



10

DEVELOP 10 TIMES FASTER



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WinDev Mobile - Concepts
Version 19 - (1) 03-2014

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Email address of our Free Technical Support: **freetechnicalsupport@windev.com**.

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In which order should these guides be read?

WinDev Mobile is a powerful tool used to develop applications for Windows Mobile, Android, Windows Phone 7, Windows 8 tablets, iPhone and iPad; it is supplied with all the tools required for creating and implementing applications.

To quickly and efficiently learn how to use WinDev Mobile, we advise you to work in the following order:

- 1** Reading the "Concepts".
This guide presents the main concepts required for creating a WinDev Mobile application.
- 2** "Tutorial" (guide + exercises)
The Tutorial provides a first "hands-on" approach to WinDev Mobile. It allows you to familiarize yourself with the main editors of WinDev Mobile.
- 3** Test of examples
Run the test of the examples supplied with WinDev Mobile in the fields you are interested in (SMS, polls, ...)

The "WLanguage" book (provided in PDF format) presents the programming in WLanguage. For each programming theme, you will find a description of the associated feature and the list of corresponding WLanguage functions.

The online help, accessible from <http://doc.windev.com> or installed with WinDev Mobile, enables you to easily find the syntax of a WLanguage function, get help about an interface, ...

Note: If there is a difference between the guide and the online help, follow the instructions given in the online help.

We hope you enjoy getting started with WinDev Mobile.

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PART 1

Basic concepts

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Project and Analysis

The development of an **Application** with WinDev Mobile is based on two main elements: the Project and the Analysis.

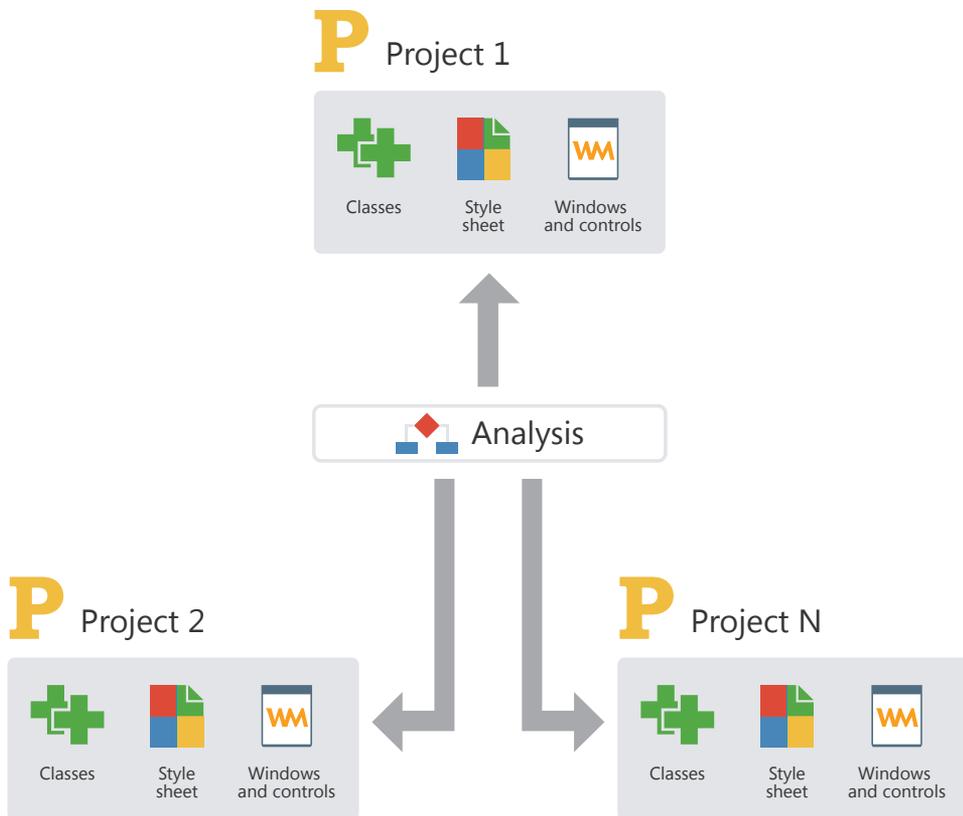
A **WinDev Mobile Project** is a set of elements: windows, controls, classes, components, ... whose combination is used to develop an application.

A **WinDev Mobile analysis** groups the description of the data files found in the application.

An application is built from a project.

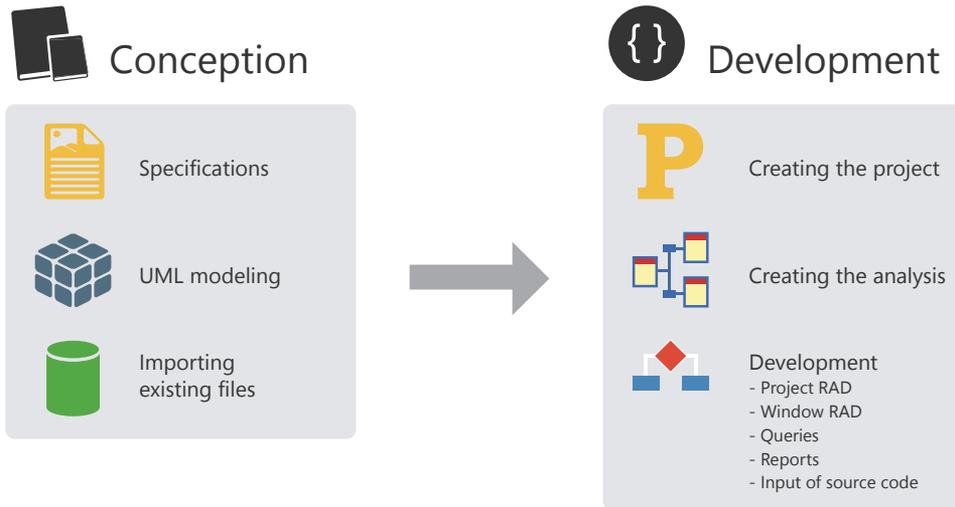
In most cases, a project is associated with an analysis.

An analysis can be associated with one or more projects.



Development cycle of an application

WinDev Mobile covers the entire development cycle of an application:



Details of the different steps:

Conception step: You have the ability to design an application from requirements, from a UML model of the processes or even from existing data files.

Development step: The creation of the project and analysis is done via very extensive wizards. The development can be done in RAD mode (Rapid Development Application) with automatic generation of the code and GUI or it can result from the manual creation of project elements.

GO Test and generation



Testing and debugging the application



Generating the application :

- Windows Mobile
- Android
- iOS
- Windows Phone
- Windows Store Apps



WM Deployment



Generating the setup program



Final test



First setup:
on the device, by HTTP,
via Google Play Store,
via MarketPlace, ...



Updating the application
Synchronizing the
data deployed

Test and generation step: WinDev Mobile offers several tools for running automatic tests in order to guarantee the reliability of applications and that there is no regression between the development steps.

Deployment step: A WinDev Mobile application can be deployed according to several methods: on the Mobile directly, by download, via Play Store, MarketPlace, App Store or Windows Store. In any case, the HFSQL data files (if they exist) will be automatically updated according to the evolutions made in the application.

WinDev Mobile: the platforms

The applications created with WinDev Mobile can run on the following platforms:

- Windows Mobile 2003/2003 SE (VGA) and Windows CE 4.0 for Pocket PC and for Smartphone.
- Windows Mobile 5.0 for Pocket PC and for Smartphone.
- Windows Mobile 6.0 to 6.5 for Pocket PC and for Smartphone.
- Windows Phone.
- Windows 8 (tablets).
- Android version 1.5 and later.
- iOS version 4 and later.

The following processors are supported for the WinDev Mobile platforms:

- **ARM and compatible** (Strong ARM, XScale, Samsung, Texas Instrument, ...)
- **ARM v4T and compatibles** (XScale, ...)

The windows

The windows are the foundation of the GUI (Graphical User Interface) of an application.

WinDev Mobile includes an advanced window editor allowing you to easily develop all types of GUI.

Several features allow you to easily obtain intuitive and user-friendly applications among which:

- powerful controls
- an anchoring mechanism allowing the GUI to automatically adapt to the size of the display. This mechanism is useful when developing mobile applications because it is used to adapt to the different resolutions of the devices.
- a GUI compilation system with error detection (empty titles, untranslated captions, overlap, etc.)



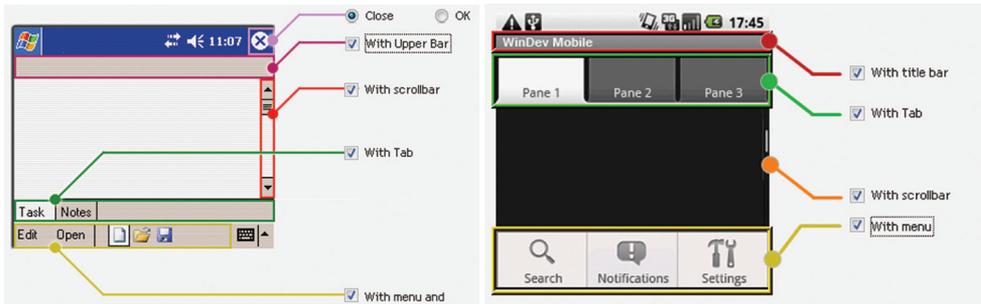
The different types of windows

Two types of windows can be used by the WinDev Mobile applications:

- **The maximized windows** (the most often used). A maximized window occupies the entire screen.
- **The non-maximized windows**. A non-maximized window can be resized by the user and it may occupy a section of the screen only.

The maximized windows

The main elements of a maximized window are as follows:

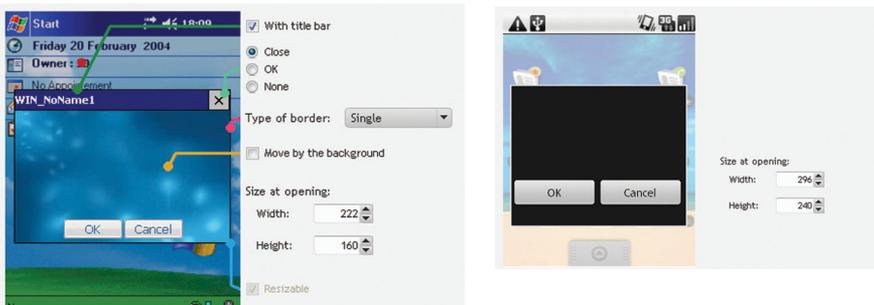


Windows Mobile

Android

The non-maximized windows

The main elements of a non-maximized window are as follows:



Windows Mobile

Android

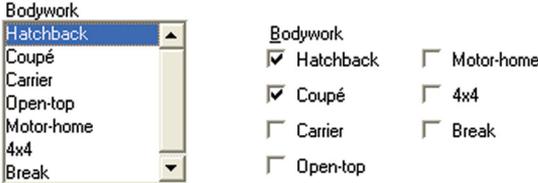


Managing the display resolution

The windows created with WinDev Mobile for the Android applications automatically adapt to the screen resolution of the devices at run time.

Available controls in a window

Several controls are available in WinDev Mobile:

You want to...	Use a control of the following type
Display a text, a title, ... 	 Static
Enter information 	 Edit
Select a value from a list (country, city, currency, ...) 	 Radio button,  Combo box,  List box
Select several values from a list 	 Check box,  List box
Select one or more values from a listview (picture directory, ...) 	 ListView
Display a graphic image (photo, statistics, chart, ...) 	 Image

Display a video, an animation



Multimedia



Image

Enter a date in a calendar



Calendar

Display the content of a file in a table (list of customers, order details, ...)



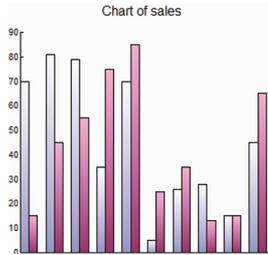
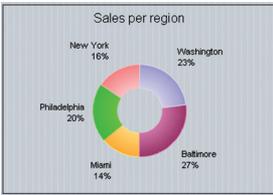
Memory table or browsing table

Repeat controls in a window (product catalog with photo, ...)



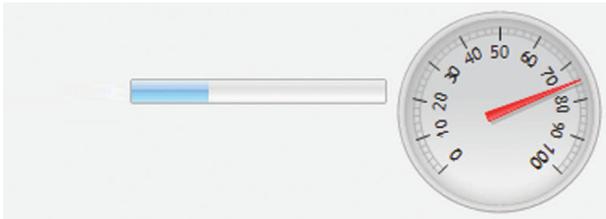
Looper

Display a column chart, a line chart, a pie chart



Graph

Display a progress



Progress bar

Program an action in a window (display another window, start a print, ...)



Button

Group the controls by theme and display the themes one by one



Tab,



Sidebar

Menus

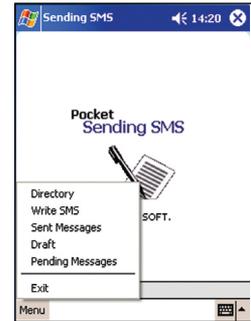
The menus created by WinDev Mobile automatically adapt to the selected runtime platform.



Windows Mobile

The menus are displayed at the bottom of the window.

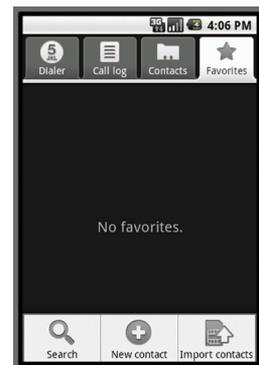
The menu options can easily be selected with the stylus of the device or with a finger.



Android

The menus are displayed at the bottom of the window when the user presses the "Menu" key. The menus with less than 6 entries can contain symbols. The longer menus are displayed as standard drop-down menus.

You can also use an action bar.



Windows Phone

The menus are displayed at the bottom of the window. The menu options contain an image and a caption. Menus with less than 4 options are displayed as small buttons at the bottom of the screen. For the larger menus, the "..." button is used to display the captions and the additional options.



Managing the keyboard

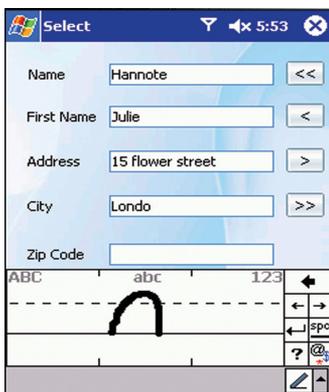


To allow the users of your applications to enter data, the keyboard of the Mobile device must be used (also called SIP for "Software Input Panel"). This keyboard allows you to:

- display a miniature keyboard at the bottom of the screen. The user clicks this keyboard with the stylus to enter information:
- automatically recognize the different words written on the screen with the stylus (method called "Transcriber").



- automatically recognize the letters typed in a specific character set (method called "Letter recognizer"):
- automatically recognize the blocks of words typed in a specific character set (method called "Block recognizer"):



WinDev Mobile allows you to easily manage this keyboard via the WLanguage functions (SIPXXX functions).

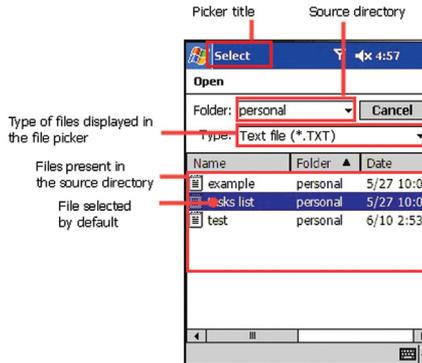
File picker in Windows Mobile

File picker



In Windows Mobile, **fSelect** is used to select a file found:

- in the "\My Documents" directory or in one of its sub-directories.
- in a directory found on a storage card.



Path of directories and files

The method for managing the directories differs on a Windows computer and on a mobile device.

In Windows, the paths have the following format: "C:\My Documents\My File.txt".



In Windows Mobile, the paths have the following format: "\MyDocuments\MyFile.txt". There is a single tree structure and the notion of drive does not exist.

Note: The notion of current directory does not exist in the Windows Mobile operating system. Therefore, functions handling the current directory (**fCurrentDir** for example) are not available in WinDev Mobile and file paths must always be absolute paths.



In Android, the file paths have the following format: "/sdcard/Documents/My File.txt". The directory separator is "/" and not "\" like in Windows. There is a single tree structure of directories.

Note: Unlike in Windows Mobile, the relative paths and the concept of current directory exist in Android.

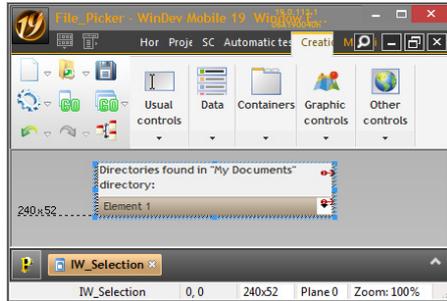
Internal window

The Internal Window control is used to include a window (and its code) in another window. At run time, the window to merge will be dynamically merged to the reception window.

1. Creating an internal window

An internal window can be created via  found among the quick access buttons. In the wheel that is displayed, hover "Window" and click "Internal window".

An internal window is a specific window that contains no title bar and no menu. All types of controls can be used in this window.



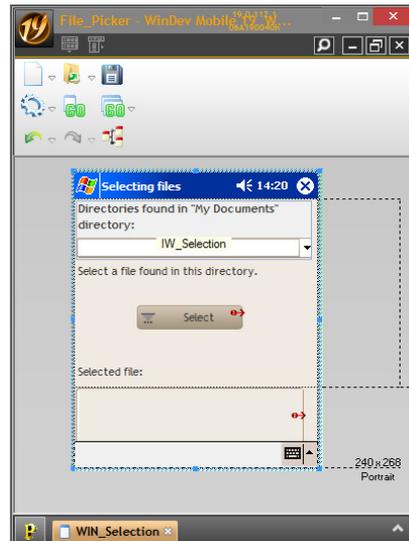
2. Using an internal window.

To use an internal window, you must:

- create an Internal Window control.
- in the control description, select the internal window to use and validate.

Notes:

- The internal window used in the "Internal window" control can be modified by programming.
- Limitations: The home area is a rectangular area and no overload is allowed. To perform overloads, we recommend that you use the control templates.

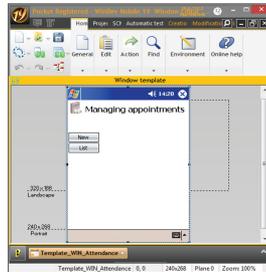


Window templates

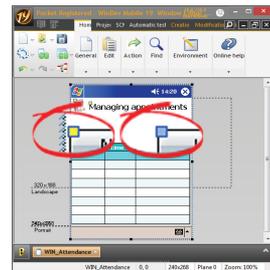
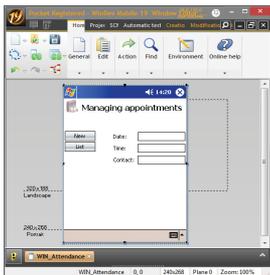
WinDev Mobile allows you to create window templates. These templates contain all the graphic elements common to all the windows of your application.

The modifications performed in a window template are automatically applied to all the windows that use this template.

A window template allows you to comply with the style book defined for an application.



*Defining a window template.
The template is bordered by a green line in the editor.*



*Using the template in several windows.
The elements belonging to the template are identified by a yellow square.*

A window template can be created:

- directly via found among the quick access buttons. In the wheel that is displayed, hover "Window" and click "Window template".
- from the current window (on the "Home" pane, in the "General" group, expand "Save" and select "Save as a template").

To create a window based on a template, select the template that will be used during the window creation.

The characteristics of the elements can be dissociated from the template. For example, dissociating the position of a control to position the control somewhere else while keeping the other evolutions performed on the control (code, style, ...). We talk of **control inheritance**. In this case, the elements are identified by a blue square.

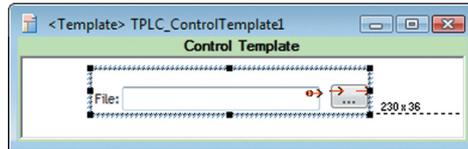
Control templates

WinDev Mobile allows you to create control templates. A control template is a set of controls that can be re-used in several windows.

The modifications made to a control template are automatically applied to all the windows that use this template.

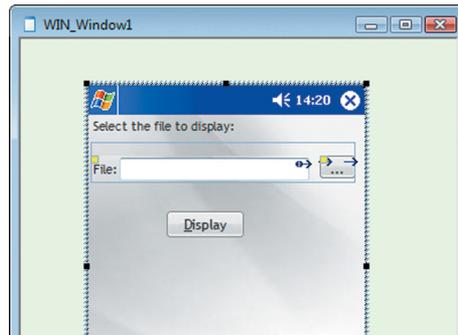
A control template is used to:

- group a set of controls for a specific purpose.
- make the controls independent of the window hosting them.



Defining a control template.

The template is bordered by a green line in the editor.



Using the template in a window.

The elements belonging to the template are bordered in blue and they are identified by a yellow square.

A control template can be created:

- directly via found among the quick access buttons. In the wheel that is displayed, hover "Window" and click "Control template".
- from the controls found in the window (select the controls then in the popup menu, select the "Control.. Refactoring.. Create a control template from the selection" option).

To create a window based on a control template, create a "Control template" control.

The characteristics of the elements can be dissociated from the template. For example, dissociating the position of a control to position the control somewhere else while keeping the other evolutions performed on the control (code, style, ...). We talk of **control inheritance**. In this case, the elements are identified by a blue square.

Reports



WinDev Mobile allows you to easily create and print all types of reports with the report editor.

In Windows Mobile, the generated reports can be printed in PCL format (".PCL" file or print on a PCL printer).

In the iOS applications, the generated reports can be printed in PDF format.

A report can be used to summarize and synthesize the data.

You can:

- group the data.
- sort the data according to any criterion.
- perform calculations (means, statistics) or create charts.

The diagram below presents a simplified definition of a report:

- the data to print comes from a data source (data file described in an analysis, HFSQL view, query, memory zone or text file).
- the report groups, sorts and formats the data.
- the execution of the report can be performed on a PCL printer or in a PCL file.



Source of report



Print mode

-  Table control
-  Query
-  Text file
-  Data
-  WLanguage variable



-  PCL file (Windows Mobile)
-  Printer (PCL format, Windows Mobile)
-  PDF file (iPhone, iPad, ...)

Other print modes

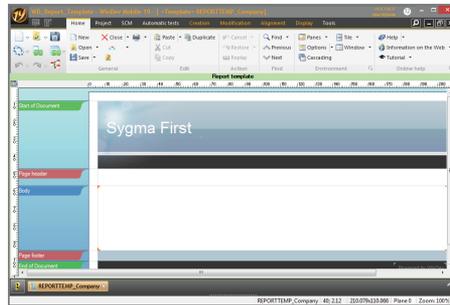
WinDev Mobile also allows you to print in WLanguage (iXXX functions).

Report templates

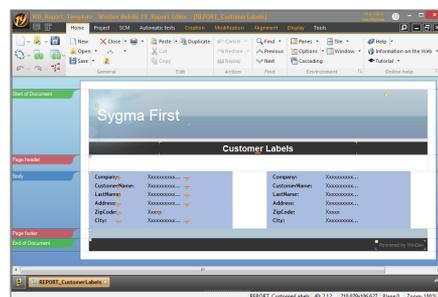
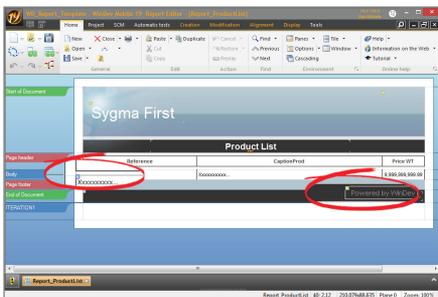


Most of the time, the prints use a standardized appearance and layout: date in the top right corner in a specific format, page footer with print time and file name, logo in the top left corner..

The report templates are used to easily standardize the layout of your reports.



Defining a report template in the report editor.



Using the template in different reports.

The elements belonging to the template are identified by a yellow square.

The overloaded template elements are identified by a blue square.

A report template can be created:

- directly via found among the quick access buttons. In the wheel that is displayed, hover "Report" and click "Report template".
- from the current report (on the "Home" pane, in the "General" group, expand "Save" and select "Save as a template").

To create a report based on a template, select the template that will be used during the report creation.

The characteristics of the elements can be dissociated from the template. For example, the position of a control can be dissociated from the template so that the control can be located somewhere else while it still benefits from the other features (code, style, ...). We talk of **inheritance**. In this case, the elements are identified by a blue square.

The background features a close-up of a woman's face with dramatic eye makeup and red lips. Overlaid on the right is a large, 3D golden '10' with silhouettes of people cheering inside it. The overall theme is high-tech and performance.

PART 2

**Development
environment**

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DEVELOP 10 TIMES FASTER



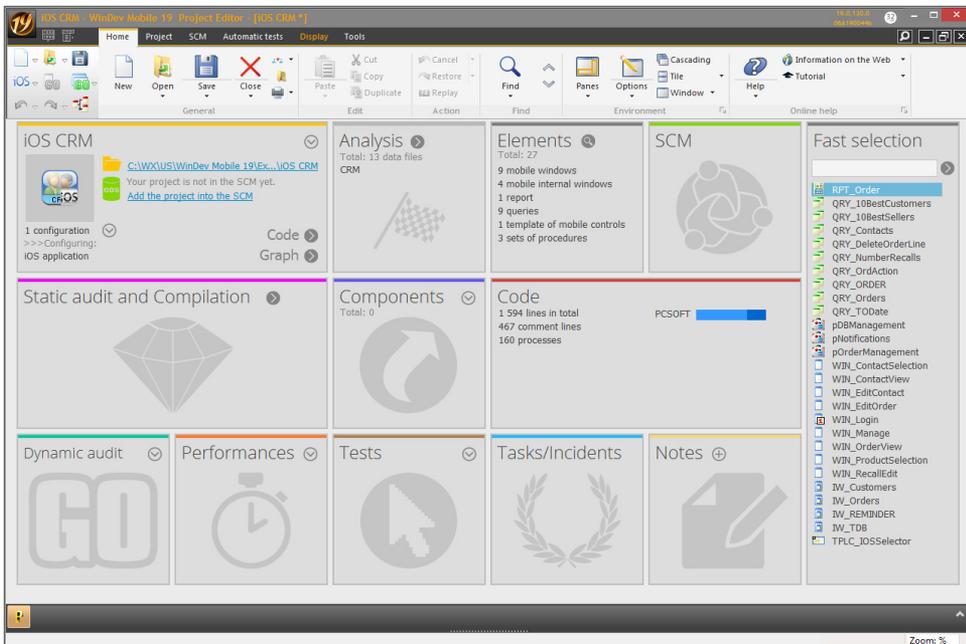
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Project dashboard

The project dashboard is a main element for managing the WinDev Mobile projects. The project dashboard gives an overall view of the progress status of a project.

The project dashboard includes several indicators about the project content:

- statistics about the project,
- incidents,
- tasks,
- status of automatic tests,
- result of different audits,
- list of elements checked out from SCM (Source Code Manager),
- result of action planes (continuous integration), ...



The elements found in this dashboard are presented as Widgets. These Widgets can be configured, moved, enabled, disabled, ... You have the ability to add new indicators.

The dashboard configuration is saved for each user. The dashboard configuration is the same for all the projects belonging to the same user.

WinDev, WebDev, WinDev Mobile: a 100% compatible format

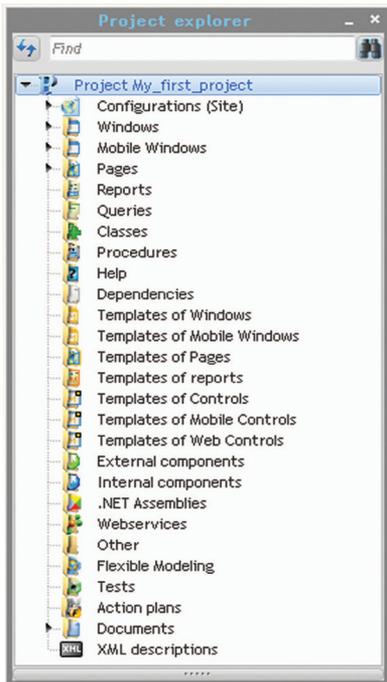
The created projects are often multi-target projects.

For example, for an ERP system intended to operate in Windows, it is very likely that beside the main application, which will be the backbone of the solution, there will be sales people equipped with PDAs or Smartphones, stores that will use mobile devices to manage inventories and that Intranet and Internet sites will be implemented.

All the elements, except for the GUI (pages and windows), are 100% compatible and sharable among the WinDev, WebDev and WinDev Mobile projects.

Indeed, the sets of procedures or the classes can be shared among several projects for example.

Regardless of the product used to create a project, it can be opened by the other products.



When a project is opened in a product other than the one where it was created, a wizard is displayed, allowing you to create a **project configuration** specific to the product used.

For example, if a WinDev project is opened by WebDev, you will have the ability to create a project configuration named "Site", used to group all the elements required by the WebDev site.

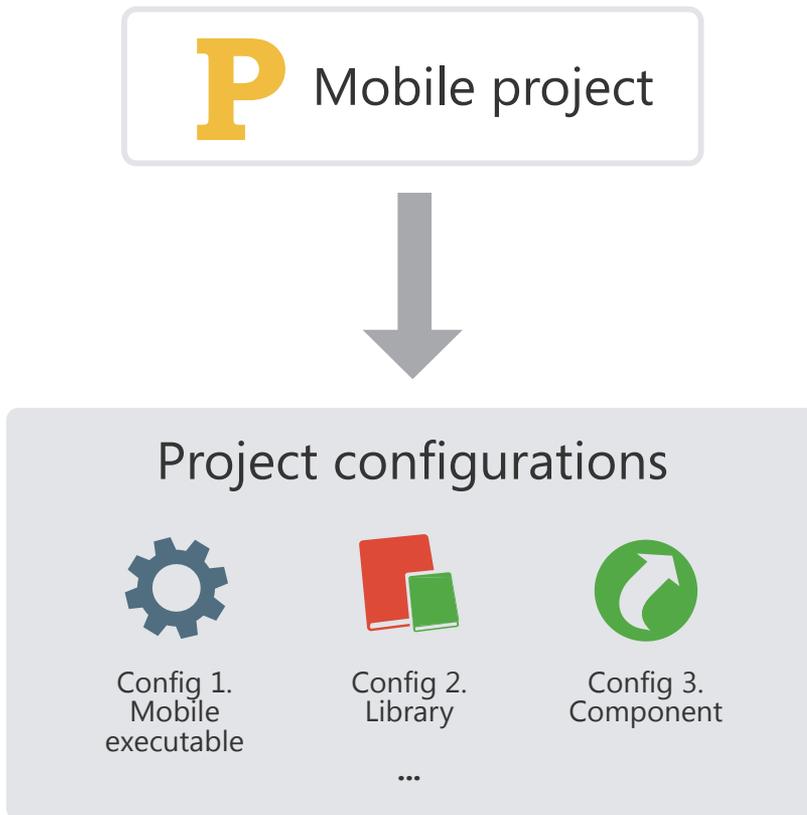
You now have the ability to view the elements of each target from each environment. A project in WinDev displays the thumbnails of the WebDev pages and the WinDev Mobile windows for example. Clicking a WebDev page from the WinDev project editor opens the WebDev page (WebDev must be installed on the computer).

Project configuration

The project configurations are used to create several "targets" from the same project. From the same project, you have the ability to create:

- executables that do not contain the same elements, that have different names, ...
- various internal or external components,
- multi-platform executables.

You have the ability to work on a specific configuration at any time: the elements that do not belong to this configuration are grayed in the project graph.



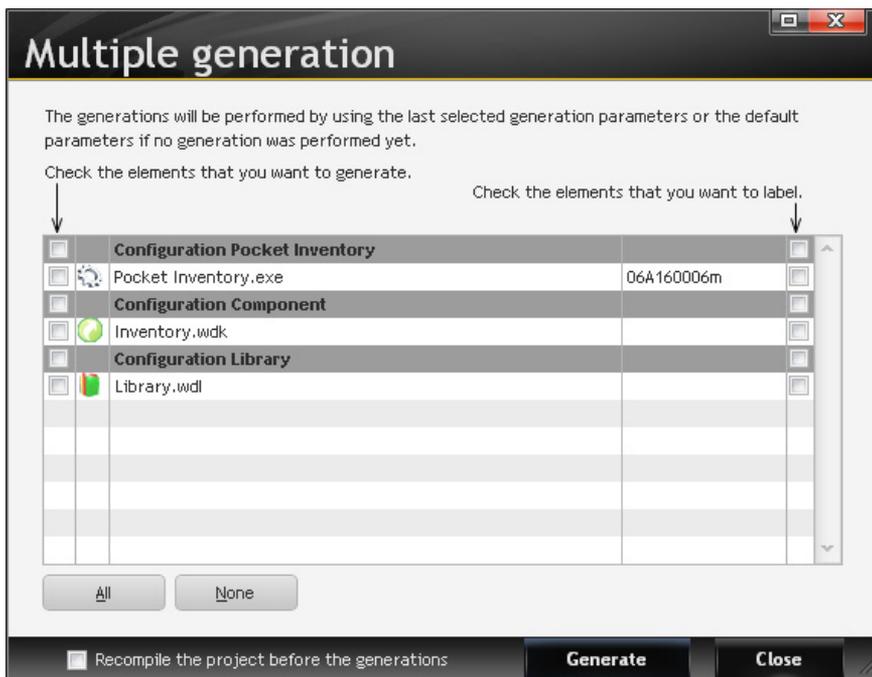
The multiple generation allows you to generate all the project configurations (or some of them) in a single operation.

Multiple generation

The project configurations are used to easily define the different "Targets" of your project. Several executables, several components and several libraries can be defined for the same project.

To generate the result of each configuration, you can select each configuration one by one and generate the corresponding program.

Another faster method is available: the **multiple generation**. The configurations to generate are selected in a single operation and the result is immediate.



To start a multiple generation, on the "Project" pane, in the "Generation" group, click "Multiple generation".

Custom-folders: Organize your project

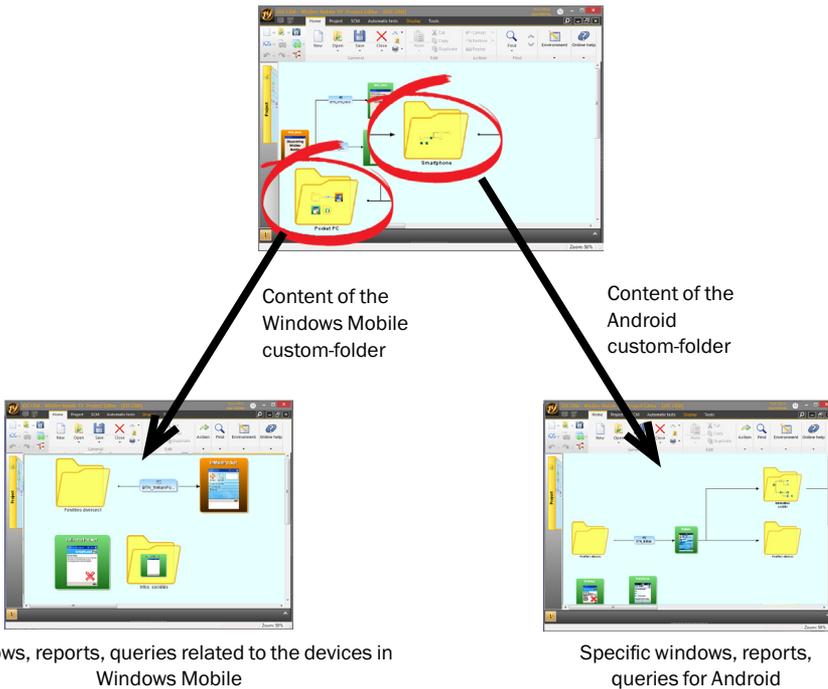
All the elements included in a project are listed in the "Project explorer" pane. By default, the elements are organized according to their type: windows, reports, classes...

In large projects, it is often more relevant to group the elements that relate to the same feature: stock management or order management for example.

To do so, create the "custom-folders" in the tree structure of the project explorer and drag the different elements into these folders.

Some elements can be common to several "custom-folders".

It makes it easier to work on part of the application.



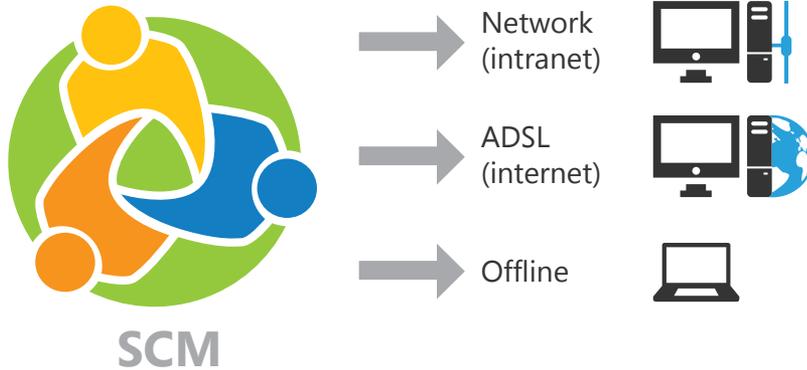
Notes:

- To organize your projects while sharing a set of elements among different projects, WinDev Mobile also proposes the internal components.
- The "custom-folders" are displayed in the project explorer and in the project graph.

Source Code Manager (SCM)

Overview

To simplify teamwork, a Source Code Manager is available in WinDev Mobile. This Source Code Manager allows several developers to work together on the same project at the same time and to share elements between several projects.



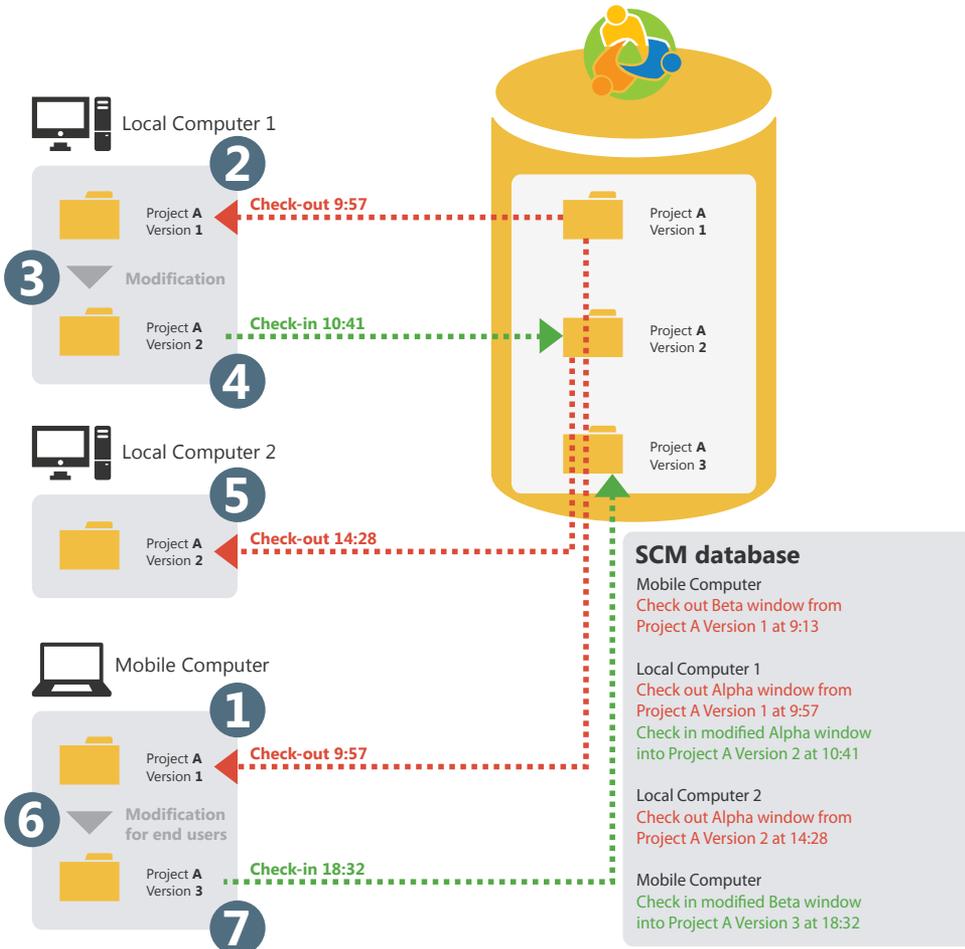
A database groups the project elements, each computer has a local copy of the elements required for the development

The elements found in the SCM can be shared:

- via a network
- via Internet
- in offline mode. In this case, the elements that require specific attention will be checked out from SCM when the laptop is connected to the main system for example.

Operating mode of the Source Code Manager

The following example presents the Source Code Manager:



If a project element (window, report, ...) is checked out, this element cannot be checked out twice.

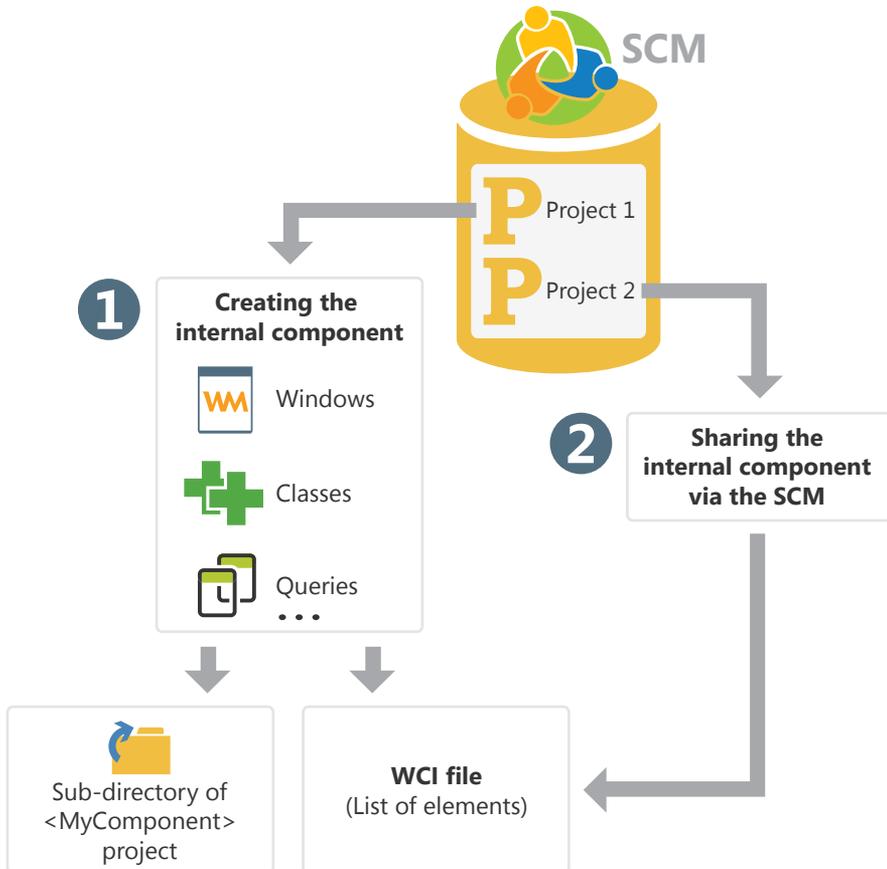
Once the checked-out elements are modified, these elements must be checked back in order for the modifications to be taken into account by the source project. Indeed, the SCM database stores a history of all the project elements since their creation.

Whenever an element is checked back in, the version number of the source project is incremented by 1.

Internal component

An internal component is used to group several project elements. This grouping is used to:

- Organize a project: you have the ability to create internal components to group the project elements (by feature for example).
- Share the elements among several projects, via the SCM.



The elements found in an internal component can be private or public:

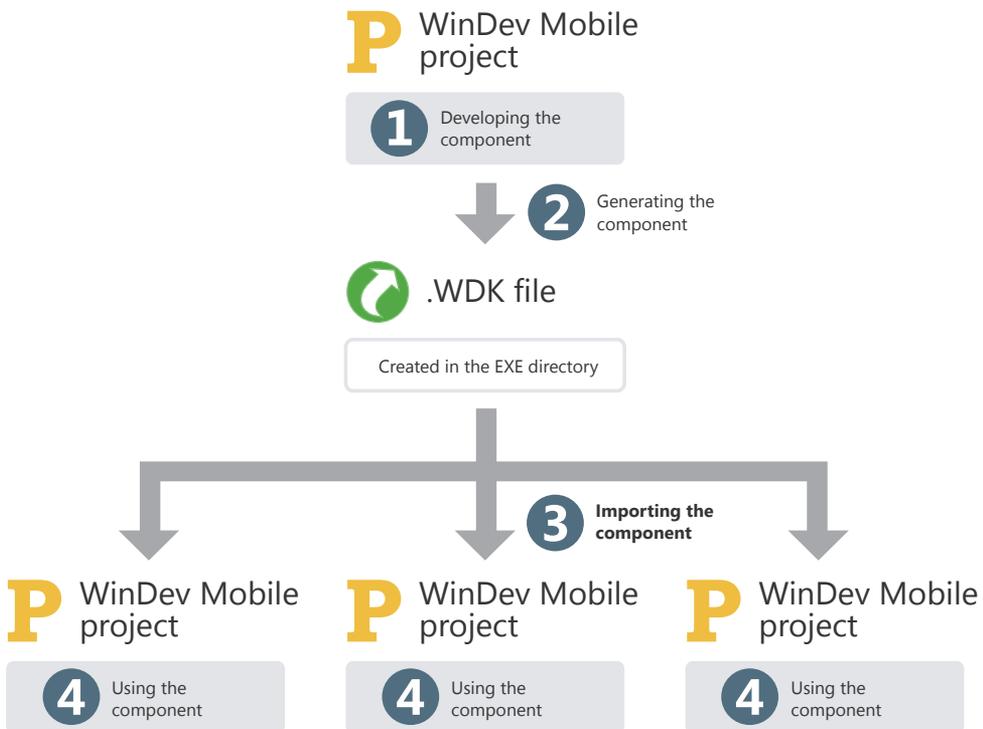
- The private elements can be handled by the other elements of the component.
- The public elements can be handled by the elements of the project that uses the internal component.

External component

An external component is a set of WinDev Mobile elements: windows, reports, analysis, ... This set of elements performs a specific feature. For example, an external component can correspond to one of the following features:

- Sending SMSs,
- Sending emails,
- ...

An external component can be distributed to other WinDev Mobile developers (for free or at a cost). These developers will be able to easily include the feature proposed by the external component in their application. The external component will be included in the application and distributed along with it.



Generation modes

WinDev Mobile allows you to generate several other types of projects.



Windows Mobile applications

The applications are the most common generation mode. The applications developed with WinDev Mobile can be run on Windows Mobile (version 2003, 5.0, 6.0 and 6.5) and they support the ARM and ARM4T processors.



Android applications

WinDev Mobile is used to generate applications for the Android platform. These applications can be run on smartphones, tablets, ultra-portable, using this operating system (starting with version 1.5). These applications can also be distributed on Play Store for example.



iOS applications

WinDev Mobile allows you to generate applications for the iPhone or iPad platform. These applications will be able to run on iPhones and iPads. These applications can also be distributed on the Apple Store for example.



Windows 8 tablet applications

WinDev Mobile allows you to generate applications for the Windows 8 tablets. These applications can be started in tile mode on the Windows 8 tablets. These applications can also be distributed on Windows Store for example.



Windows Phone applications

WinDev Mobile allows you to generate applications for the Windows Phone platform. These applications can be run on smartphones, tablets, ultra-portable devices, using this operating system. These applications can also be distributed on the Android Market for example.



Libraries and patches

A library is a unique file that groups several elements of a WinDev Mobile project: windows, reports, etc. You have the ability to generate stand-alone libraries that can be used by other applications as well as corrective patches for an application that is already deployed; this allows you not to have to reinstall the full application for a minor correction.



External components

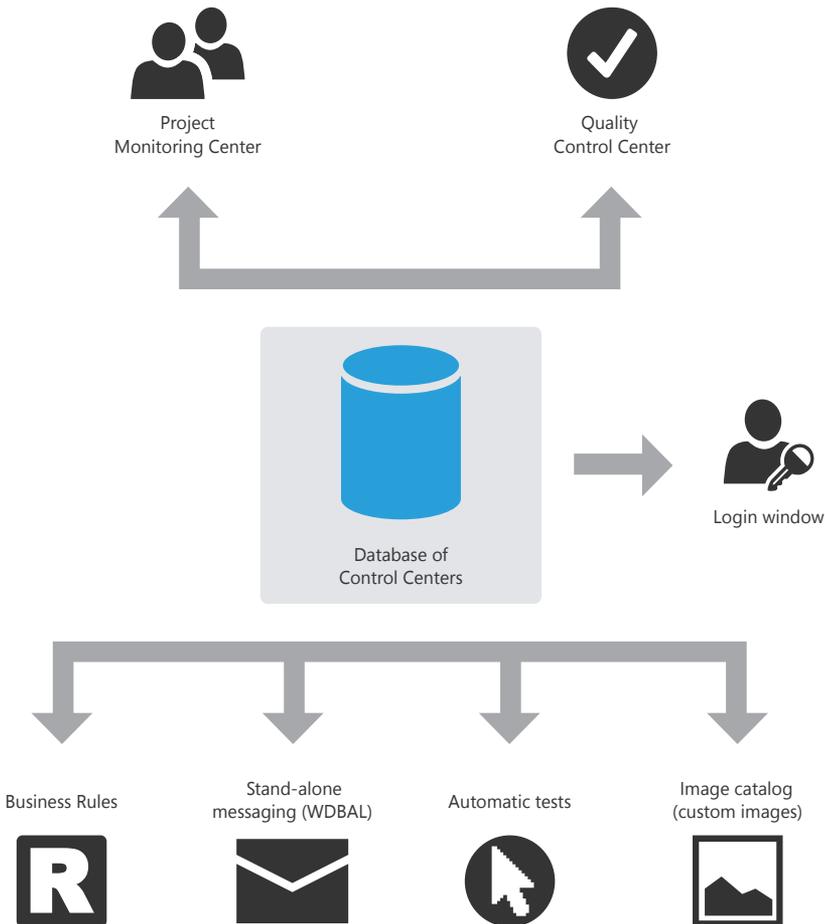
The external components are application bricks allowing you to share one or more specific features among several applications. A component generated by WinDev can also be used in a WebDev or WinDev Mobile project.

The Control Centers

To optimize the management of your development projects, WinDev Mobile gives you the ability to use Control Centers. The different Control Centers allow you to:

- Manage the requirements of a project,
- Manage the monitoring of a project,
- Manage the bugs and evolutions signaled by the users on a project.

The Control Centers use a database (HFSQL Classic or Client/Server). This database is shared among the different tools available in WinDev Mobile:



When installing WinDev Mobile, the setup program proposes:

- to create the database of Control Centers. This database will be automatically created in HFSQL Classic format in the specified directory.
- to share an existing database of Control Centers.

Managing the requirements

The Control Centers allow the project manager to manage a development project. To do so, you must:

- define the different contributors of the project.
- define the requirements (with the different elements associated with them).

Each developer performs the different tasks assigned to him.

The project manager can follow the progress status of the project at any time.

Project Manager

Developer

1 Creating requirements made of :

2 Performing the requirements :



Tasks



Project Monitoring Center



Business Rules



Pane of Business Rules



Incidents



Quality Control Center

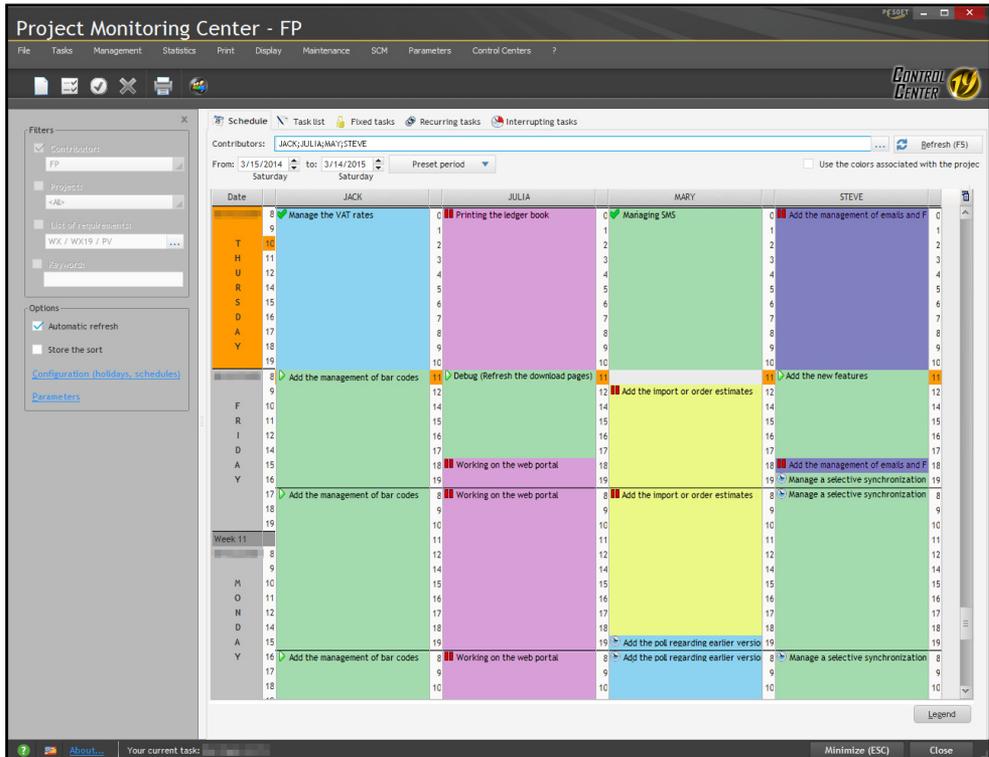
3 Monitoring requirements (Project Monitoring Center) :



Managing the requirements

Project Monitoring Center

The Project Monitoring Center allows the contributors of a project to manage their task schedule. These tasks can be linked to requirements and they can correspond to several projects



Operating mode of the Project Monitoring Center

Once all the project tasks have been defined, the Project Monitoring Center takes care of everything. Entering the time spent on a task is almost automatic, it requires no specific action and it generates no particular constraint.

When the relevant project is opened, the Project Monitoring Center requests or indicates the current task. As soon as a task is completed, all you have to do is indicate that this task is over and specify the new task.

A task can be linked to a project element (window, report, ...). Whenever the relevant element is opened, the time spent on this element is counted and stored in the Project Monitoring Center. Conversely, the element corresponding to the task that you want to perform can be automatically opened from the task list.

Each developer can also see his own task list in the "Project Monitoring Center" pane.

Managing the business rules

WinDev Mobile allows to manage the business rules. A business rule is used to define a specific operating mode or to specify a particular process. For example: the calculation of a specific VAT rate, the rules for changing the status of a customer, the formula for calculating shipping costs, a sales commission, a discount rate, a decay coefficient, ...

A business rule can be simple or complex.

The business rules can come from the specifications (corresponding to the requirements).





PART 3

Database

10



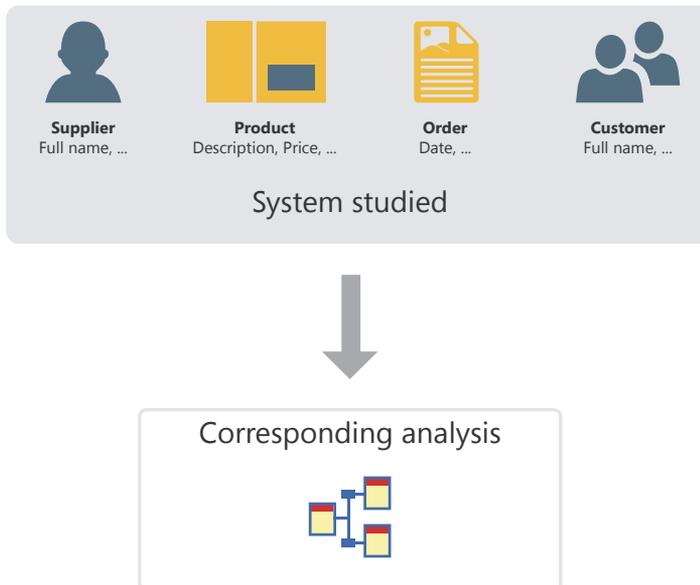
DEVELOP 10 TIMES FASTER

PCSOFT

Analysis: Structure of the database

When a WinDev, WebDev or WinDev Mobile project uses data files, this project must be associated with an analysis. An analysis allows you to describe the structures of the data (files, items, ...) used in your project.

The data model editor is used to easily create an analysis.

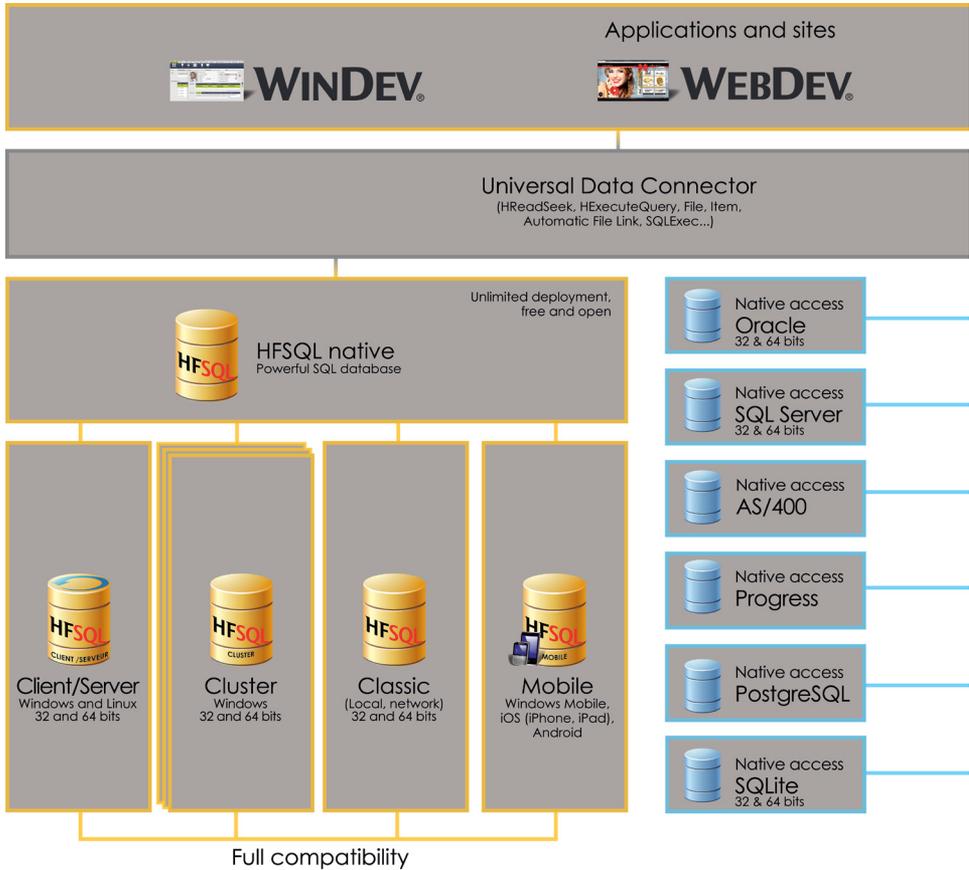


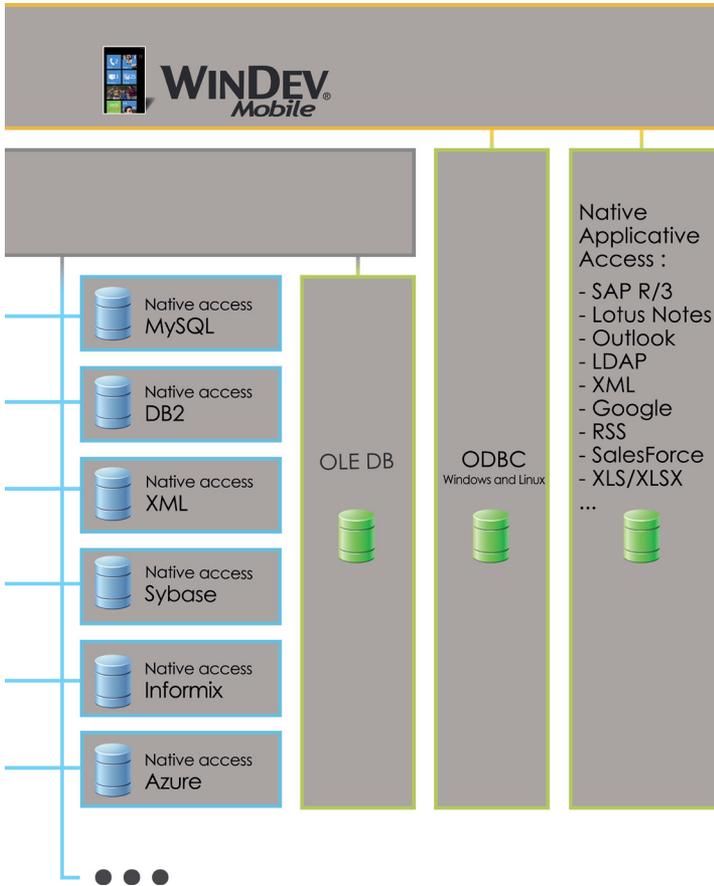
The analysis of a WinDev Mobile project corresponds to the LDM (Logical Data Model). The entire structure and data organization are described: the data is grouped by file. Each file contains several data called item.

In the analysis, the description of a data file can be linked to a type of file (HFSQL Mobile, HFSQL Client/Server, SQLite, ...).

The different types of accessible files

WebDev, WinDev and WinDev Mobile propose a simple access to most of the databases on the market.





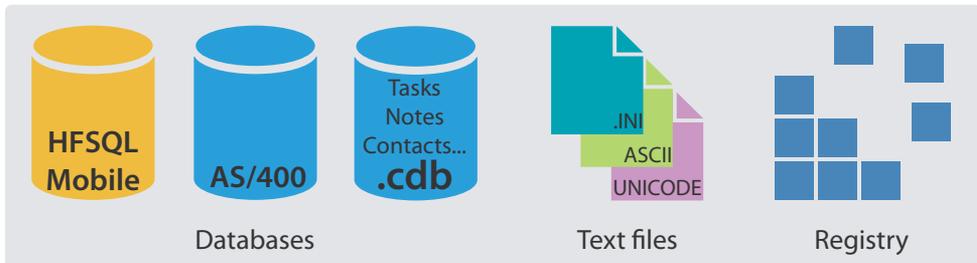
Data handled by a WinDev Mobile application

The data handled by a WinDev Mobile application can come from:

- a HFSQL Mobile or HFSQL Client/Server database (".Fic" files).
- a third-party AS/400 database (Windows Mobile only).
- a CEDB database (".cdb" files) (Windows Mobile only).
- ".INI" files.
- text files (in ANSI or UNICODE format).
- the registry (Windows Mobile only).



Mobile device



HFSQL Classic

The HFSQL Classic format is the database format supplied with WinDev Mobile. This database format is compatible with WinDev, WinDev Mobile and WebDev.

It is a freely distributable Relational DBMS.

This format can be used on the following platforms: Windows Mobile, iPhone, iPad, Android and Windows 8 Tablet.

This format is identical to the HFSQL Classic format of WinDev and WebDev (".WDD" file, data files, ...).

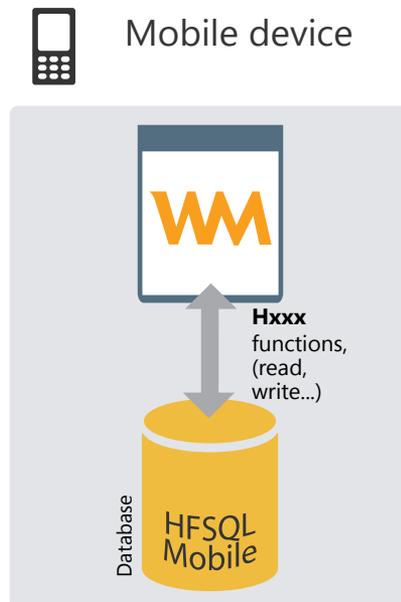
However, the available size being limited on the mobile devices, the following features are not supported by HFSQL on mobile in Classic mode:

- the transactions.
- the log process.
- the management of locks for files and records.
- the management of files in Hyper File 5.5 format.

Handling a HFSQL Mobile database from the mobile device

A HFSQL Mobile database corresponds to a set of ".FIC", ".NDX" and ".MMO" files.

Each data file can be handled by a WinDev Mobile application. These operations are performed via the HFSQL functions (**Hxxx** functions).

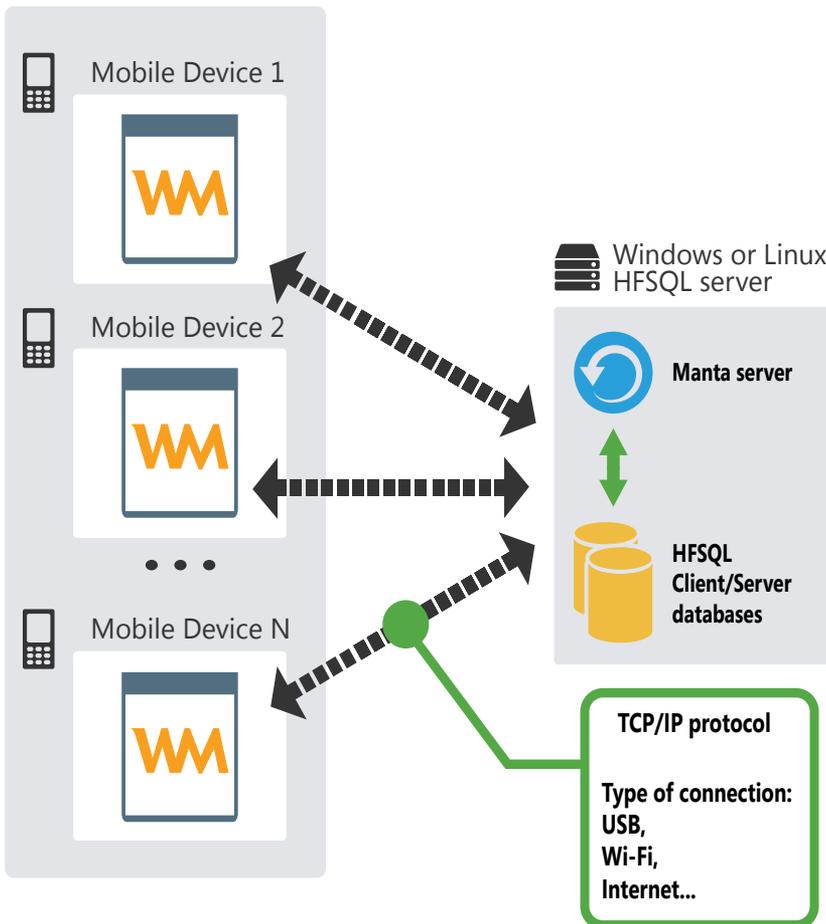


HFSQL Client/Server

A WinDev Mobile HFSQL application can also operate in Client/Server mode.

The characteristics of the Client/Server mode are as follows:

- A HFSQL Client/Server application is run on different mobile devices (called client computers).
- The data files are found on a server. Only the server physically accesses the data files.
- All the processes (query, read/write operation in a data file, ...) are performed on the server.

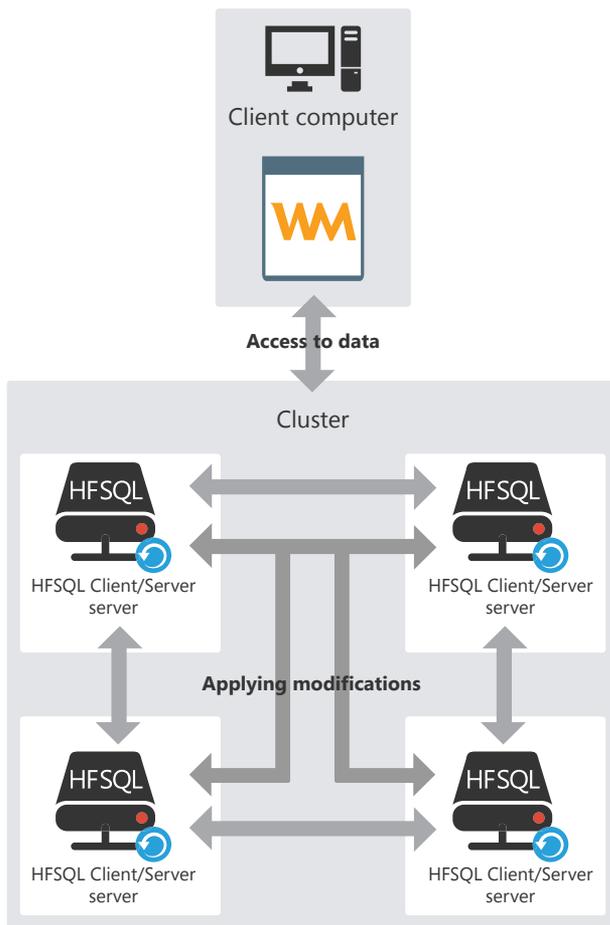


HFSQL Client/Server can be used on the Windows Mobile, iPhone, iPad and Android platforms.

HFSQL Cluster

HFSQL Cluster is an extension of the database model of HFSQL Client/Server. In a database cluster, all the HFSQL servers contain a copy of the databases and they are synchronized in real time.

- The read load can be balanced among the different servers.
- The physical configuration can evolve without any interruption for the client computers.
- If one of the servers crashes, the client is automatically redirected to an operating server.

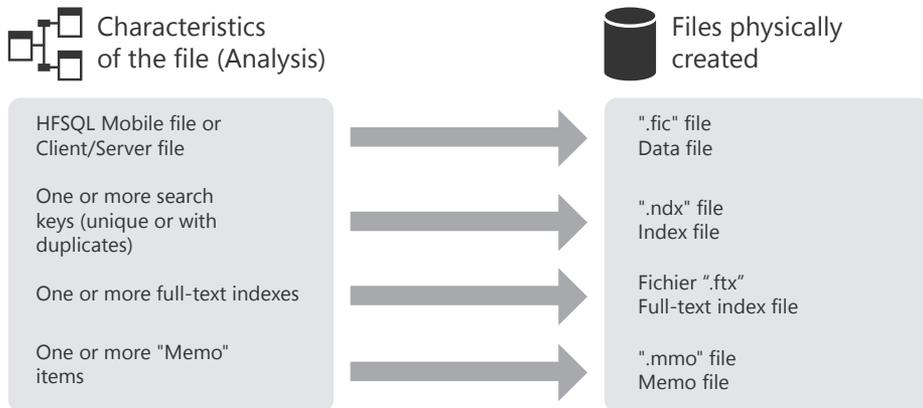


HFSQL Cluster can be used from the Windows Mobile, iPhone, iPad and Android platforms.

Creating HFSQL files: the files physically created

The data model editor is used to describe the structure of data files.

Depending on the information entered in the data model editor, different files are physically created.



Standard CEDB database

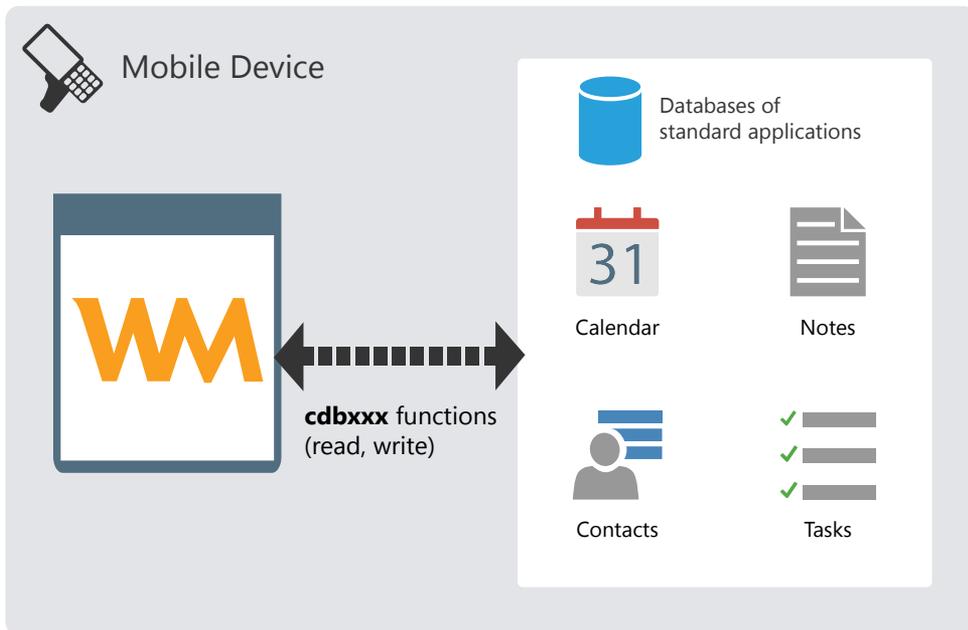


The standard applications

The devices in Windows mobile are supplied with a set of standard applications that handle the standard CEDB databases.

These databases correspond to the databases found by default on the device. These databases contain the "Tasks", "Contacts" and "Calendar" data files, ...

These databases can be handled by a WinDev Mobile application.



Handling a standard database found on the Mobile Device (from a PC)

A standard database (containing the data files for managing tasks, contacts, ...) is found on the Mobile Device (Pocket PC). This database can be handled by a WinDev application.

If you own WinDev, you also have the ability to create a WinDev application used to handle this standard database found on the Mobile Device (Pocket PC).

These operations are performed via the **cdbXXX** functions.

The synchronization between the database found on the Mobile Device (Pocket PC) and the data viewed via Outlook is performed by ActiveSync.



Note: To handle a Mobile Device database (Pocket PC) from a WinDev application, the Windows PC must be connected to the Mobile Device (**ceConnect**).

Using custom CEDB databases



CEDB database

The custom CEDB databases correspond to Access databases (".MDB" file) previously exported from a PC.

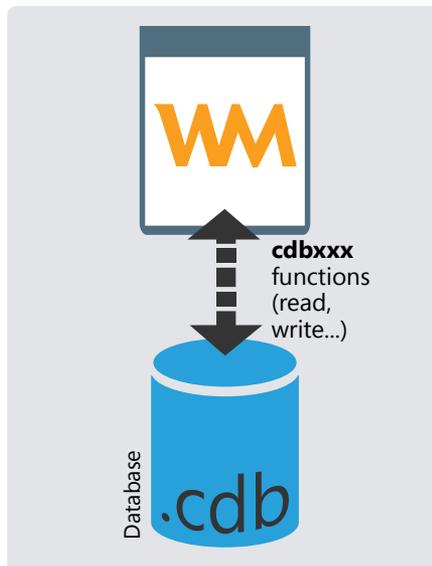
When an Access database (".MDB" file) is copied onto a Mobile Device (Pocket PC) from the file explorer, this database is automatically transformed into a CEDB database (".CDB" file).

Handling a CEDB database from the Mobile Device (Pocket PC).

A CEDB database can be handled by a WinDev Mobile application. These operations are performed via the **cdbXXX** functions (read, write...).



Mobile Device



Handling a CEDB database from the Windows PC

If you own WinDev, you also have the ability to create a WinDev application used to directly handle a CEDB database found on the Mobile Device (Pocket PC). These operations are also performed via the ***cdbXXX*** functions.



Note: To handle a database found on a Mobile Device (Pocket PC) from a WinDev application, the Windows PC must be connected to the Mobile Device (***ceConnect***).

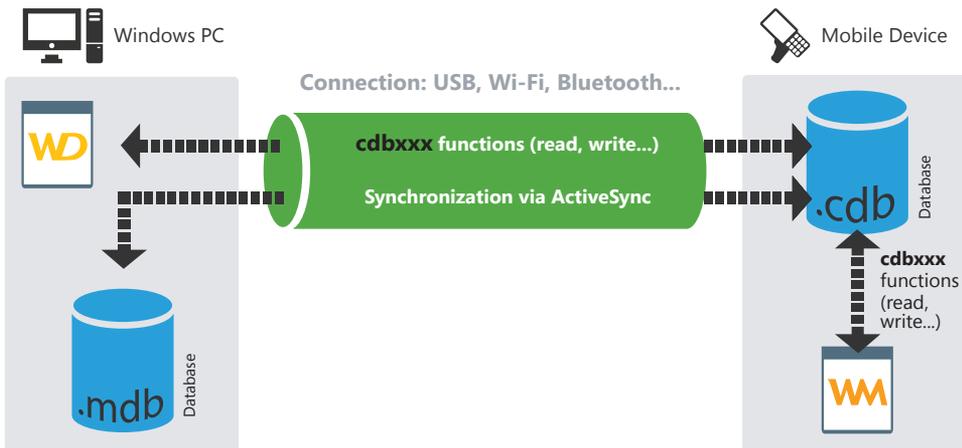
Synchronizing a CEDB database with an Access database

An Access database (".MDB" file) is found on the Windows PC. This database is exported to the Mobile Device (Pocket PC): ActiveSync automatically transforms it into a database for Mobile Device (".CDB" file).

This database for Mobile Device (Pocket PC) can be handled by a WinDev Mobile application.

If you own WinDev, you also have the ability to create a WinDev application used to handle the database found on the Mobile Device (Pocket PC).

These operations are performed via the **cdbXXX** functions. The synchronization between the database found on the Mobile Device (Pocket PC) and the Access database is performed by ActiveSync.



Notes:

- To handle a database for Mobile Device (Pocket PC) from a WinDev application, the Windows PC must be connected to the Mobile Device (**ceConnect**).
- The WinDev application can also handle the Access database via the Native Access.
- **From Windows Vista**, "ActiveSync" was replaced by the "Manager for Windows Mobile devices".

Comparison between HFSQL Mobile and CEDB



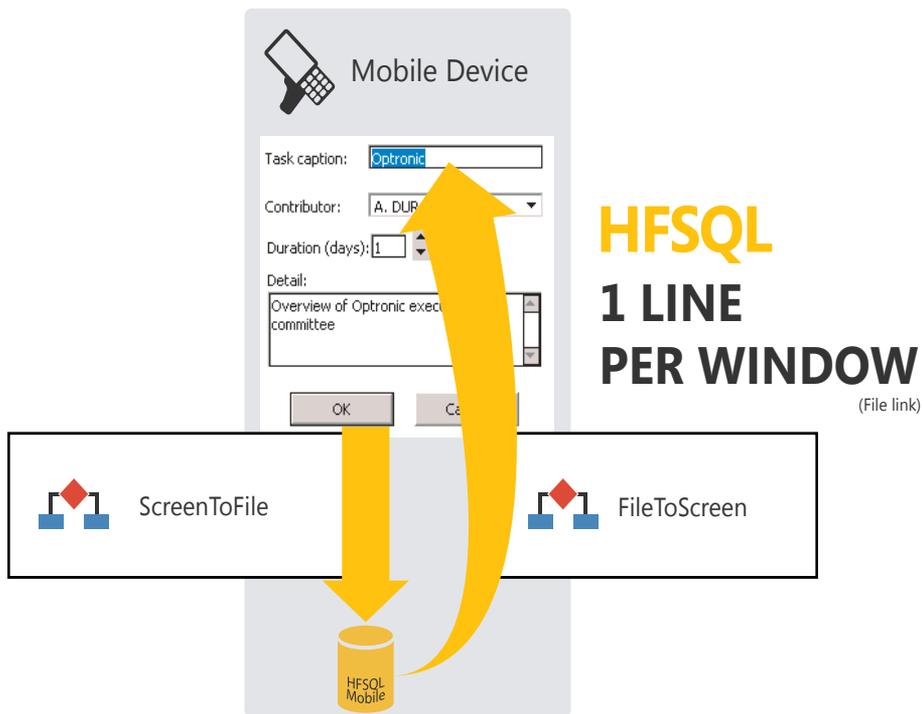
The CEDB databases only concern the applications that operate in Windows Mobile.

To display information coming from a database in a window, the controls of this window must be linked to the different items of the database.

The method for displaying and retrieving the information depends on the database used (HFSQL Mobile or CEDB).

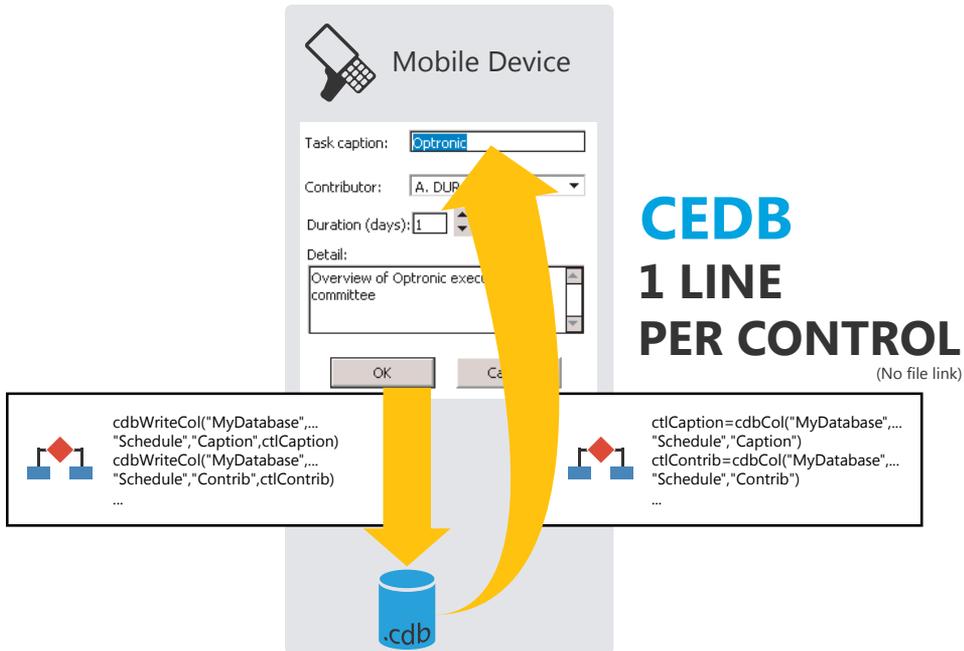
File link between a window and a HFSQL Mobile database

In most cases, the link between a control and an item is defined in the window editor when describing the control ("File" tab). This link allows you to specify the data file item that will be used by **ScreenToFile** and **FileToScreen**.



File link between a window and a Pocket PC database (CEDB)

This link must be be defined by programming (*cdbXXX* functions).



Other differences

The use of HFSQL Mobile databases allows you to access the following features (non-exhaustive list):

- Speed of the HFSQL Mobile database.
- Queries on the HFSQL Mobile databases (created in the query editor supplied with the product).
- Fast application development via Full Application RAD.
- Features specific to the HFSQL Mobile database (encryption, ...)

Associating the controls with the data

A window can display information coming from:

- a database: the controls are directly linked to the items found in the data files or in the queries available in the database.
- variables found in the code of the application (variables global to the window or to the project or parameters passed to the window).

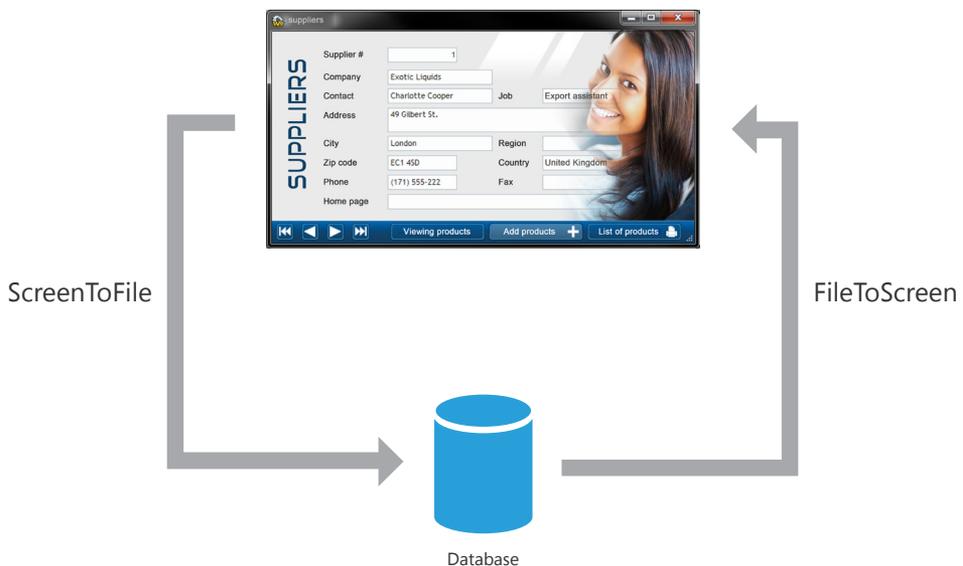
To display this information in a window, the controls of this window must be linked to:

- the different items of the database.
- the available WLanguage variables.

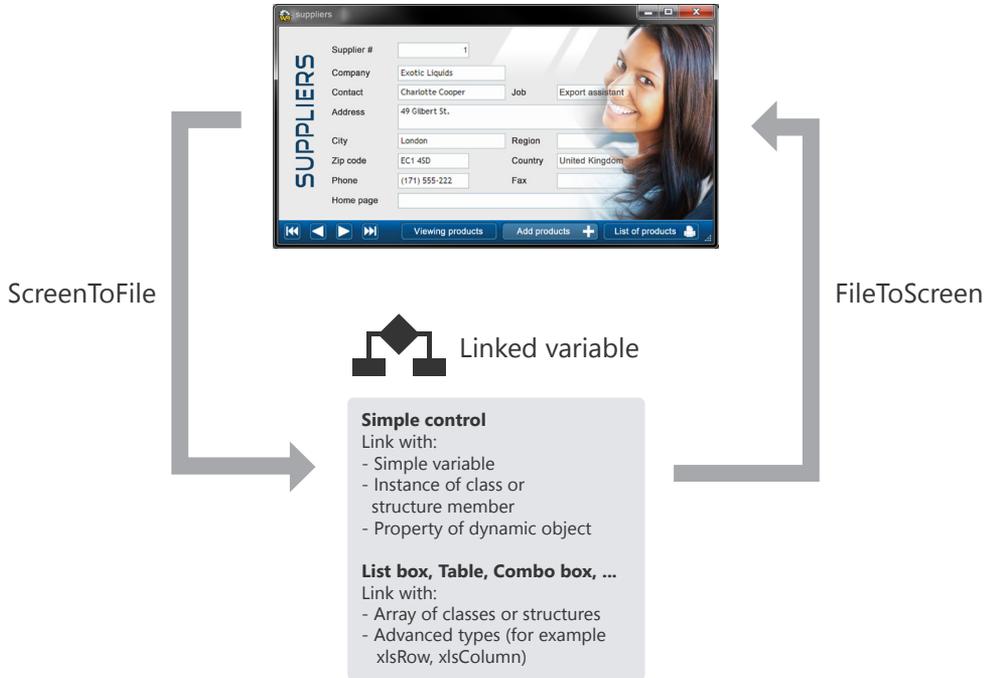
The method for displaying and retrieving the information is straightforward:

- The link between a control and an item or between a control and a variable is defined in the window editor when describing the control ("Link" tab).
- **ScreenToFile** is used to update the record or the variable with the data displayed on the screen.
- **FileToScreen** is used to update the data displayed on the screen with the information saved in the data file or with the information saved in the variable.

Link between control and item



Link between control and variable



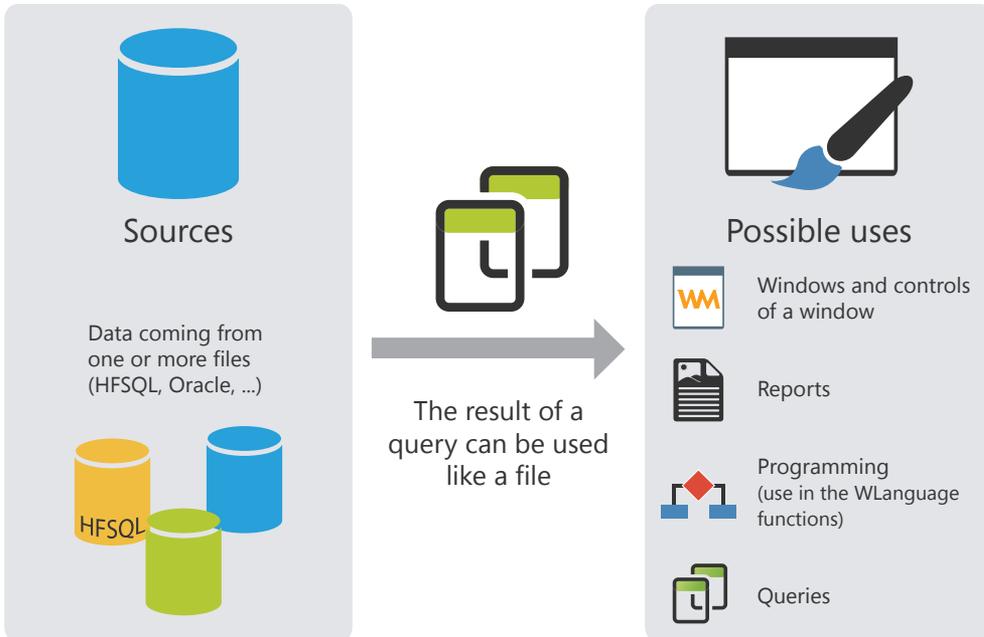
Note: The concept of control/variable link is not available for the Android applications.

The queries

A query is used to interrogate a database in order to view, insert, modify or delete data. The structure of the query defines the data used.

A query can interrogate one or more data files.

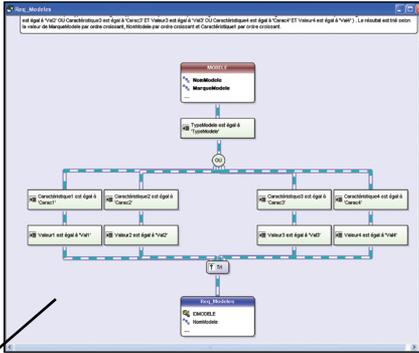
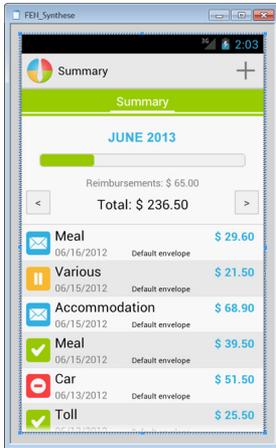
The query editor allows you to easily create queries without programming.



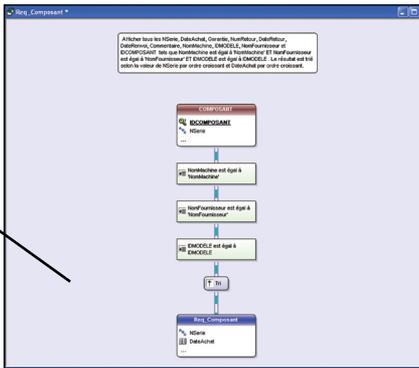
Note: In programming, a query can be handled like a data file. Especially, it can be associated with a display control (a Table control for example) that will present the data returned by the query.

The embedded queries

The controls found in a window can be linked to a data file or to an existing query, ... These controls can also be linked to a query created when the control was designed.



Embedded query:
MyWindow_1\$Query



Embedded query:
MyWindow_2\$Query

In this case, the query is included in the window. It is found in the WPW file corresponding to the window. If the WPW file is copied (into another project for example), the embedded queries used by this window will also be copied.

The Table/Looper controls

The Table/Looper controls can be used to display a set of information (the content of a data file for example). The content of these controls can come from different sources:

- Browsing Table/Looper control with direct access
- Memory Table/Looper control
- Browsing Table/Looper control loaded in memory

Note: These three fill modes will be presented in details for the Table control. The same concepts apply to the Looper control.

Browsing Table control with direct access

A browsing Table control with direct access is used to directly display the data coming from a data file, a query or an array variable. Browsing the data file allows you to display the data in the Table control. The data file is read for each row displayed: the record read is displayed in a row of the Table control.

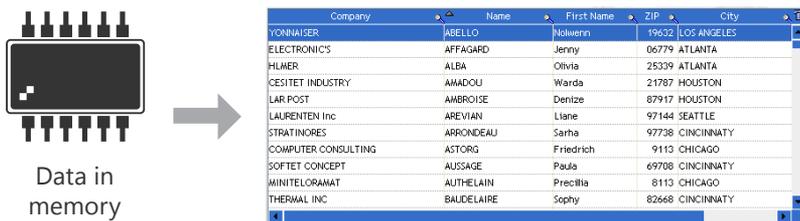


The displayed data that is not linked to the data file is not kept when displaying the row (value of a Check Box column for example).

The WLanguage functions starting with "Table" are used to handle the browsing Table controls with direct access. Adding or deleting a row into/from the Table control triggers the addition or deletion of the record in the linked data file.

Memory Table control

A memory Table control is used to directly display the data loaded in memory. The data is added into the Table control by programming (by **TableAddLine** for example).



The data being found in memory, the Table control allows you to perform all the operations on the data (sort on any column, search performed in the columns, ...).

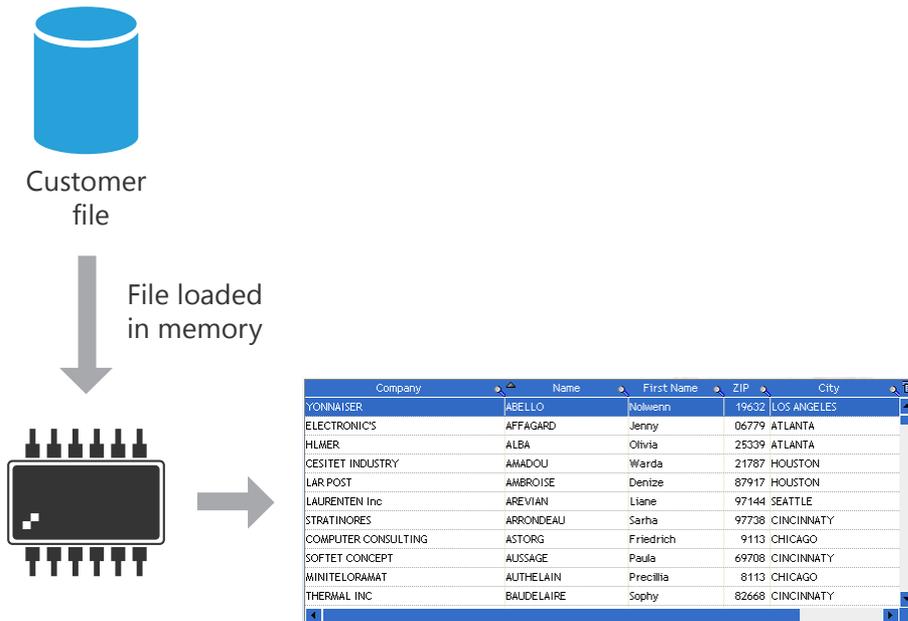
Browsing Table control loaded in memory

The browsing Table controls loaded in memory combine the benefits of browsing Table controls with the benefits of memory Table controls.

The Table control is linked to the data file but the content of the data file is entirely loaded in memory. The sort and the search are available for all the columns.

The data that is not linked to the data file is kept when handling the scrollbar of the Table control (Check Box column for example).

The records found in the data file being loaded in memory, this type of Table control is recommended for the data files containing less than 100 000 records (to avoid memory overflow).



Notes:

These different fill modes are also available for the List Box and Combo Box controls.



The Table control is not available in the Android, Windows Phone, iPhone and iPad applications. Only the Looper control can be used.

Synchronizing the data

WinDev Mobile allows you to synchronize the records used by several applications. The two applications manage the same data independently of each other. During the synchronization, the modifications performed in the database used by the PC are automatically applied to the mobile device (and conversely).

This synchronization is automatically performed by:

- **ActiveSync** when the Mobile Device (Pocket PC) is connected to the Windows PC (Windows Mobile only). **From Windows Vista**, "ActiveSync" was replaced by the "Manager for Windows Mobile devices".
- the **Universal Replication** when the mobile device is connected (or not) to the Windows PC.

ActiveSync (or the manager for Windows Mobile devices)

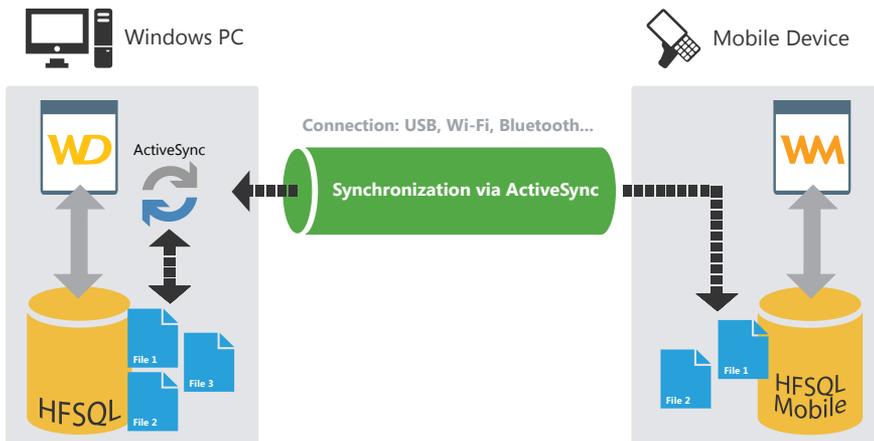


ActiveSync is used to update databases of same format used by both a standard WinDev application and a WinDev Mobile application.

The synchronization can be adapted to special cases. For example, you have the ability to retrieve the records regarding a specified product or the records created at a given date, manage the conflicts, display a configuration window, ...

These changes must be done by programming in a set of procedures called "WDSynchro.wdg". This set of procedures is supplied with WinDev Mobile.

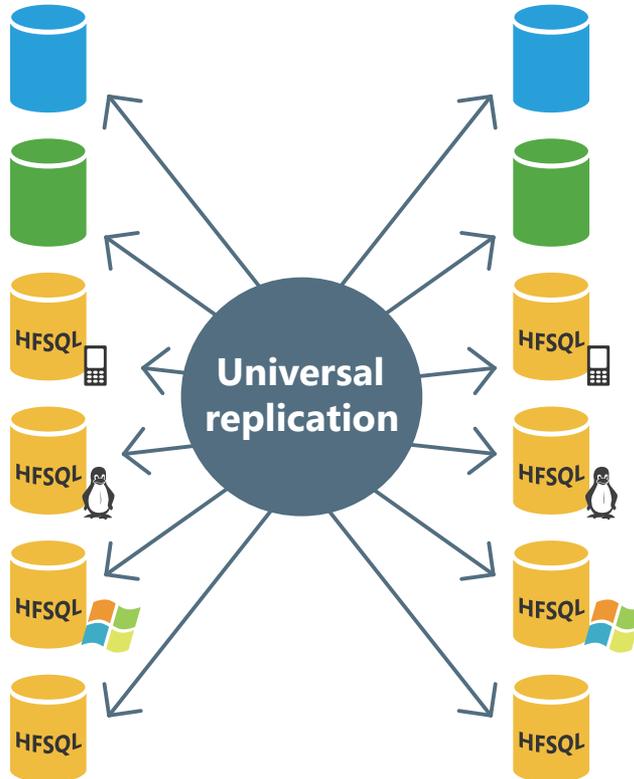
Note: No programming is required to perform a full synchronization.



Universal replication

The universal replication is used to update databases (with the same or different formats) used by several applications. You can for example perform a synchronization between a HFSQL Mobile database and an Oracle Lite database.

The universal replication uses a centralized model: all the databases are synchronized with a master database. Then, the master database applies the modifications to the other databases.



The synchronization can be adapted to special cases. For example, you have the ability to retrieve the records regarding a specified product or the records created at a given date, manage the conflicts, display a configuration window, ...

These changes must be done by programming via *HRplFilterProcedure*.

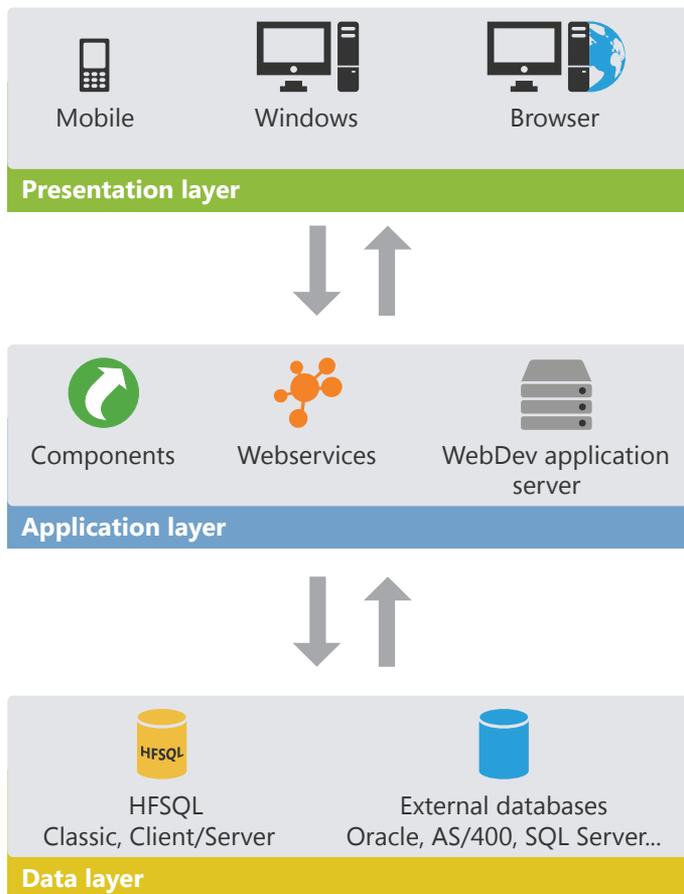
3-tier

The purpose of 3-tier programming is to separate the "3 standard layers" of an application: UI, process and data.

Therefore, an application will include 3 separate tiers:

- a presentation layer,
- an application layer,
- a layer for accessing the data.

The reason for separating them is to facilitate maintenance and future upgrades of the application. This provides better security because the access to the database is allowed via the Processes layer only. It also optimizes the teamwork and the multi-target development.





PART 4

**Advanced
concepts**

10



DEVELOP 10 TIMES FASTER





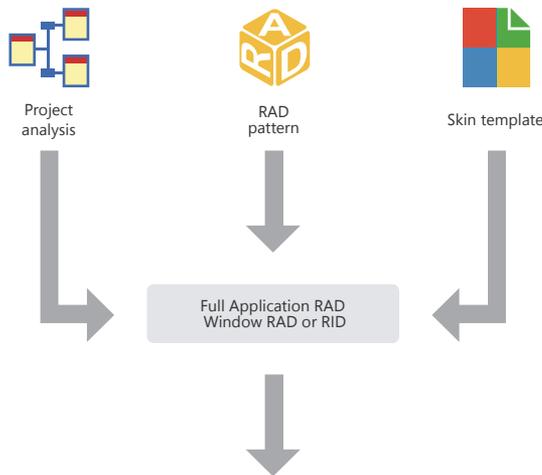
RAD/RID

The RAD (Rapid Application Development) and the RID (Rapid graphical Interface Design) are used to create windows from:

- the analysis linked to the project,
- standard or custom RAD patterns,
- skin templates.

In RAD generation, the generated windows contain the entire code required for them to operate. The test of these windows can be run immediately with the data found on the development computer.

In RID generation, the generated windows only contain the controls linked to the analysis items. The code required for these windows to operate must be written by the developer. Only the code required for the additional pattern elements to operate is added. Your custom code can be entered directly.



Example of window generated by RAD or RID

Multilingual application

A multilingual application is an application that can be distributed in several languages. WinDev Mobile takes into account the different languages of the application during the entire development of an application.

The main steps for developing a multilingual application are as follows:



Test of a WinDev Mobile application

The test of the entire project is used to simulate the start of the application by the executable. This allows you to run the test of the entire application, even if its development is not finished yet.

Several types of project tests are available in WinDev Mobile:

- **Test on the development computer.** This test simulates a mobile device on the development computer. During this test, no connection to a device is required. This test allows the use of the debugger. However, this test being run on a PC and not on the real mobile device, the application may behave differently.

- **Direct test on the mobile device connected to the development computer.** In this case, the executable corresponding to the project is created, copied onto the Mobile Device (Pocket PC) and run. When running the program on the Mobile Device, the Mobile Device can be disconnected from the PC. The debugger is not available.



- **Test and debug on the Mobile Device (Pocket PC) connected to the development computer.** This test allows the use of the debugger even though it is run on the Mobile Device directly.



- **Test on the Android emulator.** The Android SDK is supplied with an emulator of Android device. The test of the application can be run in the emulator. This option does not require a real Android device to run the tests but it provides a more faithful execution than the "simulator" mode.



- **Test on the Windows Phone emulator.** The Windows phone SDK is supplied with a Windows Phone device emulator. The test of the application can be run in the emulator. This option does not require a real Windows Phone device to run the tests but it provides a more faithful execution than the "simulator" mode.



- **Test on iPhone/iPad simulator.** The test of the iOS application can be directly run on Mac when compiling the project in Xcode. This option does not require a real iPhone or iPad device to run the tests but it provides a more faithful execution than the "simulator" mode.



- **Real test.** The test of the Windows Store Apps application can be run on a Windows 8 computer. This option allows you to run your project in RT mode, from Windows 8 directly. The Windows Store apps application must be generated.

Debug modes

Two different modes are available for debugging a WinDev Mobile application:

Debugging in the simulator

This mode starts the application in a device simulator. However, the application is run by the PC itself in the Windows environment.

This debug mode is useful to quickly debug a new function or to test an algorithm but it presents differences of behavior with the real device:

- the paths of the files are those of Windows,
- by default, the character strings are in ANSI format and not in Unicode format,
- the functions specific to the mobile devices (SMS for example) are not available.



Debugging on the mobile device

This debug mode allows an operating mode of the application that is closer to the real application as the debugger runs the application on the real mobile device. All the specific functions can be used (except for the ones that require some digitally signed executables).

This mode is slightly slower than the simulator. Indeed, it adds to the execution a communication phase between the development environment and the debugger found on the device.

This mode requires a mobile device connected to the development computer.



Unit tests

The unit tests (also called automatic tests) are used to run the test of windows, procedures and classes found in an application during the entire development.

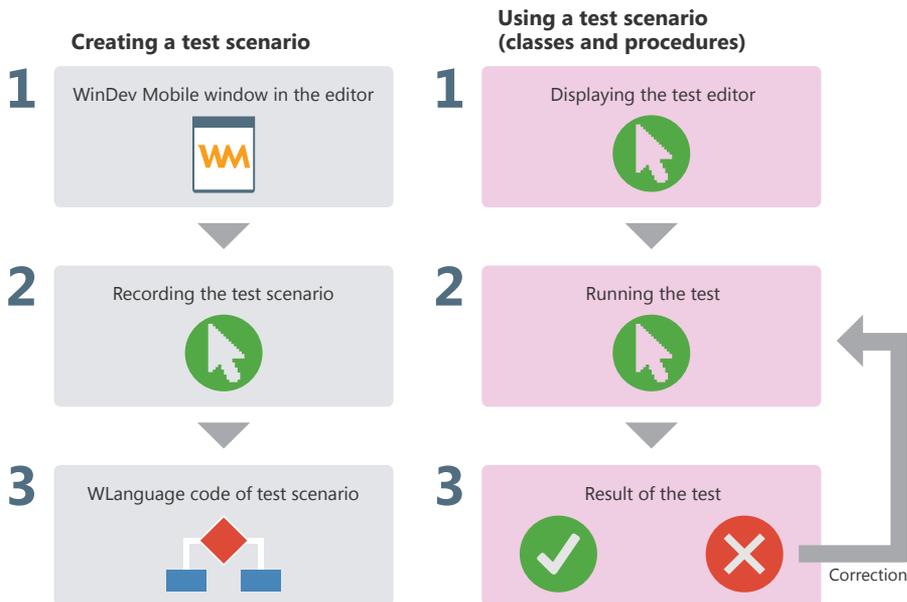
To do so, select (or create) the test scenario that will be run.

These scenarios are generated in WLanguage and they can be directly modified.

These scenarios are grouped in the test editor. The test editor analyzes the result of the unit tests and calculates the validation rate of the application.

When creating the application executable, WinDev Mobile:

- displays the validation rate of the application.
- indicates the modified elements whose test was not run.



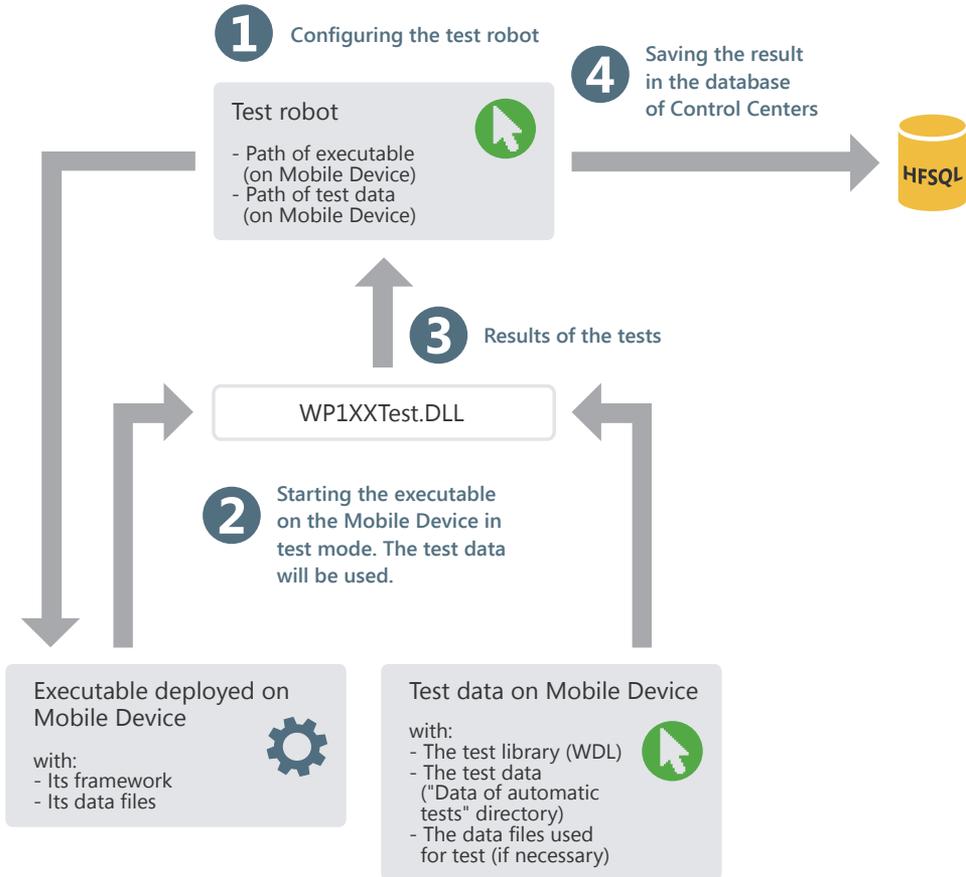
To create a unit test on the current window, click .

To create a unit test on a procedure or on a class, select this procedure or this class in the "Project explorer" pane and select "Create a unit test" from the popup menu.



Unit tests on the executable

WinDev Mobile allows you to run unit tests on the windows. However, these unit tests can only be run on the Mobile Device (Pocket PC) via the test robot. The test robot is used to run all the unit tests in real configuration on the Mobile Device (Pocket PC).



The test robot runs the executable deployed on the Mobile Device (Pocket PC) in "test mode", via the "WP1XXTest.DLL" library. The test data (scenarios, test data files if necessary, ...) is automatically used.



PART 5

**Interactions
between
WinDev and
WinDev Mobile**

10



DEVELOP 10 TIMES FASTER



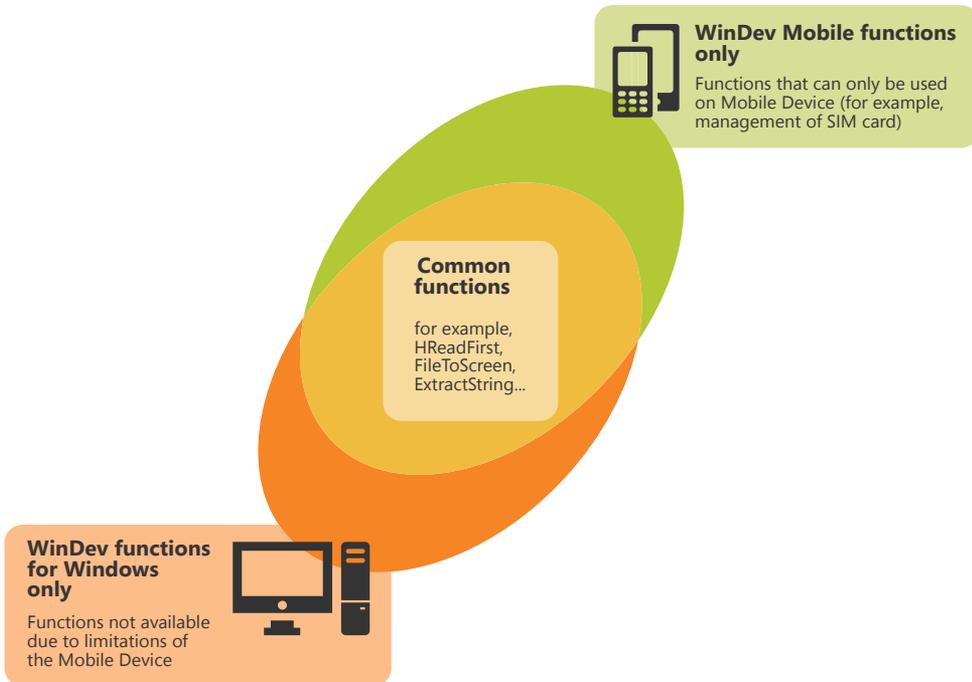
WLanguage functions

Most of the WLanguage functions found in WinDev are also available in WinDev Mobile. These functions are common to the two products.

The functions specific to Windows are not available in WinDev Mobile because of the differences between Windows and the various operating systems available on the mobile device (Windows Mobile, Android, iOS, Windows Phone, ...).

On the contrary, some functions specific to mobile devices are proposed with WinDev Mobile only.

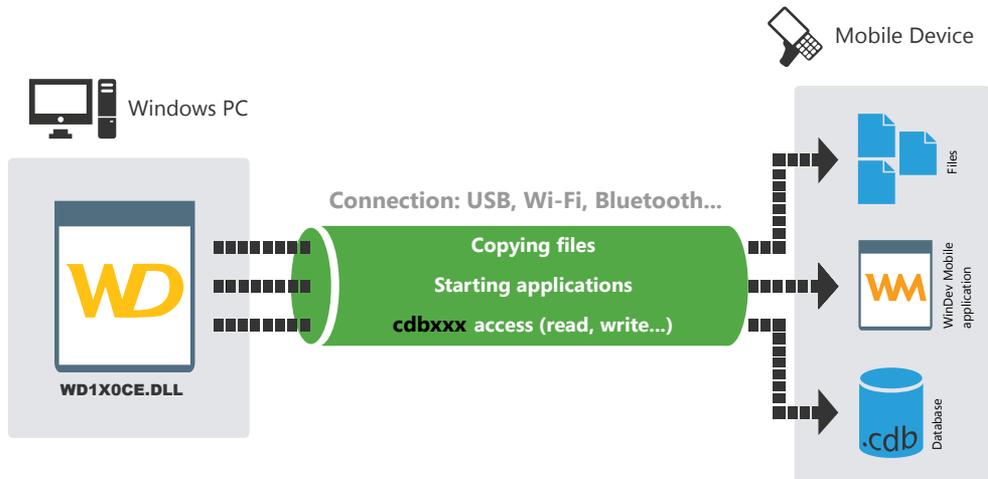
The following diagram presents some WLanguage functions that can be used according to the type of application developed:



Interaction with a WinDev application



The functions for accessing the Mobile Devices (Pocket PCs) are used to access the Mobile Devices (Pocket PCs) from a WinDev application.



WinDev Mobile is supplied with several examples that use the functions for accessing the Mobile Devices:

- PC Registry.
- PC Explorer.

These examples can be used on a PC.

Handling the character strings

Different formats of character strings are available:

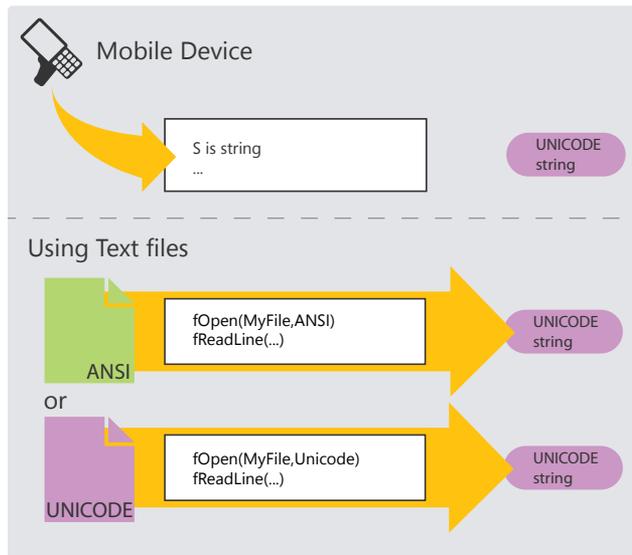
The UNICODE format is used to describe a very large set of characters by representing each letter on several bytes. All the characters of the most used character sets are represented in a single set. Each character has a unique identifier. This format is used to simultaneously handle the characters issued from different character sets. The "Unicode" term does not define by itself the method for encoding the characters. Several "transformations" are available for encoding the texts among which the most common are UTF-8 and UTF-16.

The ANSI format represents each character on one byte. This format can encode 256 characters in the Indo-European character sets. This format can represent all the character sets. However, a single character set can be used at a time.



Character strings in Windows Mobile

In most cases, the Windows Mobile applications handle the character strings in Unicode/UTF16 format. In this format, each character is encoded on 16 bits (2 bytes).



In Windows Mobile, when using text files containing character strings in ANSI format, WinDev Mobile automatically converts these character strings into Unicode/UTF-16 format. This conversion is performed even if the opening of this file in ANSI format is explicitly requested. This conversion is completely transparent.

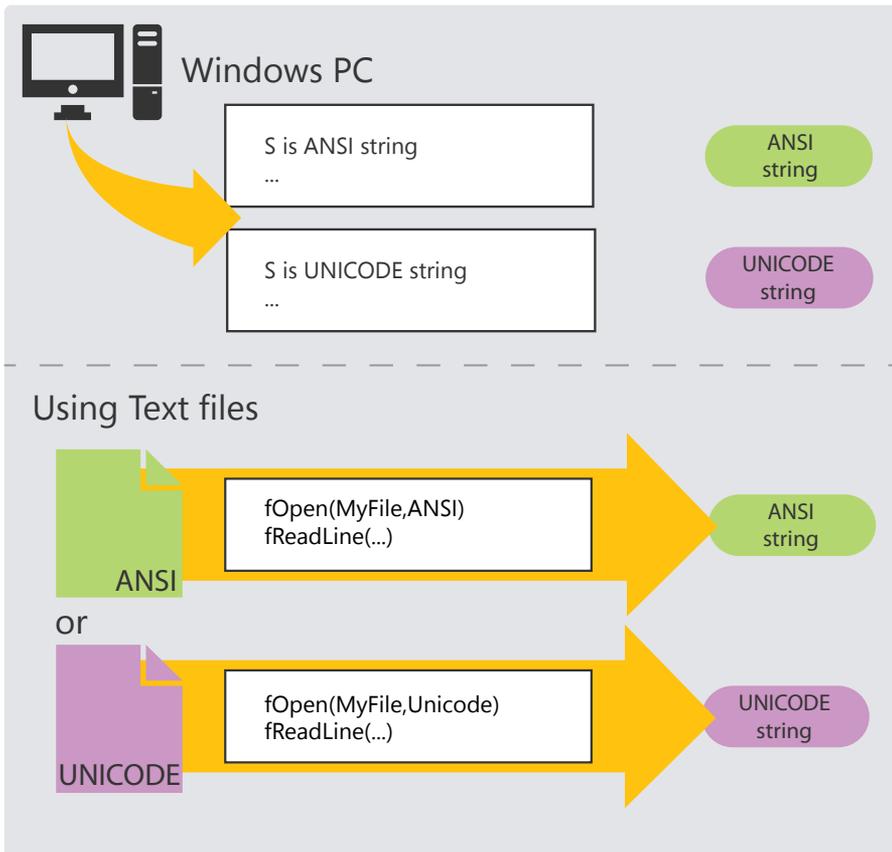


Character strings in Android

In Android, the character strings are handled in Unicode/UTF-8 format.

Reminder: Character string in Windows PC

The Windows applications for PC handle the character strings in ANSI or UNICODE format. On a PC, the text files can be opened in ANSI format and in UNICODE format. No conversion is performed by default.



The method for programming the character strings is the same in WinDev and in WinDev Mobile (with very few exceptions). WinDev automatically performs the necessary conversions.

Handling a Windows Mobile device from a standard WinDev application



The following WLanguage functions are used to access the Windows Mobile devices connected to a PC from a standard WinDev application:

ceConnectionStatus	Used to find out the status of the connection between the current computer and a Windows Mobile device
ceConnect	Connects the current computer to a Windows Mobile device.
ceCopyFile	Copies: - a file found on the current computer to the connected Mobile Device. - a file found on the connected Mobile Device to the current computer. - a file found on the connected Mobile Device to another directory in the Mobile Device.
ceCreateShortcut	Creates a shortcut on the device connected to the current computer
ceDeleteFile	Deletes a file from the Windows Mobile device connected to the current computer
ceDeleteShortcut	Deletes a shortcut that was created by ceCreateShortcut
ceDir	Finds a file or a directory on the Windows Mobile device connected to the current computer
ceDisconnect	Closes the connection between the current computer and the device
ceFileDate	Returns or modifies the different dates associated with a file (creation, modification or access)
ceFileExist	Checks the existence of a file
ceFileSize	Returns the size (in bytes) of a file found on the Windows Mobile device connected to the current computer
ceFileTime	Returns or modifies the different times associated with a file (creation, modification or access)
ceListFile	Lists the files found in a directory (and in its sub-directories) and returns the number of listed files
ceMachineName	Returns the name of the Windows Mobile device
ceMakeDir	Creates a directory on the Windows Mobile device connected to the current computer
ceOEMInfo	Returns the OEM information about the Windows Mobile device: make, model, serial number, ...

cePlatform	Returns the name of the platform on the Windows Mobile device
cePowerStatus	Used to get information about the main or secondary battery of the Windows Mobile device
ceProcessorType	Returns the type of processor on the Windows Mobile device connected to the current computer
ceRegistryCreateKey	Creates a key in the device registry.
ceRegistryDeleteKey	Deletes a sub-key from the device registry.
ceRegistryDeleteValue	Deletes a value from the device registry.
ceRegistryExist	Checks the existence of a key in the device registry.
ceRegistryFirstSubKey	Identifies the key found after the specified key in the registry of the Windows Mobile device
ceRegistryListValue	Returns the name (and possibly the type) of the values for a registry key of the Windows Mobile device
ceRegistryNextKey	Identifies the key found after the specified key in the device registry.
ceRegistryQueryValue	Reads the value of a register in the device registry.
ceRegistrySetValue	Writes a value into a register of the device registry.
ceRegistrySubKey	Identifies the path of the specified Nth sub-key in the registry of the Windows Mobile device
ceRemoveDir	Deletes a directory from the Windows Mobile device connected to the current computer
ceRunExe	Starts the execution of a program (an executable for example) from the current application
ceSysDir	Returns the path of a system directory on the Windows Mobile device connected to the current computer
ceWindowsVersion	Returns information about the Windows version used on the Windows Mobile device connected to the current computer
ceWinEnum	Used to enumerate the Windows windows currently opened on the Windows Mobile device
ceWinTitle	Returns the title of the specified Windows window
ceXRes	Returns the horizontal resolution of the screen on the Windows Mobile device connected to the current computer
ceYRes	Returns the vertical resolution of the screen on the Windows Mobile device connected to the current computer

Note: these functions are **WinDev** functions and not **WinDev Mobile** functions.



PART 6

Setup

10



DEVELOP 10 TIMES FASTER

PCSOFT

The WinDev Mobile Framework

The WinDev Mobile Framework is the set of libraries (.DLL files) required to run a WinDev Mobile application.

When creating the executable, you can choose to use:

- the common WinDev Framework (renamed or not),
- a custom framework.



In Android, the framework is automatically included in each application during its generation. Its size is smaller than 1 MB.

Using the common WinDev Mobile framework

When using the common framework, the libraries are installed in a common directory. The libraries are shared by all the WinDev Mobile applications installed on the same computer.

Benefits of the common framework:

- The disk space used by the framework (about 17 MB) is shared by all the applications.
- The update of the framework is performed once for all the applications installed.

Note: the common framework is installed at a set location in the device's RAM. You have the ability to rename the DLLs included in the framework and to place the renamed framework anywhere (including on a storage card for example in order to save the RAM).

Using a custom framework

When using a custom framework, the libraries are installed in the directory of each application. Therefore, each WinDev Mobile application uses its own version of the libraries. You also have the ability to rename the libraries when using a custom framework.

Benefits of the custom framework:

- Each application can exploit a different version of the framework DLLs.
- The framework of a given application can be updated without impacting the other applications.
- The framework can be renamed.

Installing an application

Several methods can be used to install a WinDev Mobile application:



- **Setup in CAB format.** This setup program is run on a Windows Mobile device.
- **Setup in MSI format.** This setup program is run on a PC running Windows connected to a Windows Mobile device.
- **Setup by direct copy** of the executable from the PC to the Windows Mobile device.



- **Setup in APK format.** This setup program is run on the Android device.
- **Setup via Play Store.**



- **Setup in APK format.** This setup program is run on the Android device.
- **Setup by MarketPlace.**



- **Compilation in Xcode on Mac.** The compilation in Xcode is used to create the executable application on iPhone or iPad.
- **Setup:**
 - by App Store
 - via an In-House network
 - via an Ad-Hoc network



- **Setup via Windows Store**
- **Direct setup on a tablet**

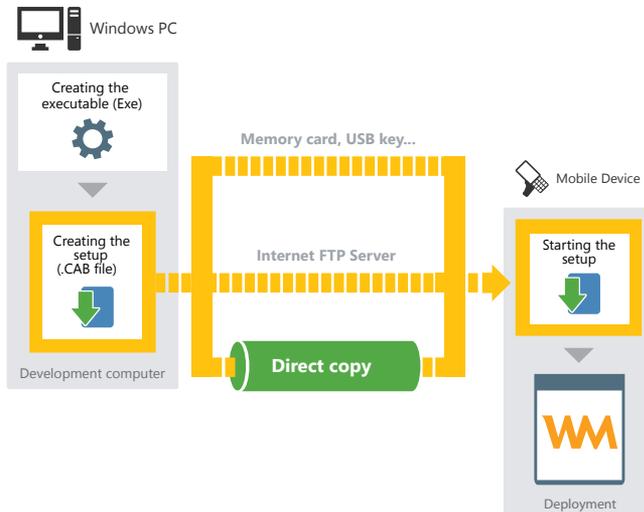
Setup in CAB format

This setup consists in:

- generating the executable of the application on the development computer via WinDev Mobile.
- generating the setup program of the application on the development computer. This setup program corresponds to a ".CAB" file.
- copying this setup program onto the Windows Mobile devices of the end users.
- running this setup program on the Windows Mobile devices. This program installs all the files required by the application.



To use this application, start the application on the Windows Mobile device (via the shortcut created in the "Start" menu).

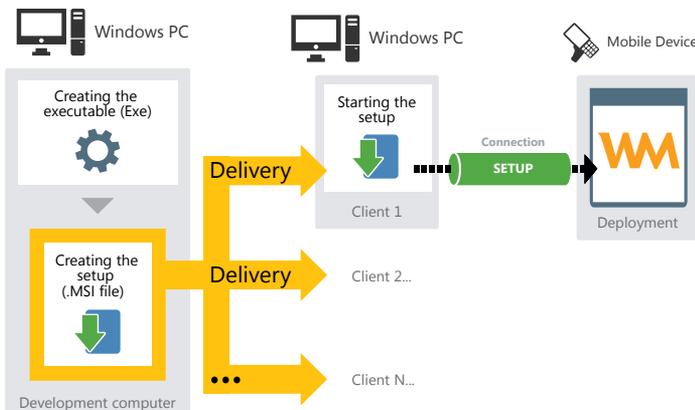


Setup in MSI format

This setup consists in:

- generating the executable of the application on the development computer.
- generating the setup program of the application on the development computer. This setup program corresponds to a ".MSI" file.
- distributing this setup program to the end users.
- running this setup program on the PCs. The application will be automatically installed on the Windows Mobile device connected to the PC.

Note: If no Windows Mobile device is connected, the setup will be performed during the next synchronization between the PC and the Windows Mobile device.



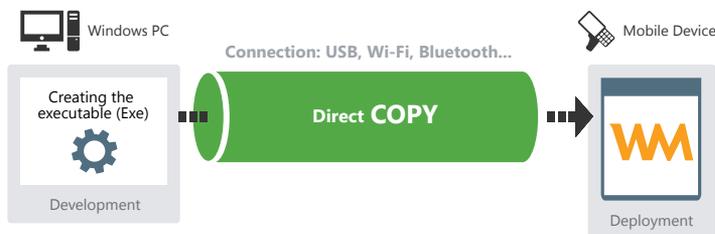


Setup by direct copy

This setup consists in:

- generating the executable of the application on the development computer.
- copying this executable onto the Windows Mobile device connected to the PC.

To use this application, run this executable on the Mobile Device (double-click the ".EXE" file for example).



Setup in APK format



This setup consists in:

- generating the application on the development computer.
- signing the APK file digitally.
Note: a self-signed key can be used.
- copying the APK file onto an Android device.
- running the APK file on the Android device. This action triggers the setup of the application.

To run the application, all you have to do is choose its icon from the "All programs" menu.

Setup by Play Store



Play Store (formerly Android Market) is an application proposed by Google. Play Store presents applications for Android that can be purchased or downloaded from a unique setup interface included in the Android devices.

This setup consists in:

- generating the application on the development computer.
- signing the APK file digitally. For a deployment on Play Store, we recommend that you use a real key signed by a recognized trusted authority.

- uploading the APK file onto the Web site of Play Store.
Note: you must register on the site beforehand.
- the users of the application will only have to install the requested application from the "Play Store" application of their Android device.

To run the application, all you have to do is choose its icon from the "All programs" menu.

Setup by MarketPlace



MarketPlace is an application proposed by Microsoft. MarketPlace presents applications for Windows Phone that can be purchased or downloaded from a unique setup interface and included in the Windows Phone devices.

This setup consists in:

- generating the application on the development computer.
- uploading the Windows Phone application on the Web site of MarketPlace.
Note: you must register on the site beforehand.
- the users of the application will only have to install the requested application from the "MarketPlace" application of their Windows Phone device.

To run the application, all you have to do is choose its icon from the menu of applications.

Setup by Windows Store



Windows Store is an application proposed by Microsoft. Windows Store presents applications for Windows 8 that can be purchased or downloaded from a unique setup interface included in the devices running Windows 8.

This setup consists in:

- generating the application on the development computer.
- uploading the application on the Web site of Windows Store.
Note: you must register on the site beforehand.
- the users of the application will only have to install the requested application from the "MarketPlace" application of their Windows Phone device.

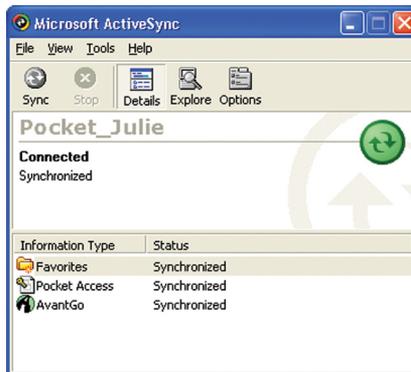
To run the application, all you have to do is choose its icon from the menu of applications.

Synchronization software: ActiveSync, ...



Several programs can be used to synchronize the data (WinDev application, email, calendar, contacts, tasks, notes, ...) between a PC and a Mobile Device (Pocket PC):

- ActiveSync**, for versions up to Windows XP.
 In most cases, ActiveSync is supplied with the Mobile Device (Pocket PC) but it can also be downloaded from Internet.
 ActiveSync is automatically started on the PC during the connection between the Mobile Device and the PC. The data to synchronize is configured in ActiveSync ("Options" icon).



- the "Manager for Windows Mobile devices", available from Windows Vista. This manager is automatically started when the Mobile Device is connected to the PC.





PART 7

Communication

10



DEVELOP 10 TIMES FASTER

PCSOFT

Communication with WinDev Mobile

WinDev Mobile proposes several communication functions in several areas. These functions allow you to:

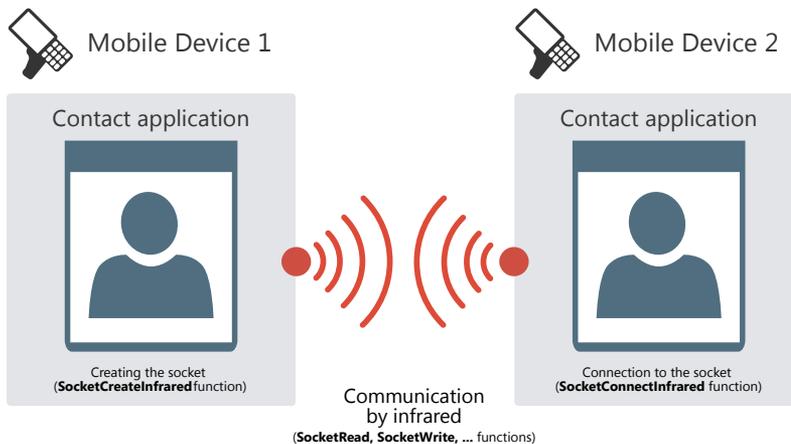
- manage emails (POP3, IMAP and SMTP protocols),
- transfer files by FTP,
- perform HTTP and HTTPS queries,
- use the telephony feature,
- perform SOAP queries (to access SOAP, J2EE or .Net Webservices),
- manage SMSs,
- use TCP sockets (with automatic use of the SSL protocol), UDP sockets,
- use Infrared or Bluetooth sockets.

The availability of these functions depends on the features of the device that runs the application.

Some examples

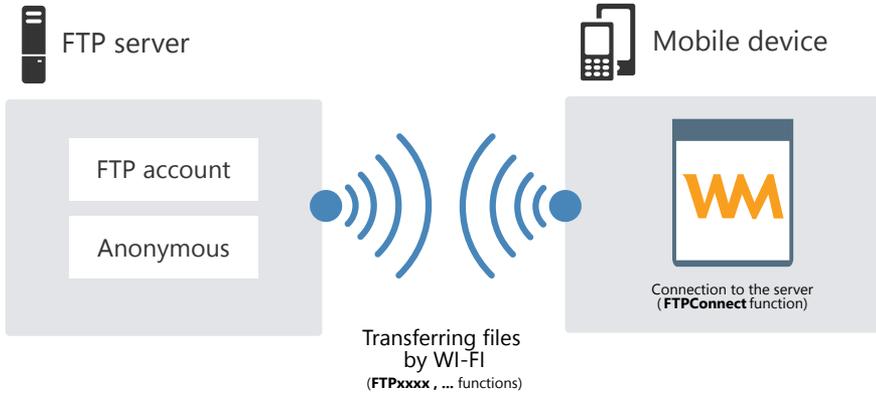
1. Communication by Infrared

Communication by infrared is performed via the Socket functions (**SocketConnectInfrared**, **SocketCreateInfrared**, ...). Therefore, the Windows Mobile or Android devices can communicate with any type of device.



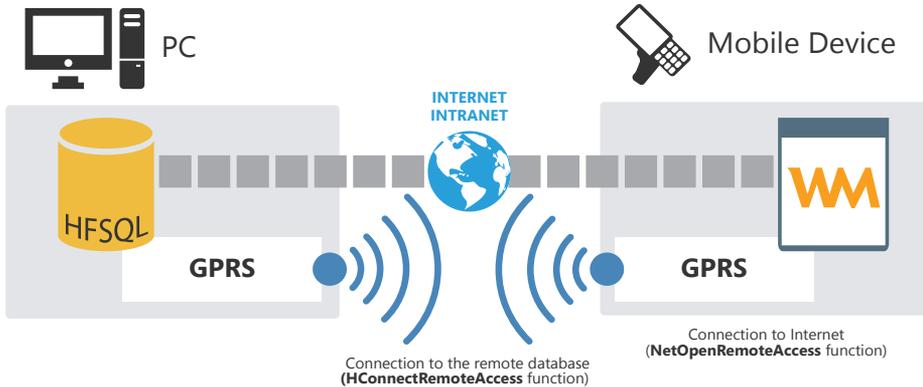
2. Communication by Wi-Fi

The communication by Wi-Fi can be used to transfer files by FTP for example.



3. Communication by GPRS

The communication by GPRS can be used to access a remote HFSQL database via Internet for example.



Managing the emails (POP3/IMAP/SMTP)

The POP3/IMAP and SMTP protocols are protocols for email management recognized by all service providers. These protocols allow you to dialog with the email server available at your ISP.

Notes:

- The POP3 and IMAP protocols are used to receive emails.
- The SMTP protocol is used to send emails.



Principle

1. Connect the Windows Mobile device to a PC (required if it is not natively equipped with an Internet access).
2. Connect to the Internet service provider (if necessary).
3. Start an email session with ***EmailStartSession***.
4. Send and read the messages.
5. Close the messaging session with ***EmailCloseSession***.

Managing emails (CEMAPI)



CEMAPI is an API for email management used by most of the applications for Mobile Device (Pocket PC) to send and receive emails (Pocket Outlook in most cases).

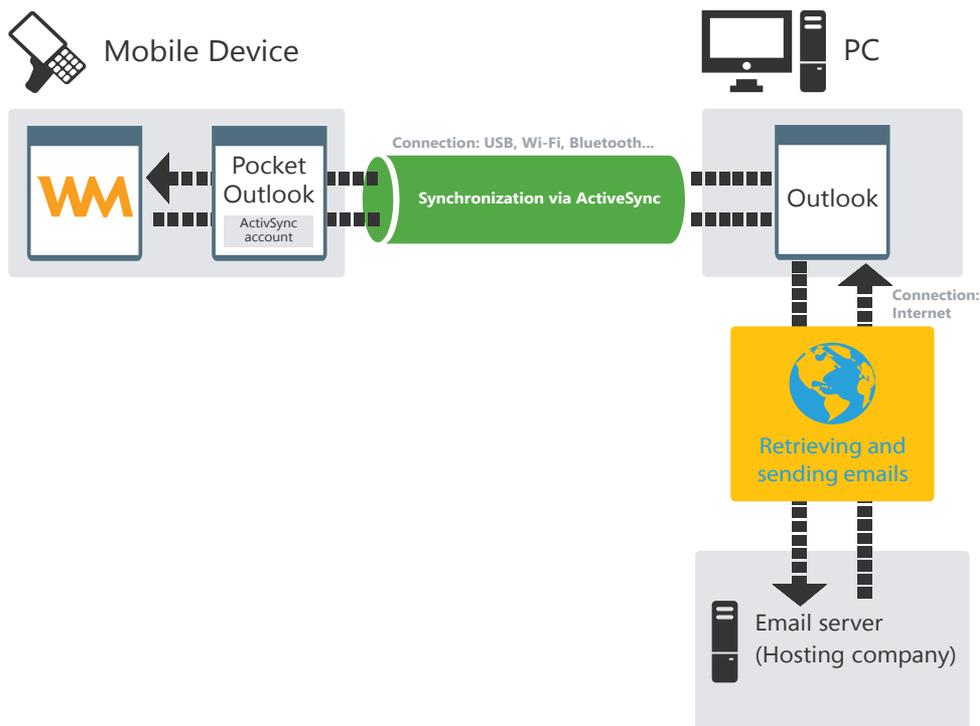
CEMAPI simplifies the management of the emails received by the hosting company. When an email is read, it is automatically loaded in the local message box and deleted from the server (at the hosting company).

All the characteristics required to manage the emails (POP3 protocol, SMTP protocol, remote access, etc.) are grouped in the "User Profile".

Via the WLanguage email functions, a WinDev application can directly handle the emails managed in an application that uses "CEMAPI".

Using the "ActiveSync" user account

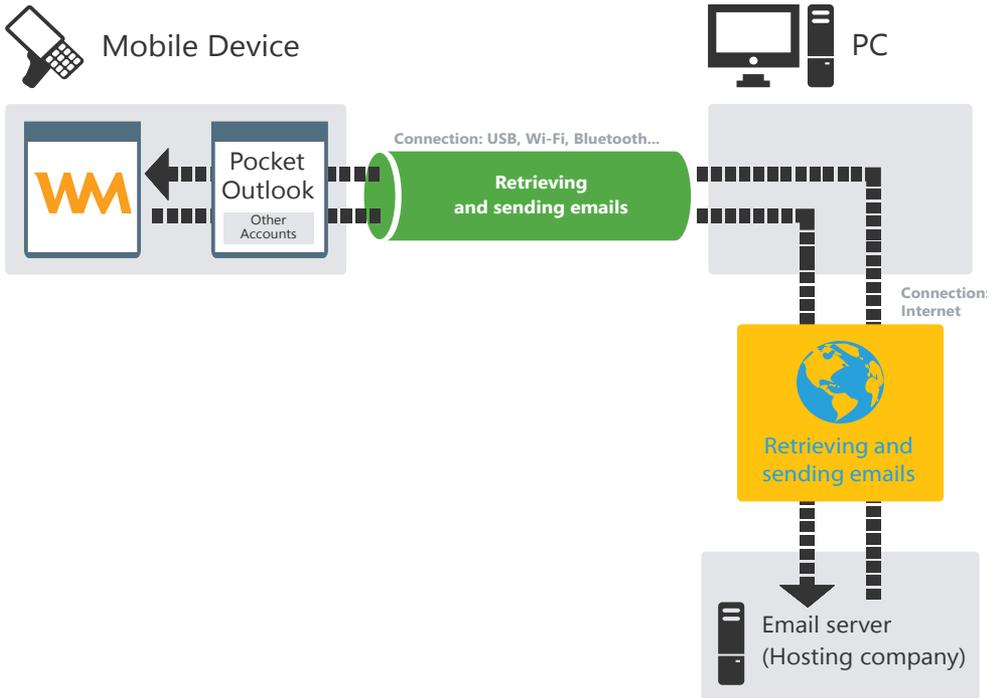
A user account defined in Pocket Outlook is required to manage the emails via CEMAPI. By default, Pocket Outlook manages the "ActiveSync" user account.



Using a specific user account

To use another user account, you must define one.

If the Mobile Device (Pocket PC) has no direct link to Internet, a synchronization with the PC is required to send and receive the emails.



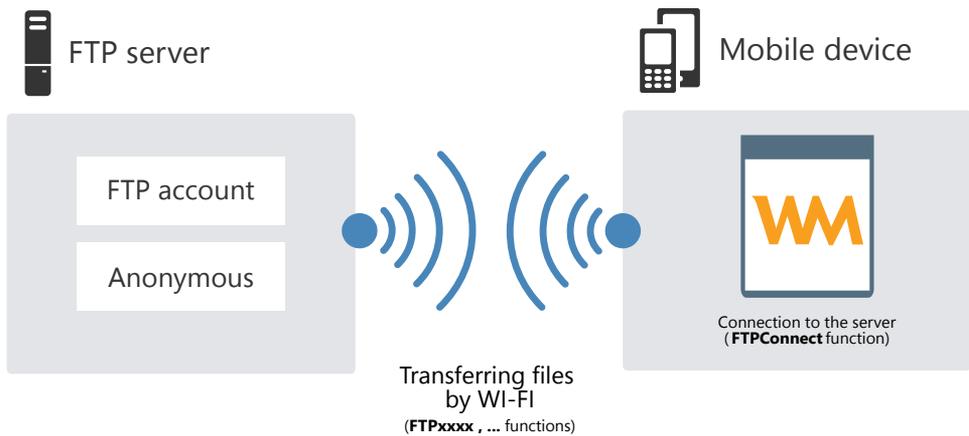
If the Pocket PC has a direct access to Internet (by Wi-Fi, ...), no synchronization with a PC is required.

Handling files on an FTP server

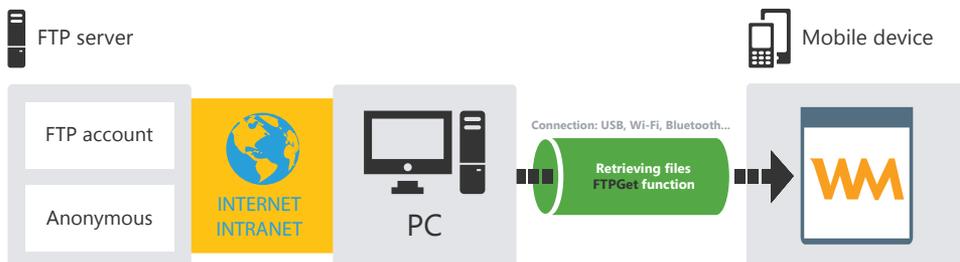
The FTP (File Transfer Protocol) is a protocol used to transfer files from a site to another remote site. This protocol is used to exchange files via TCP/IP, Internet Wi-Fi or ActiveSync. Several thousands of file servers can be accessed by FTP on Internet. These servers propose shareware or freeware accessible to the public.

Several WLanguage functions allow you to manage files on an FTP server from your WinDev Mobile applications.

Transferring files by direct link between a Mobile Device (Pocket PC) and a FTP server by Wi-Fi:



Transferring files by Internet:



Managing the SMSs

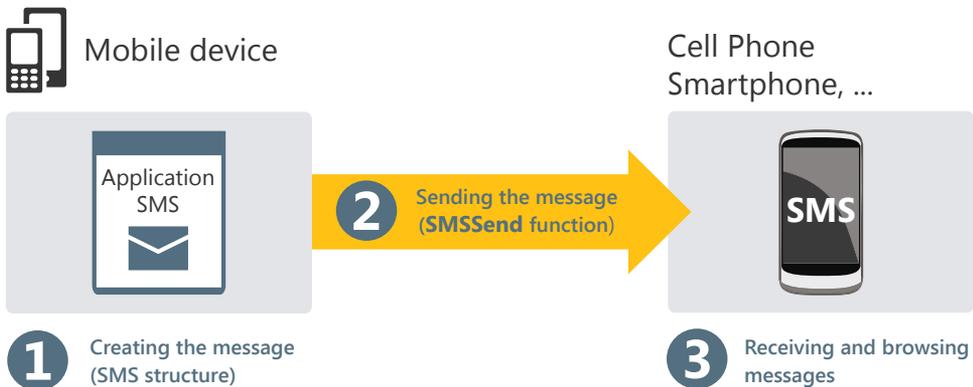
With the WLanguage functions, WinDev Mobile allows you to:

- send SMSs.
- read the incoming SMSs.
- delete one or more incoming SMSs.

An SMS (Short Message Service) is a text message (up to 160 characters) sent on a cell phone.

To use the SMS functions, the application for Mobile Device (Pocket PC) must be installed:

- on a Mobile Device (Pocket PC) equipped with a phone access (GSM type).
- on a Smartphone.





PART 8

Appendices

10



DEVELOP 10 TIMES FASTER



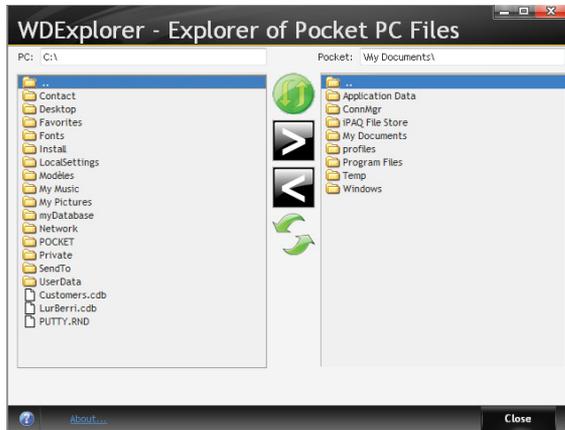


Tools available for WinDev Mobile

Specific tools are available for handling a Mobile Device (Pocket PC) from a PC:

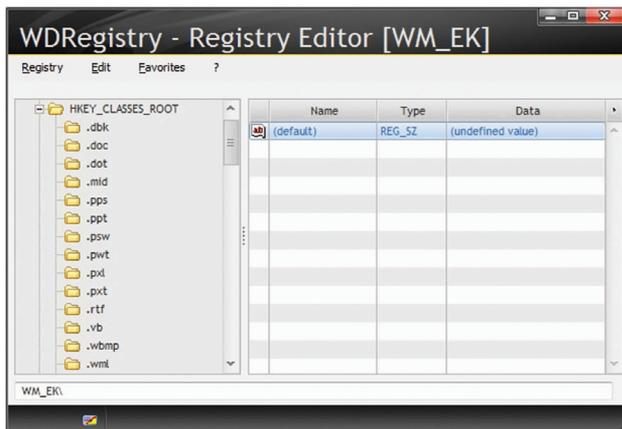
WDEplorer

Tool used to view the files and directories found on a Mobile Device (Pocket PC), a Smartphone, ...



WDRegistry

Tool used to view the registry of a Mobile Device (Pocket PC), Smartphone, ...



Components supplied with WinDev Mobile

The examples of components supplied with WinDev Mobile are divided into 2 categories:

- **components that can be used from a WinDev Mobile application.**
 These components are found in the "Components\Example components\Mobile" sub-directory of the setup directory of WinDev Mobile.

Name of the component	Description
Pocket Directory picker	Directory picker for Mobile Device (Pocket PC).
Pocket Falcon	Used to access all the features of Pocket PC Falcon.
Pocket GANTT	Used to display a GANTT chart in a memory Table control or in a window included in the component.
Pocket GPS	Used to interrogate a GPS to retrieve a longitude, a latitude, a speed, an altitude.
Pocket Intermec	Used to manage an Intermec device. Used to emulate the scanner and the imager (device for image acquisition) of the device
Pocket Limitation	This example explains how to implement a limitation system as well as a system for enabling the software on Mobile Device (Pocket PC).
Pocket Login Management	Manages the identification of users in an application from a login and a password.
Pocket PAXAR	Allows you to use the features of bar code reader and printers of PAXAR industrial terminals.
Pocket Pidion	Used to manage a Pidion device. Used to emulate the scanner, the imager (device for image acquisition), the bar code reader and the card reader of the device
Pocket Signature	Allows you to easily include a ready-to-use "Signature" control in your WinDev Mobile applications.
Pocket Symbol	Used to access all the features of Pocket PC Symbol.
Pocket TomTom	Emulates TomTom Navigator (satellite-assisted navigation software).

- **components that can be used from a WinDev application that handles the files found on the Mobile Device (Pocket PC).**

These components are found in the "Components\Example components\Windows" sub-directory of the setup directory of WinDev Mobile.

Name of the component	Description
PC Directory Picker	Select a directory found on a Mobile Device (Pocket PC) from a WinDev application.
PC File Picker	Select files found on a Mobile Device (Pocket PC) from a WinDev application.

Two sub-directories are specific to each one of these examples:

- the "<ComponentName>-Example" sub-directory contains an example of project that uses the component.
- the "<ComponentName>-Source" sub-directory contains the project of the component.

Additional components can be downloaded from our site (www.windev.com).

Examples supplied with WinDev Mobile

The examples supplied with WinDev Mobile are intended to help you learn the features of WinDev Mobile.

Their source code is presented in details.

These examples are found in the "Examples" sub-directory of the setup directory of WinDev Mobile and they can be opened from the "Wizards, Examples and Components" pane.

Features of some examples supplied with WinDev Mobile.

Examples that can be used on a Mobile Device (Pocket PC) only

Pocket _NET	This example uses a Mobile .NET assembly (OpenNETCF.Net) in order to retrieve the list of WIFI network cards available on a PDA and to retrieve connection information about these cards.
Pocket Animated	This example explains how animated images can be created by WinDev Mobile.
Pocket Attendance	This application is an attendance manager. It is used to keep track of people attending a seminar. This database was previously filled with the list of members.
Pocket Camera	This example uses the management of photos and videos. The example is used to take a photo (.jpg format) or a video (.asf format) with VideoCapture. The images and the videos can be viewed in a looper control.
Pocket Click on Chart	This example proposes a solution used to offset the sections of a Pie chart via a simple click.
Pocket Explorer	This example is a file explorer for Windows CE. You have the ability to list the files and directories found on a Mobile Device (Pocket PC).
Pocket Financial Functions	This examples explains how to use the financial functions.
Pocket FTPClient	This example is used to view the content of an FTP server. It can also be used to download, rename or delete files.
Pocket Images	This example is used to browse a specific directory to find images
Pocket Inventory	This example is used to draw up inventories and to save the results in a HFSQL database.
Pocket Loan	This example is used to simulate loan calculations and to display the corresponding amortization tables.

Pocket Managing Contacts	<p>This example presents the management of contacts on Mobile Device (Pocket PC) and it uses:</p> <ul style="list-style-type: none"> - the loopers, - the queries - the feature for sending SMSs and emails - the phone call.
Pocket Managing Orders	<p>This example is a simplified management of orders/invoices, used to:</p> <ul style="list-style-type: none"> - create, modify or delete a product, - create, modify or delete a customer, - contact a customer by email, - show the history of the actions performed for a customer, - place an order, print an order form, - invoice an order, print an invoice.
Pocket Map	<p>This example is a light version of WDMaP. This example is used to view and modify the data files in HFSQL Mobile format on a Mobile Device (Pocket PC) directly.</p>
Pocket MIME Extraction	<p>This example is used to extract the attachments found in an email</p>
Pocket Notes	<p>This example is used to draw graphic “notes” and save them. You have the ability to enter keywords to identify your notes.</p>
Pocket Password	<p>This example presents a “box” of passwords. It can be used to manage password created when using Internet sites but also in applications or everyday life.</p>
Pocket Persistence	<p>This example presents the functions used to manage the persistent values.</p>
Pocket Photos	<p>This example is used to take photos and to associate them with:</p> <ul style="list-style-type: none"> - a caption and a description - a snapshot address - an explanatory diagram.
Pocket Poker	<p>This example is used to play poker on a Mobile Device (Pocket PC). The purpose of this game is simple: find out several identical cards.</p>
Pocket Registered	<p>This example is an attendance manager, used to check a meeting attendance. This database was previously filled with the list of members. A bar code reader can be used to read the identifiers of the persons.</p>
Pocket Regular Expressions	<p>This example explains how to use regular expressions and how to perform searches in character strings</p>
Pocket RTF	<p>This example presents the display of the RTF format in the edit controls in Mobile.</p>

Pocket Slide Show	This example is an image viewer for Mobile Device (Pocket PC). It is used to view the images found in a given directory.
Pocket Statistics	This example performs various statistical calculations.
Pocket Stopwatch	This example explains how to use WinDev Mobile to create a stopwatch for a mobile device. In this example, a timer is used to display the hands of the analog stopwatch and to display the time passed on a regular basis.
Pocket Telephony	This example is a telephony application that can be used on a Mobile Device (Pocket PC) equipped with phone access (GSM type).
Pocket Thread Pool	This example presents the use of threads. Reminder: A thread is a process run in parallel of the current application.
Pocket Tic Tac Toe	This example is used to play "Tic Tac Toe" on a Mobile Device (Pocket PC). The purpose of this game is simple: align 3 pawns before your opponent does.
Pocket Virtual Keyboard	This example proposes virtual keyboards that can be fully customized and certainly smaller than the standard keyboard of Mobile Devices (Pockets PC).
Pocket ZIP	This example is used to create and handle archives (".ZIP" files).

Examples containing a project that can be used on Mobile Device (Pocket PC) and that interacts with a project that can be used on PC

<p>Sending SMS</p> <ul style="list-style-type: none"> • "Pocket Sending SMSs" project that can be used on Mobile Device (Pocket PC) • "PC Sending SMSs" project that can be used on PC 	<p>These examples are used to send SMSs.</p>
<p>Managing the purchase lists</p> <ul style="list-style-type: none"> • "Pocket Managing purchase lists" project that can be used on Mobile Device (Pocket PC) • "PC Managing purchase lists" project that can be used on PC 	<p>These examples are used to manage a list of stores, departments, products and purchases You have the ability to synchronize the data entered in the two projects.</p>
<p>Expense Reports</p> <ul style="list-style-type: none"> • "Pocket ExpenseReports" project that can be used on Mobile Device (Pocket PC) • "PC ExpenseReports" project that can be used on PC 	<p>These examples are used to manage the expense reports. You have the ability to synchronize the data entered in the two projects.</p>

<p>Beach Reservation</p> <ul style="list-style-type: none"> • "Pocket Beach" project that can be used on Mobile Device (Pocket PC) • "PC Beach" project that can be used on PC 	<p>These examples are used to manage the bookings for private beaches. You have the ability to synchronize the data entered in the two projects.</p>
<p>Unicode Socket</p> <ul style="list-style-type: none"> • "Pocket Unicode Socket" project that can be used on Mobile Device (Pocket PC) • "PC Unicode Socket" project that can be used on PC 	<p>These examples present the operating mode of sockets with the Mobile Devices (Pocket PCs).</p>
<p>Poll</p> <ul style="list-style-type: none"> • "Pocket Poll" project that can be used on Mobile Device (Pocket PC) • "PC Poll" project that can be used on PC 	<p>These examples are used to perform polls. You have the ability to synchronize the data entered in the two projects.</p>
<p>Stocks</p> <ul style="list-style-type: none"> • "Pocket Stocks" project that can be used on Mobile Device (Pocket PC) • "PC Stocks" that can be used on PC 	<p>These examples are used to manage the stocks. You have the ability to synchronize the data entered in the two projects.</p>
<p>Network tasks</p> <ul style="list-style-type: none"> • "Pocket Network tasks" project that can be used on Mobile Device (Pocket PC) • "PC Network tasks" project that can be used on PC 	<p>The "PC Network tasks" application is used to enter a task list (with management of priorities, deadline, automatic reminder, ...). The "Pocket Network Tasks" application is used to access this task list to specify that a task is in progress or completed.</p>
<p>Using sockets</p> <ul style="list-style-type: none"> • "Pocket Using sockets" project that can be used on Mobile Device (Pocket PC) • "PC Using sockets" project that can be used on PC 	<p>These examples present the functions for managing the sockets.</p>

Examples that can be used on PC only

PC CDB Browser	This example is used to access the standard databases (.cdb) found on a Mobile Device (Pocket PC).
PC Explorer	This example is used to view the files and directories found on a Mobile Device (Pocket PC).
PC Photo Album	This example is used to import and/or export the photos found on a Mobile Device (Pocket PC) from a PC.
PC Registry	This example is used to handle the registry of a Mobile Device (Pocket PC) from a PC.

Examples that can be used in Android only

Android Expense accounts	This example is used to enter your expense reports and to take a snapshot in order to follow up.
Android Explorer	This example is used to list the files and directories found on an Android device.
Android FTP Client	This example is an FTP Client for Android.
Android GPS	This example presents the use of the GPS functions of WLanguage in an Android application.
Android Inventory	This application is used to draw up inventories and to save the results in a database.
Android Managing Contacts	This example presents the management of contacts in Android.
Android Managing Orders	This example is used to manage the orders and their invoicing.
Android Notes	This example uses the drawing functions of WLanguage for Android.
Android Password	This example is used to manage the passwords created when using Internet sites but also in applications or in everyday's life (codes, ...).
Android Persistent Notifications	This example is used to create persistent notifications that appear even if the application is not used anymore

Android Photos	<p>This example is used to take photos and to associate them with:</p> <ul style="list-style-type: none"> - a caption and a description, - a snapshot address, - an explanatory diagram. <p>The addresses are saved and they can be used by several photos.</p>
Android Poker	<p>This example is a game of poker for Android built using WinDev Mobile.</p>
Android Registered	<p>This example is used to identify the persons who are attending a seminar.</p>
Android RSS Reader	<p>This example is a reader of RSS stream for the Android devices.</p>
Android Speech Synthesis	<p>This educational example shows how to manage voice recognition and synthesis on Android.</p> <p>The speech synthesis is performed by using either the WLanguage functions, or an external JAR file included in the WinDev Mobile project.</p>
Android Sports Assistant	<p>This example is a sport application used to save your performances</p>
Android Stocks	<p>This application is used to draw up inventories and to save the results in a database.</p> <p>The example creates stock entry and stock exit by directly scanning the product bar codes.</p> <p>It is optimized to run on tablets.</p>
Android Stopwatch	<p>This example explains how to use WinDev Mobile to create a stopwatch for an Android device.</p>
Android System	<p>This application is an educational example presenting some functions specific to Android.</p>
Android Tic Tac Toe	<p>This example is used to play “Tic Tac Toe” on an Android device.</p> <p>The purpose of this game is simple: align 3 pawns before your opponent does.</p>
Android To-Do List	<p>This example is a manager of To-Do Lists.</p>
Android ZIP	<p>This example is used to browse the folders of the Android device to find ZIP archives.</p>

Examples that can be used in Windows Phone only

WP Notes	This example is an application for managing notes for Windows Phone.
WP Password	This example presents a “box” of passwords. It can be used to manage the passwords created when using the Internet sites but also in applications or in everyday’s life (codes, ...).
WP Pocker	This example is a game of poker for Windows Phone smartphone developed with WinDev Mobile.
WP Stopwatch	This example explains how to use WinDev Mobile to create a stopwatch for a mobile device. In this example, a timer is used to display the hands of the analog stopwatch and to display the time passed on a regular basis.
WP Tic Tac Toe	This example is used to play at “Tic Tac Toe” on a Windows Phone device. The purpose of this game is simple: align 3 pawns before your opponent does.

Examples that can be used on iPhone/iPad only

iOS Click on chart	This example proposes a solution used to offset the sections of a Pie chart via a simple click.
iOS CRM	This example is a CRM application for iPad.
iOS Expense reports	This example is used to enter your expense reports and to take a snapshot in order to follow up.
iOS Financial functions	This example calculates the number of payments needed to pay back a loan, the total cost of a loan as well as the interests returned by an investment.
iOS FTPClient	This example is an FTP Client for iOS system. It is used to view the content of an FTP server. It can also be used to download files, to rename them or to delete them.
iOS Loan	This example is used to simulate loans and specifically to: - calculate the amount of the monthly payments from the amount borrowed - calculate the amount that can be borrowed from a monthly payment - calculate the income of an investment from a monthly payment For each case, you can view the depreciation schedule corresponding to your parameters.
iOS Managing Contacts	This example presents the management of contacts for an iPad.

iOS Managing Orders	This example is used to manage the orders and their invoicing.
iOS Notes	This example is an application for managing notes for iOS.
iOS Password	This example is used to manage the passwords created when using Internet sites but also in applications or in everyday's life (codes, ...).
iOS Poker	This example is a game of poker for iPhone developed with WinDev Mobile.
iOS Poll	This examples is used to manage and view polls. The results are stored in a HFSQL database. The example is split into two distinct platforms: - The iPad is used to manage polls - The iPhone is used to answer polls
iOS Registered	This example is used to identify the persons who are attending a seminar.
iOS Regular Expressions	This example presents two methods for using regular expressions: - check the input format - check out the different elements that match the input format. This example is also used to search for a word in a string. The search can be case-sensitive or not. Possibility to take into account (or not) the start or end of string, as well as spaces (anywhere in the string, even in the sought word).
iOS RSS Reader	This example is an RSS reader for an iPhone.
iOS Sport Wizard	This example is a sport application used to save your performances. The application calculates the distance, the time, the average speed and the number of calories spent according to the sport.
iOS Stocks	This application is used to draw up inventories and to save the results in a HFSQL database.
iOS Stopwatch	This example explains how to use WinDev Mobile to create a stopwatch for an iPhone.
iOS System	This application is an educational example presenting some functions specific to the iOS system.
iOS Tic Tac Toe	This example is used to play at "Tic Tac Toe" on an iPhone or iPad. The purpose of this game is simple: align 3 pawns before your opponent does.

Windows Store Apps example

WSA Password	This modern UI application is used to manage passwords.
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Multi-platform example

WB Quizz	<p>This application allows you to test your knowledge and competence on WebDev.</p> <p>This project shows how from the same code you can manage an application for different platforms.</p> <p>This example contains an Android and iOS configuration.</p>
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Additional examples are supplied can be downloaded from our site (www.windevcom).