

# WINDEV® Mobile

## INTEGRATED MOBILE DEVELOPMENT PLATFORM

Smartphone, Tablet, Device

Android, iOS, Windows 10 Mobile-UWP, Windows CE

Multi-platform CODE: Windows, .Net, Linux, Java, PHP, J2EE,  
Internet, Ajax, Android, Windows 10 Mobile, iOS...





**“YOU CAN START DEVELOPING FOR MOBILE DEVICES WITHIN 10 MINUTES”**



“Networks and Telecom Magazine”

- WINDEV Mobile 21 is fantastic for developing apps for Smartphones, Tablets, Industrial devices.
- Thanks to WINDEV Mobile 21 you develop native applications really quickly (or you can reuse existing WINDEV code).
- You can distribute your applications freely.

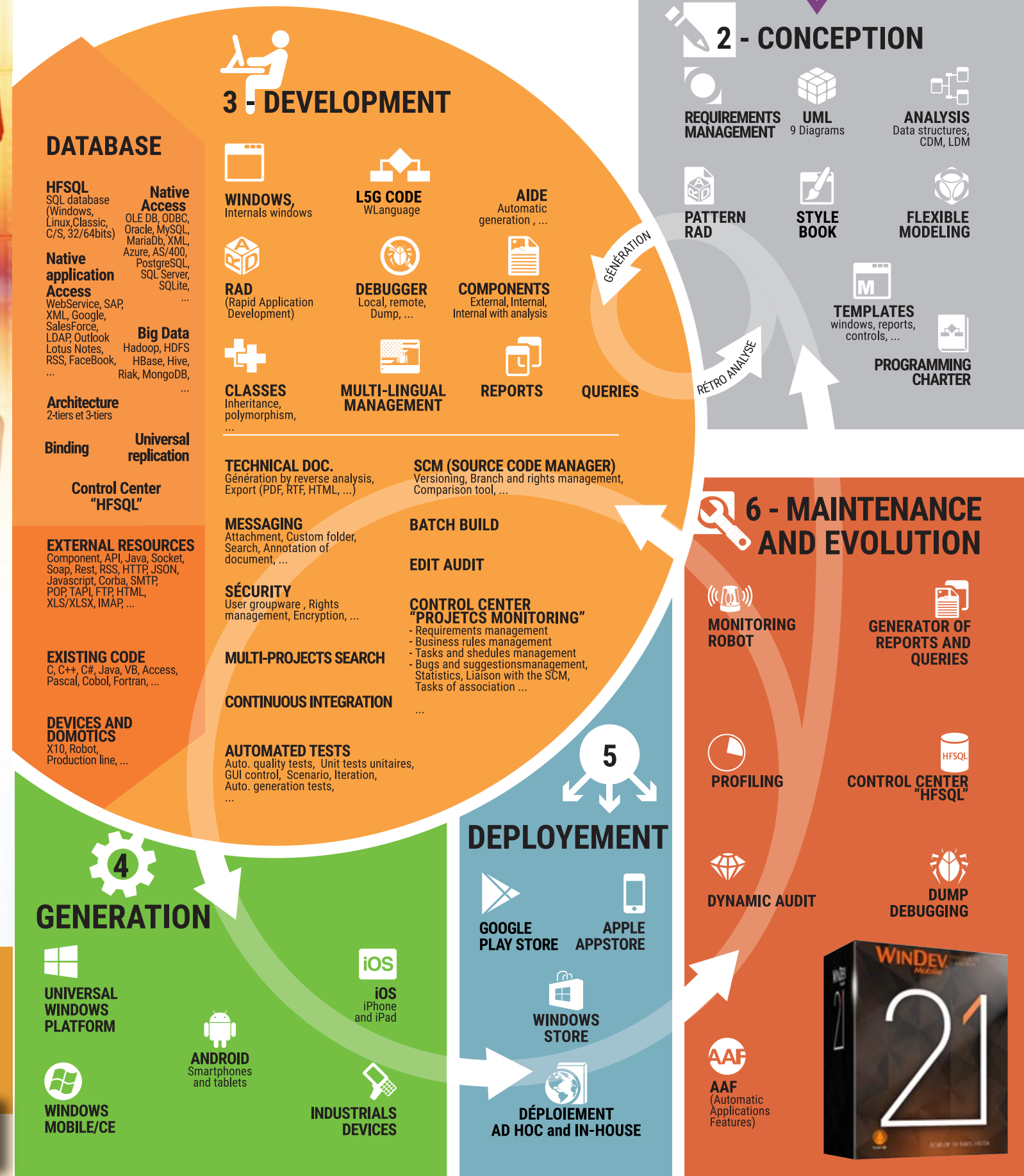
## TABLE OF CONTENTS

3	Development method
5	Windows
6	Single editing
9	Controls
12	Common features
16	Databases
18	Distributing applications
23	Android
26	iOS (iPhone, iPad)
29	Windows 10 Mobile
30	Windows Mobile & CE
34	Questions/Answers

Android  
iOS (iPhone, iPad)  
Windows 10 Mobile-UWP  
Windows CE

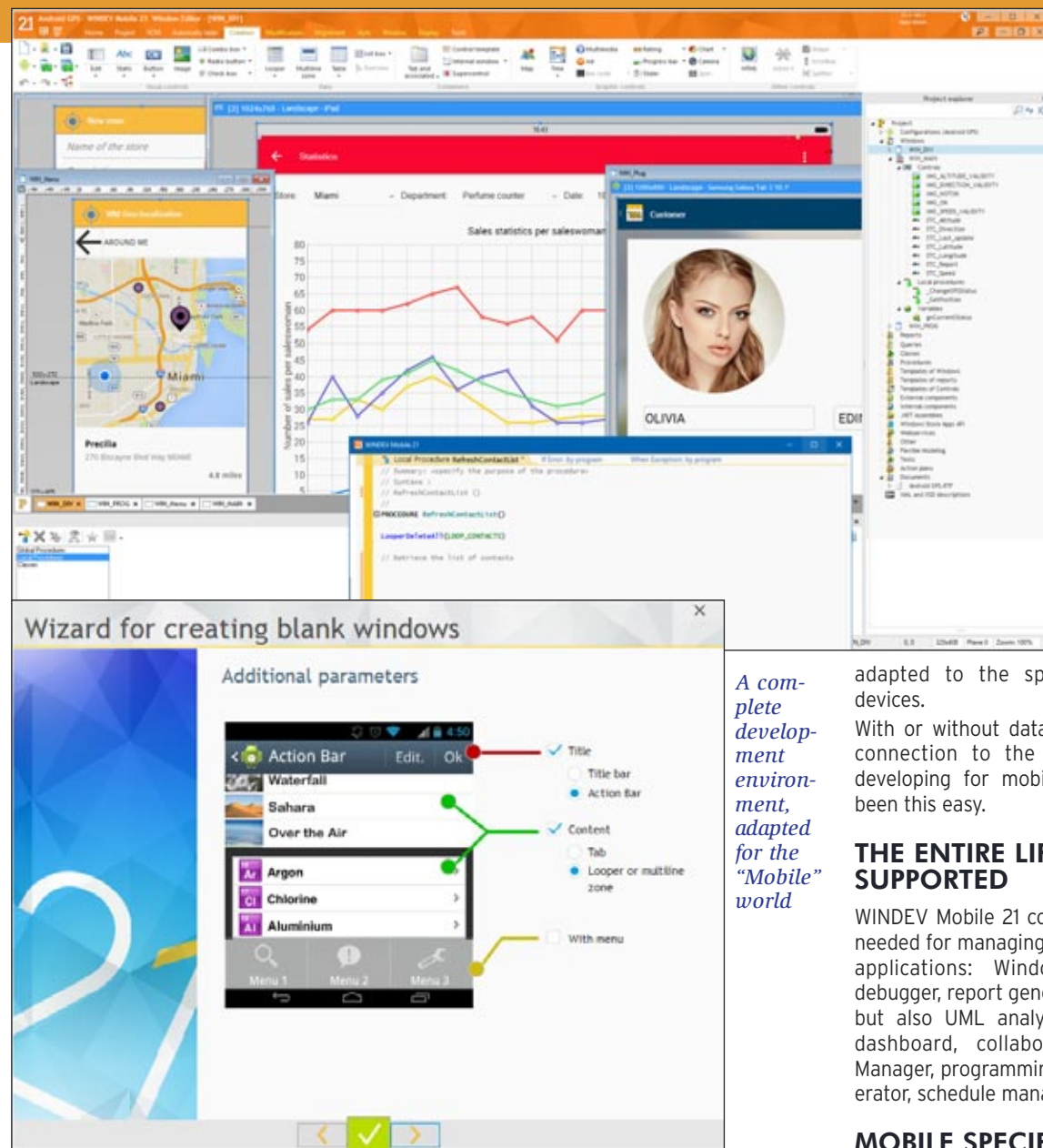


## THE POWERFUL IDE AND ALM SUITE





# NATIVE DEVELOPMENT FOR ALL THE MOBILE DEVICES



## DEVELOPMENT METHOD

### CREATE NATIVE APPLICATIONS FOR ANY MOBILE DEVICE

WINDEV Mobile 21 lets you easily create native applications for all mobile devices:

smartphones, tablets and industrial terminals. And if you have existing WINDEV or WEBDEV code, you can reuse it.

### A STANDALONE DEVELOPMENT ENVIRONMENT

Regardless of the target equipment and the operating system, the way to develop with WINDEV Mobile 21 is similar.

The development environment is integrated, powerful, complete, intuitive and it is

*A complete development environment, adapted for the "Mobile" world*

adapted to the specificities of mobile devices.

With or without database, with or without connection to the Information System, developing for mobile devices has never been this easy.

### THE ENTIRE LIFE CYCLE IS SUPPORTED

WINDEV Mobile 21 comes with all the tools needed for managing the entire life cycle of applications: Window generator, 5GL, debugger, report generator, setup generator but also UML analysis generator, project dashboard, collaborative Source Code Manager, programming documentation generator, schedule management, ...

### MOBILE SPECIFIC FEATURES

WINDEV Mobile 21 offers the usual development features, and of course a lot of features specific to the use of mobile devices, such as SMS reading, accelerometer management, compass management, GPS positioning, bar codes...

Integrating the various connection technologies (Bluetooth, Wi-Fi, infrared, GPRS, 3G, 4G, replication, synchronization, ...) with your company's Information System is child's play with WINDEV Mobile 21!

## YOUR APPLICATIONS ARE PORTABLE



Your applications' portability is insured on mobile devices (phone, tablets and terminals), of course, but the same code can also be ported to Windows, Linux, Mac, as well as used for Internet and Intranet sites.

Only WINDEV 21, WEBDEV 21 and WINDEV Mobile 21 provide this universal portability, and through this feature protect your investment in your company's legacy.



### PROGRAM IN 5GL: 90% LESS CODE

WLanguage, a 5th generation language, lets you develop faster than a traditional language. Its powerful functions make the code easier to write and read, simplifying both the development and the maintenance (see page 14-15).

A specific mobile RAD lets you generate applications! (see page 10)

To discover WLanguage, don't hesitate to download the free Express version of WINDEV Mobile.

### ACCESS TO APIS

You can access the device's APIs. If necessary, you can code very specific processes.

### YOU'RE FAMILIAR WITH WINDEV?

You develop in a familiar way, in WLanguage, with the added benefit of the efficient environment you know, and by re-using your existing code if necessary.

### COMPATIBILITY WITH WINDEV APPLICATIONS

You have WINDEV applications?

The compatibility between WINDEV and WINDEV Mobile is amazing: code, analyses, UML, classes, queries, controls (edit, table, scheduler, Looper, etc.)!

You can reuse and share most of the code, classes, queries and UI.

Database programming is identical.

Given that the screen's size is smaller, you just need to resize the windows, which is very easy to do with WINDEV Mobile 21! You can reuse your existing code for smartphones and tablets.

**FREE EXPRESS VERSION**  
Download it!





# PORTABILITY OF YOUR APPLICATIONS

## ANDROID, IOS, WINDOWS 10 MOBILE, WINDOWS CE

With WINDEV Mobile 21, the same application can run on different Mobile OS: iOS (iPhone, iPad), Android, Windows CE & Mobile, UWP...  
Recompile!

## ANY TYPE OF MOBILE

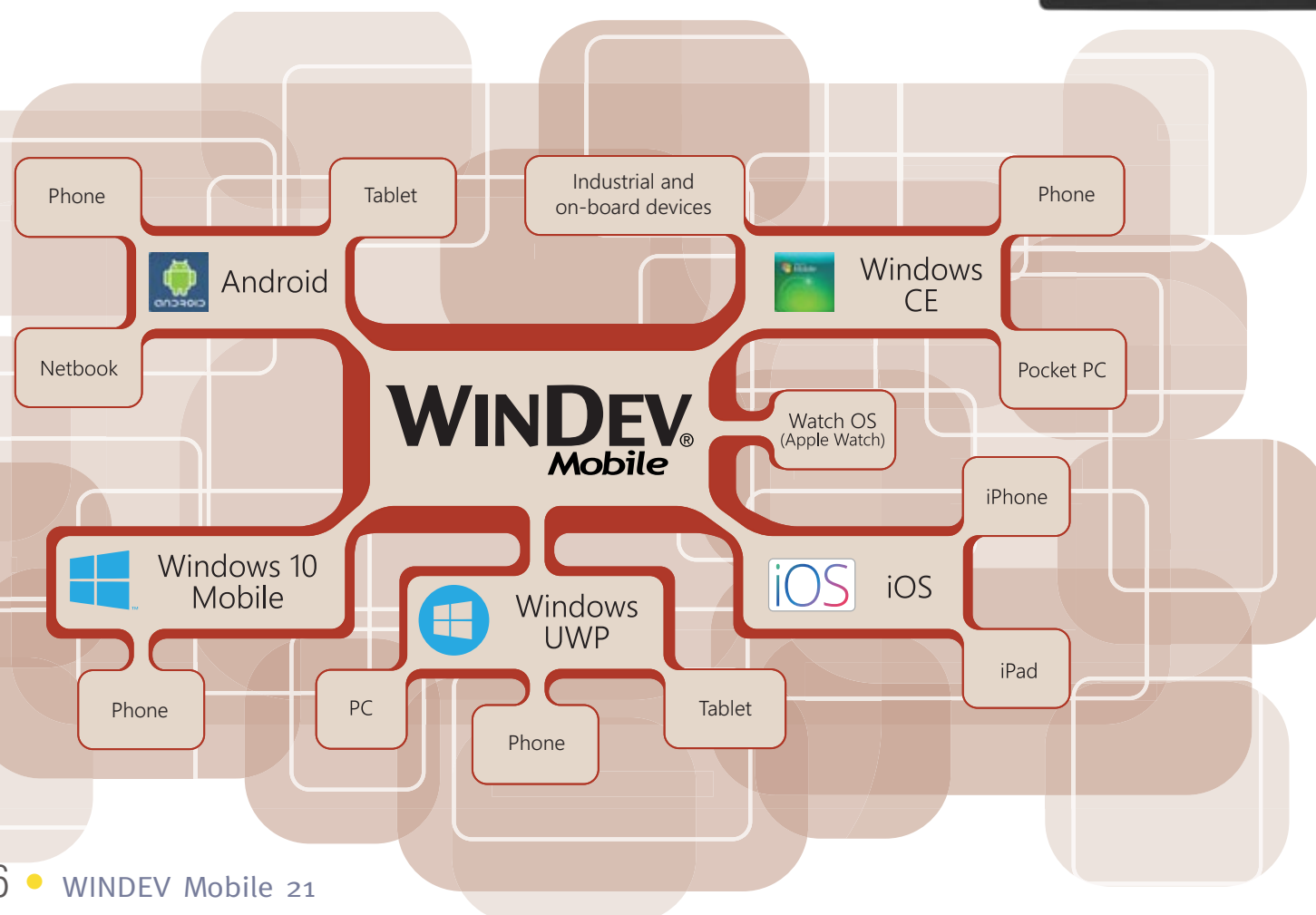
Develop for any type of mobile: phones, smartphones, pocket PC, terminals, rugged terminals, tablets, netbook,...

## ALL MANUFACTURERS

The applications developed with WINDEV Mobile 21 operate on the devices of all manufacturers: Datalogic, Intermec, Falcon, Symbol, PSC, PAXAR, Psion Teklogix, Pidion, Gotive, HHP...

All the smartphones are supported: Apple iPhone, Qtek, Toshiba, HP, Asus, Acer, Samsung, Paragon, HTC, Motorola, LG, Oppo, Lenovo, Wiko, Huawei...

All the tablets: Apple iPad, Samsung Galaxy Tab, Galaxy Note, Google Nexus, Kindle Fire, Acer, Asus, Archos, Microsoft, Sony, Msi, HP, Toshiba, Motorola, HTC, Lenovo, LG, Huawei...



# THE WINDOWS

## POWERFUL UI EDITOR (WINDOWS AND CONTROLS)

WINDEV Mobile offers the most efficient GUI generator (windows and controls) in the world.

The WINDEV Mobile 21 UI generator enables you to create quickly and without any required skill great-looking interfaces, that are also secure and easy to use. Window creation is assisted.

The edit controls are very powerful and they propose a set of security mechanisms (mandatory controls or not, authorized characters, ...) and a lot of input formats.

The famous "7-tab" technology is also used to manage the graphic look of your windows.

## TEST YOUR APPLICATIONS INSTANTLY

Click the "GO" icon to run an instant test of the window and the application, directly on the development PC.

## PORTABILITY

An application's windows can be specific to the iPhone, iPad, iPod Touch, a smartphone or an Android tablet, a device ... or common to all these devices and all their various screen sizes, thanks to the use of anchors. You can choose to develop for a specific device, or for a set of devices.

## ALL SCREEN RESOLUTIONS AND DPI.

WINDEV Mobile 21 support all the sizes, screen resolution and DPI.

The portrait and landscape modes are supported; if needed, a window can be locked in portrait or landscape mode.

Anchor management for controls (the control expands or shrinks automatically according to the screen's size) allows you to create portable interfaces for screens of different sizes.

## ANIMATION OF WINDOWS

Opening a window can be paired with an animation.

A window can for instance come up from the right, or the left or the bottom of the screen.

## VERY POWERFUL CONTROLS

The available controls are very powerful and they allow you with just a simple slide/move in the editor to create some user-friendly windows without any effort.

An edit control offers, without any programming, dozens of automatic features and security checks: required input, convert to uppercase, types of characters authorized in input, direct link with the database, ...

These functionalities are implemented with a simple click in the window editor ("7-tab" technology), and can be modified through programming.

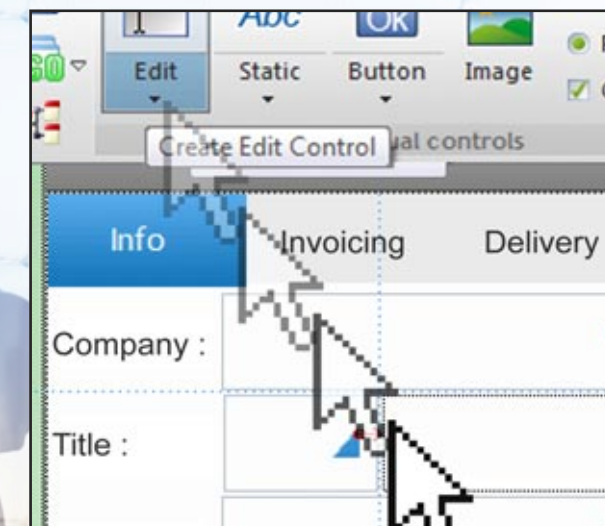
## SKIN TEMPLATES

A skin template defines the graphic style of an application. The created controls adopt by default the characteristics of the skin template (but can of course still be modified). Therefore, the created windows respect the graphic charter by default. WINDEV Mobile 21 comes with a large number of skin templates. You can also create your own skin templates.



## CREATE CONTROLS USING DRAG & DROP

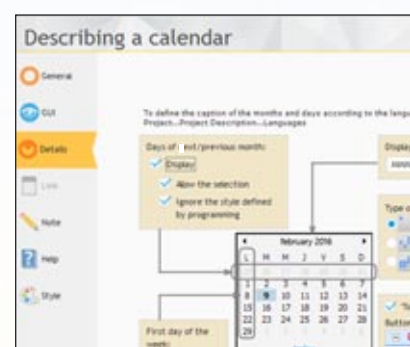
Control creation is done visually by moving the type of control you want from the editor's ribbon to the location you want inside the window.



## THE "7-TAB" WINDOW: REVOLUTIONARY

Once the control is positioned, simply define its characteristics (required input, mask, graphic look, link with the database, anchor, ...) using the "7-tab" technology.

The enter the code in the corresponding events...







## MULTI-VIEW EDITING

The one changing things among mobiles is the size of their screens!

Even on the same mobile, there are 2 display options: portrait and landscape!

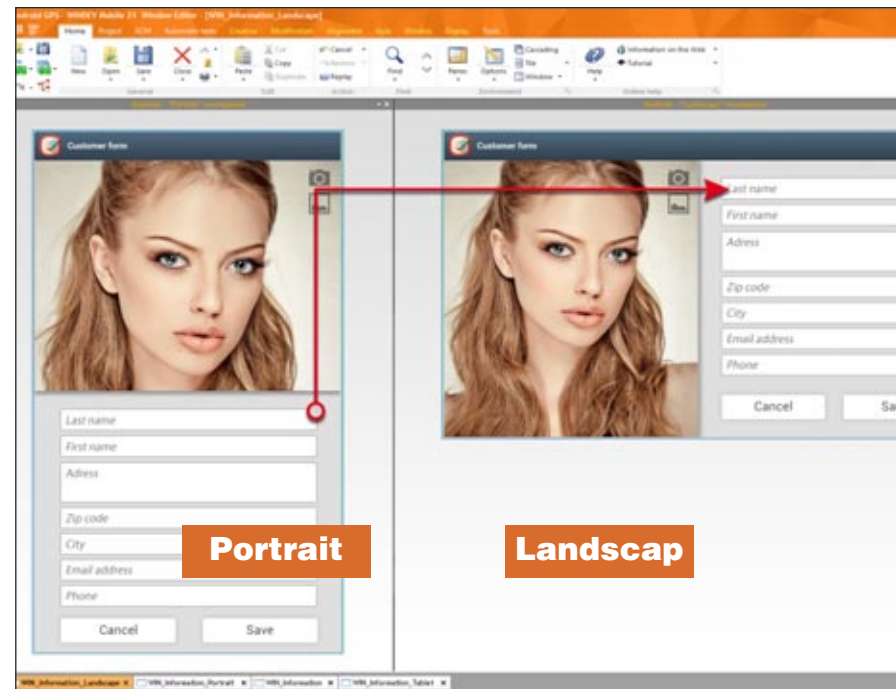
How to develop easily and only once for all these different modes?

It's easy with the multi-view editing in WINDEV Mobile 21.

### DIFFERENT CONTROL POSITIONING DEPENDING ON THE ORIENTATION (PORTRAIT/LANDSCAPE)

The position of the controls often differs based on the device's orientation. For example, in portrait mode texts are located below an image, though when in landscape mode, they're located to the right of the image.

In the WINDEV Mobile 21 editor, you can position controls differently in the same window, based on its orientation, directly in the editor, without having to code anything.



Note the different position of the controls based on the screen's orientation. The developer sets each position.



### INSTANT EDITING

**TABLET <> TELEPHONE,  
PORTRAIT <> LANDSCAPE,  
IOS <> ANDROID**

When creating or modifying a window, it is possible to view in real time the window's layout in several other configurations: in another system, in portrait or landscape, on phone or tablet.

Phones from different manufacturers don't have the same screen size, tablets are available in several screen sizes, etc.

This multiple viewing can also be useful when developing for a single system, single device, to view the result for 3 screen sizes for different phones.

This multiple view is very useful to check the result of anchors being set.

You instantly see the impact of a modification on other targets.

At runtime, the application automatically selects the screen's orientation to use, based first on the equipment's resolution and then on the orientation.

In this multiple editing mode, when adding a control to a window in edit mode, it automatically comes up in all the other views....

Everything is dynamic.

Multi-view editing is completed by the visualization panel (see next page).

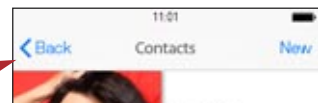
### COMMON IOS & ANDROID WINDOW IN THE STANDARD OF EACH SYSTEM

End users demand, which is understandable, that their applications' windows respect their phone's standard!

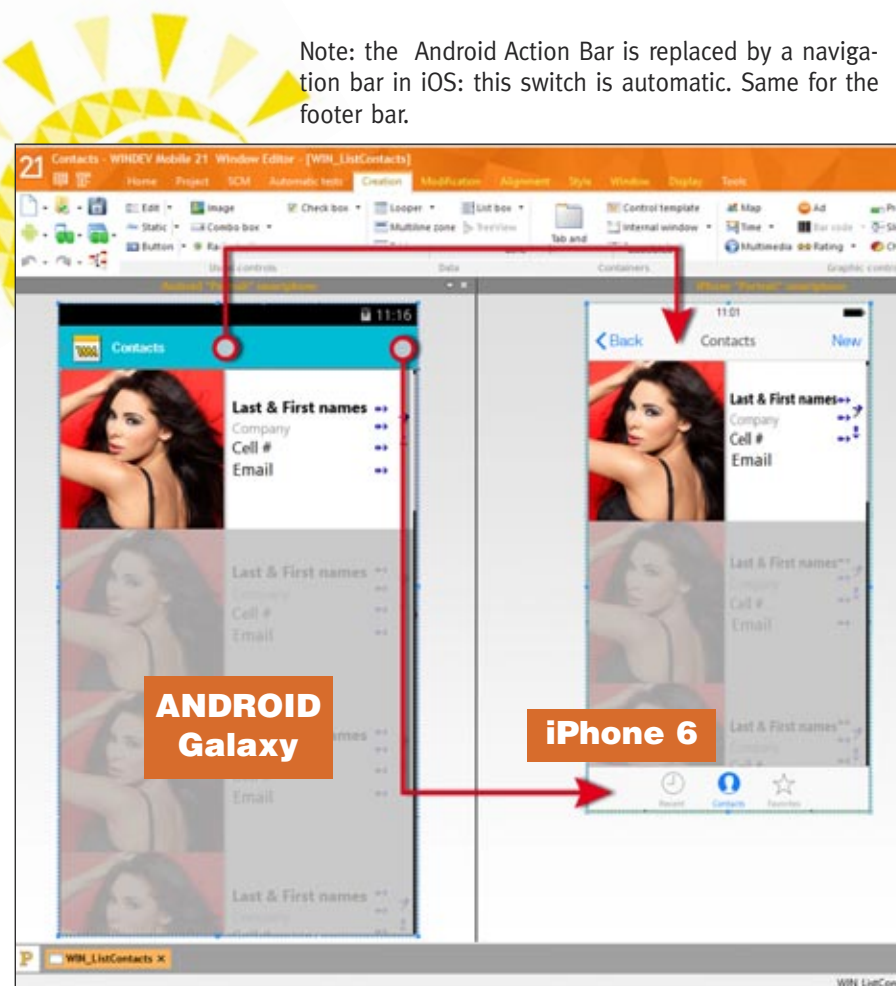
For example, in Android, the users expect an action bar at the top of windows.



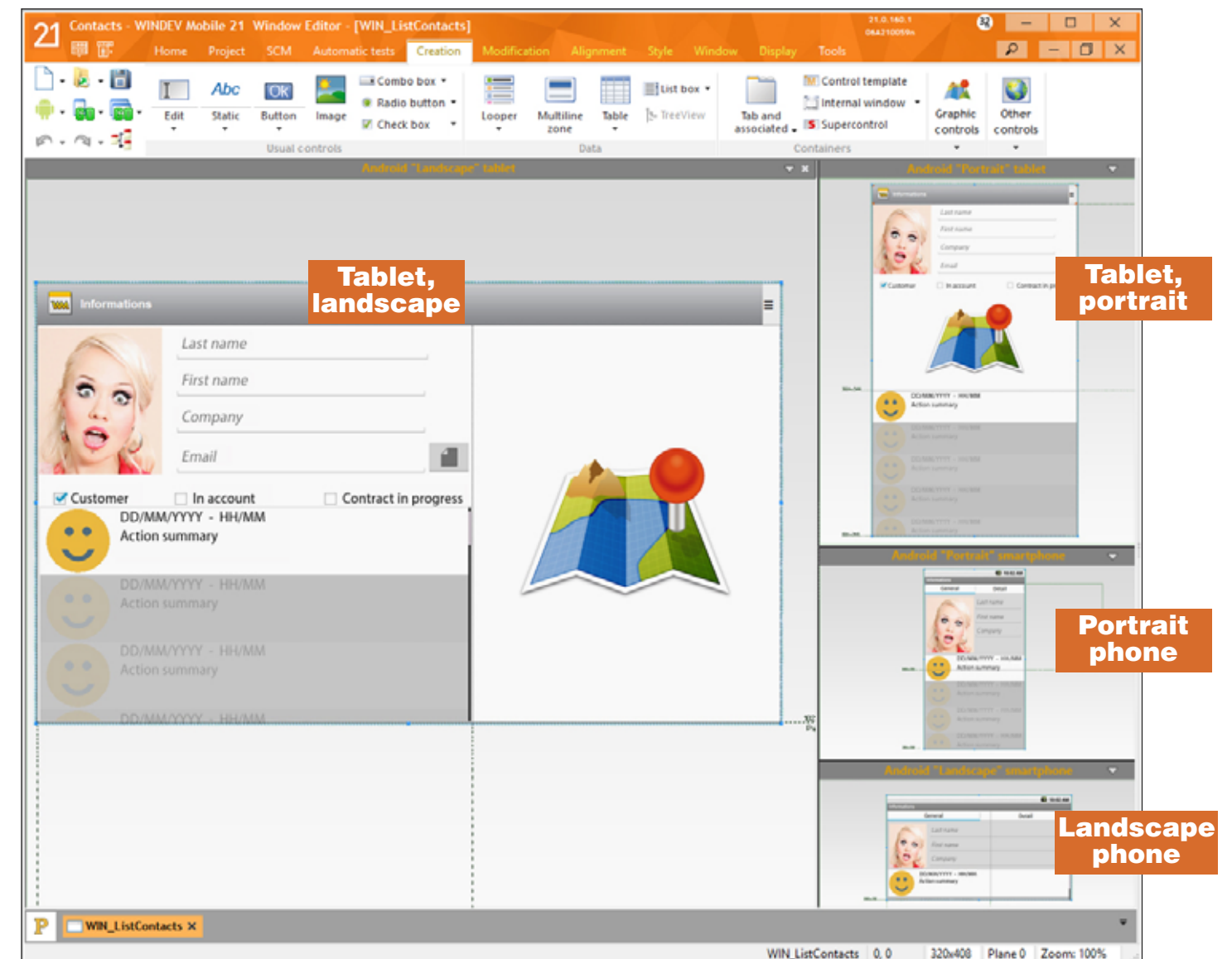
On iOS, users expect a navigation bar with a "Back" button.



WINDEV Mobile 21 now allows you to create windows that automatically respect the Android and iOS standards, while leaving it up to WINDEV Mobile 21 to manage the differences in UI: no programming is required. You edit and maintain a single window for iOS and Android.



Note: the Android Action Bar is replaced by a navigation bar in iOS: this switch is automatic. Same for the footer bar.





## CROSS-PLATFORM VISUALIZATION PANEL: HOW DOES YOUR APPLICATION LOOK ON DIFFERENT DEVICES

With the panel you can easily verify the behavior of your applications (anchors, layout) on all the devices.

This panel visualization mode allows you to immediately check that the interfaces are correct for the targeted devices:

- correctly positioned anchors
- support for landscape/portrait mode
- behavior on different resolution screens
- layout check: proper size position and anchors dissociation
- font compatibility

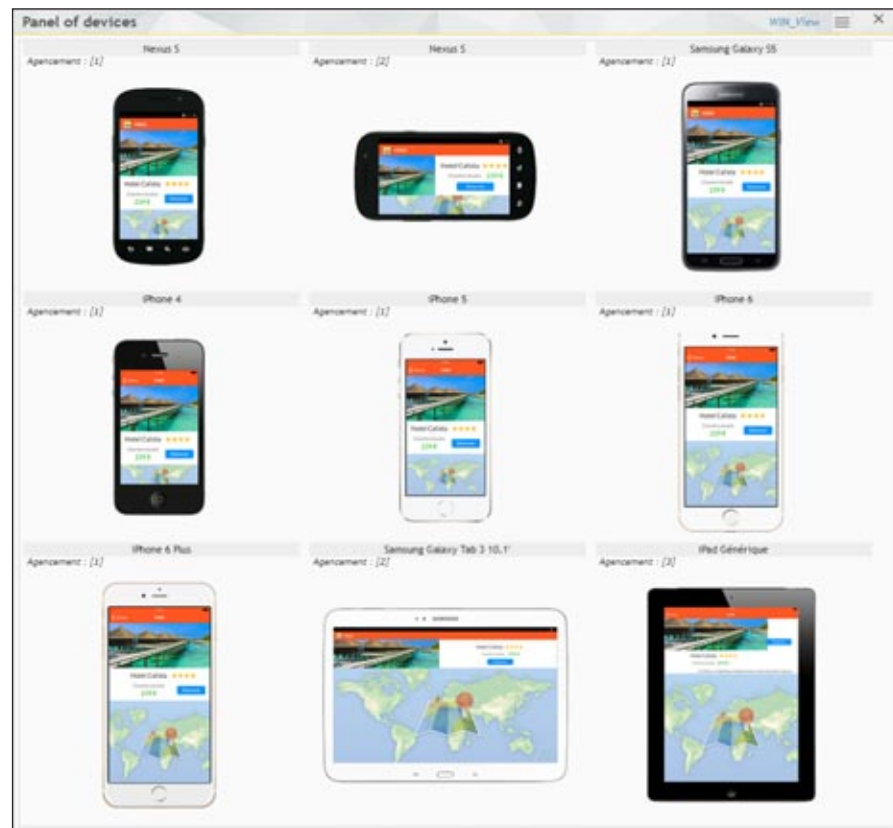
• ...

The visualization is performed in real time.

Each device can be zoomed in.

The clock on the device starts the “test” window (GO of the window) in order to test the behavior, and to be able to compare between several devices or systems. For example: is the behavior the same between iOS and Android? Etc.

The layouts set up the behavior, and the panel visualizes the end result in “real” devices.



*The panel is updated in real time in the editor: you can see the results of your modifications instantly*

## THE RAD

### MOBILE RAD: PRETTY WINDOWS

Need to quickly generate the form corresponding to a data file of the analysis? RAD is here for that!

Tablets and phones have a different use mode. Therefore, our teams have created 2 types of RAD: a RAD for tablets, a RAD for phones.

A single application can contain both windows for phones and windows for

tablets: the appropriate window will be opened on the relevant device.

The UIs generated via RAD are suited for a mobile use mode, by using the controls specific to these devices.

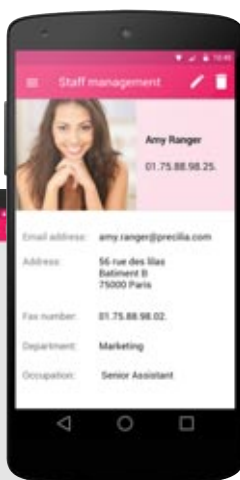
The Window RAD offers 14 new templates.

### MOBILE RAD FOR PHONES

Several RAD templates for phones are offered.

These templates are adapted to the size of screens on phone as well as to the standard operating mode on phone:

- Image + Form in read-only
- Image + Form in edit
- Image + Long text
- Form + Loop
- Image gallery
- Loop
- Multi-line loop...



### MOBILE RAD FOR TABLETS

Several RAD templates for tablets are offered.

These templates are adapted to tablets.

Via the powerful “layouts” concept, these RAD templates are adapted to the size and orientation of the screens on tablet.

The RAD automatically generates the necessary layouts, adapted to the selected pattern.

Among the templates for tablets:

- Image + Form in read-only
- Image + Form in edit
- Image + Long text
- Image gallery
- Loop + Form in read-only
- Multiline Zone + Form in read-only...

### MOBILE RAD: THE GENERATED CODE

The Mobile RAD generates clear code, easy to understand, that can be easily re-used and maintained.

Links with the data are automatically generated. Wizards ask questions adapted to each template.

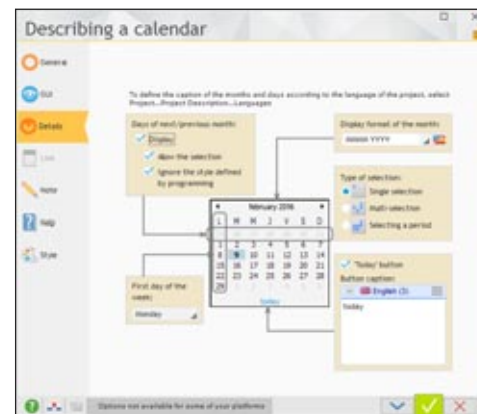
## CONTROLS (CONTROLS)



### “7-TAB” TECHNOLOGY

The definition of the controls’ characteristics is done through the “7-tab” technology: only a few clicks are needed to define controls and their detailed and powerful characteristics.

### THE CONTROLS



All the types of controls needed for mobile application development are offered.

Note that these controls are compatible with the applications and sites developed in WINDEV and WEBDEV.

Each control brings user-friendliness, automation and integrated security.

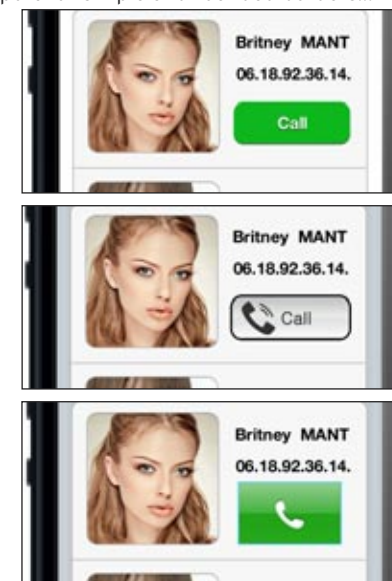
The detailed features are so rich that they take a few hundred pages of description! To explore the exhaustive characteristics of each control, please visit the [www.windev.com](http://www.windev.com) site and read the “WINDEV features” document (352 pages)

### STYLES

A style defines the characteristics of a control. Thanks to the notion of style, a control's look instantly respects the application's style book.

You can create as many styles as you want, and modify the characteristics of your choice. Styles support inheritance.

Among the many style parameters, you'll find: character size and font, customization of the edit control background image, modification of the radio button and check box image, customization of the selection band for loop controls and list boxes, customization of the combo box display, support for simple and rounded borders...



*The “Call” button adopts three different styles here. Want to change the style? 1 click*

### EDIT CONTROL

The “edit” control (input) is used for data entry and information display. The virtual keyboard comes up in edit mode if the device doesn't have a physical keyboard. Over 50 properties are available for edit controls: required input, data type, mask, alignment, ...

To explore all the properties available for each control, please visit the [www.windev.com](http://www.windev.com) site and read the “WINDEV features” document (352 pages, free).

### DATE AND TIME

Special feature for the date or time edit controls, the display and the input can be done in the style of the device used.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### STATIC CONTROL

The “Static” control lets you display information, from your code, a process or a database.

Everything is customizable: font, color, border, ...

Here too, as with every type of control, to explore all the properties available, please visit the [www.windev.com](http://www.windev.com) site and read the “WINDEV features” document (352 pages, free). This information will not be repeated for each control, even though each control is detailed in this book. Don't hesitate to check it out!

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

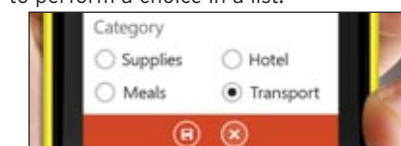
### FORMATTED STATIC

The “formatted static” control lets you display information with an automatic mask (date, currency, ...).

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### RADIO BUTTON

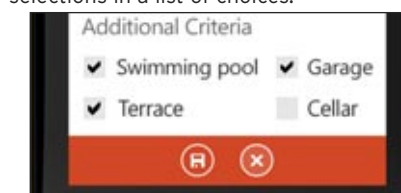
The “Radio Button” control allows the user to perform a choice in a list.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### CHECK BOX

The “Check Box” control allows you to make selections in a list of choices.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### BUTTON

The “Button” control lets you trigger an action. Like with all controls, this style is customizable: size, font, color, icon, ...

Round buttons and floating buttons are automatically generated.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

Legend: the blue bar located above a subject title indicates for which systems the described feature is natively available.





ANDROID, IOS

## SCHEDULER

The “Scheduler” control lets you easily manage schedules. Managing tasks with a finger is easy, create tasks, move them,...

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## LIST

The List control lets you display a list of information, set by the program, sent via another process or read from a database.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## CALENDAR

The Calendar control lets you display and select dates or ranges of dates. The control supports gesture.



The calendar control

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## MENU

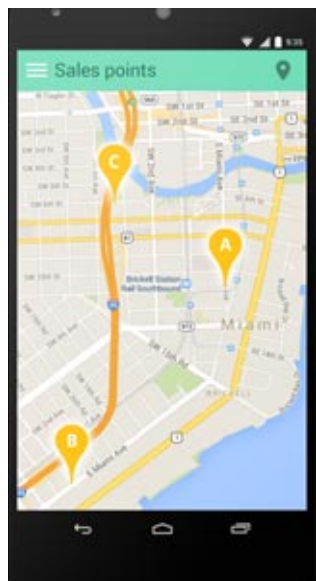
The “Menu” control lets you create a menu that will start processes.

ANDROID, IOS, WIN 10 MOBILE-UWP

## MAP

The Map control is used to display a Google Map (or an Apple map on iOS).

The Map control allows you to find a location, to create an itinerary, to display Points of Interest (P.O.I.) and itineraries ...



A Google Maps map where markers (P.O.I.) are displayed

The map displayed is interactive: you have the ability to zoom, to move, ...

The **Marker** type is used to position the P.O.I. on a map. The symbol representing these P.O.I. is customized by the `.image` property.



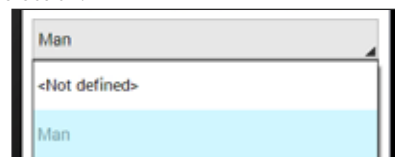
P.O.I marker examples.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## COMBO BOX

The “Combo Box” control is used to expand a list of choices in order for the user to choose one.

When expanded by the user, a barrel may come up for the user to perform his or her selection.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## IMAGE

The “Image” control lets you automatically display images and pictures. The photo can come from a database, be modified by programming, ...

The popular formats are supported: JPG, PSD, PNG, PDF, SVG, BMP... No code, no library is needed to display the image or the photo.

The various display modes are also supported without any code: homothetic, centered, 100%, ... Zooming and finger scrolling are also automatically managed.

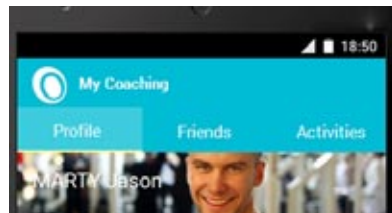
ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## TAB

The “Tab” control lets you create tabs, which themselves contain other controls and processes.

When navigating between tabs, transition effects automatically come up.

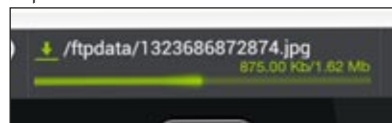
The Swipe gesture is also available for moving between tabs.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## PROGRESS BAR CONTROL

The “Progress Bar” control lets you display a progress bar to visually show the progress of a process.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## LOOPER

The “Looper” control lets you display a set of controls by rows, often filled from a database.



On iOS and Android, the finger gestures on a line (to the right or to the left) allow you to start a custom process or to automatically

display the “Delete” button or a series of buttons.



“Pull to refresh” is supported.

ANDROID, IOS, WIN 10 MOBILE-UWP

## MULTILINE ZONE

The “Multiline zone” control lets you place controls of different types on each row.

This allows you to customize each line, for example by proposing a check box on a line to change the status, a progress bar on another line, etc.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## INTERNAL WINDOW

The “Internal Window” control allows you to easily re-use an existing window inside another window.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## SUPERCONTROL

The “Supercontrol” control allows you to group several controls together and treat them as if it were a single control.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## HTML CONTROL

The “HTML” control allows you to display content in HTML format: the tags are interpreted, the links are automatically active.

ANDROID, IOS, WIN 10 MOBILE-UWP

## PERSISTENCE OF CONTROLS

When the “persistence” option of the control is checked, the content of the control is stored between 2 starts of the application. This prevents the user from having to reenter a piece of information that comes back often.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

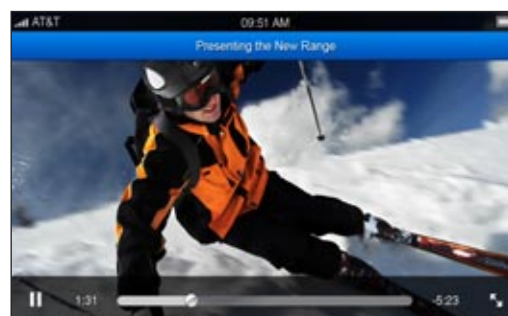
## CAMERA

The “camera” control allows you to take pictures or film a video, and to retrieve the result (also see page 17).

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## PLAYING VIDEO

The “multimedia” control allows you to



automatically read video files as well as music files.

The popular audio and video formats are supported: Wav, mp3, AVI...

ANDROID, IOS

## RATING CONTROL

The “rating” control lets you enter a rating (review).

In addition to stars, several visual symbols are provided.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## EASY CHARTS

A chart designer is available with WINDEV Mobile: you create charts on Mobile devices without any programming



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## CONTROL TEMPLATE: INHERITANCE

The “control template” notion allows you to manage inheritance and overloading code and properties for all the types of controls.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## MANAGING THE PLANES

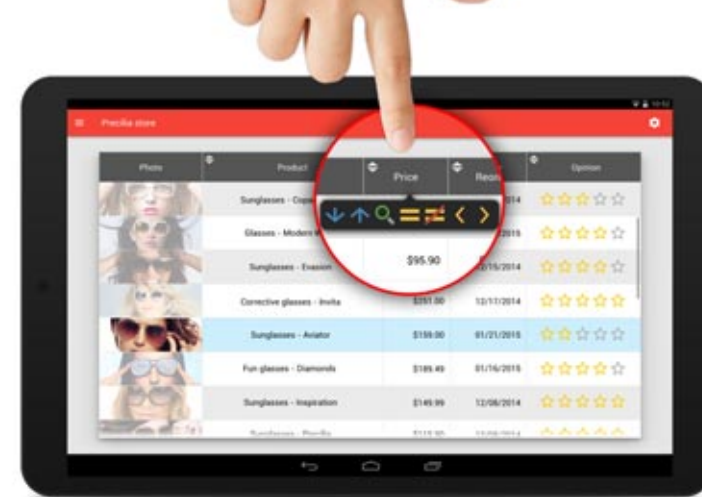
In windows, managing controls over multiple planes is supported.

ANDROID, IOS, WIN CE

## TABLE CONTROL

The “table” control uses the functionalities of the WINDEV table control.

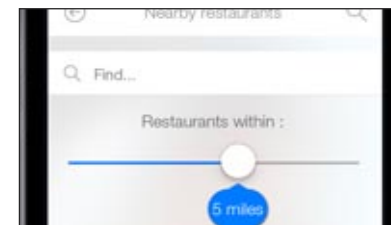
Scrolling - horizontal and vertical - is done with the finger. Input is automatically man-



aged. Sorting and searching are also supported. “Pull to refresh” is supported.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## SLIDER CONTROL



The “Slider” control is offered.

A style can be applied to the slider, or it can be the standard slider.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## LARGE NUMBER OF SKIN TEMPLATES PROVIDED

In order to easily define a look adapted to your applications, a large number of ready-to-use skin templates are provided. They let you automatically apply a spectacular and custom look to each of the windows for the applications you create.







## THE PROGRAMMING LANGUAGE



```
// Retrieves the current position
CurrentPosition is geoPosition = GPSGetPosition()

// Browse the stores of the database
FOR EACH Store
    // Calculate the distance separating the store from the current
    position
    StorePosition is geoPosition
    StorePosition..Latitude = Store.Latitude
    StorePosition..Longitude = Store.Longitude

    //If the distance is less than the configured distance
    IF geoDistance(StorePosition, CurrentPosition)< CST_DISTANCE THEN
```

### WLANGUAGE: 5TH GENERATION LANGUAGE

The integrated WINDEV Mobile language, WLanguage, is powerful, simple and intuitive.

It's a 5th generation language (5GL): The commands are evolved.

A WLanguage command can replace dozens or even hundreds of 4GL commands, making programming easier and more reliable.

### EASE AND POWER: A NATURAL LANGUAGE

WLanguage is an easy programming language, close to natural language; it is quick to learn.

The code is quick to write and especially easy to proofread.

Coding and maintenance are therefore much easier to do.

```
FOR EACH CUSTOMER
    Message is Email
    Message.Recipient=Customer.EmailAddress
    EmailSendMessage(Message)
END
```

Take the test: do you understand this code? Yes, because WLanguage is so readable. WLanguage is available in English and Chinese.

### VARIABLES AND TYPES

Declaring variables is easy and intuitive.

```
Message is Email
```

```
CustomerArray is array of Customers
```

WLanguage offers the standard simple types, including integer, boolean, currency, numeric, real number or character string.

### THE STRING TYPE

WLanguage lets you manage text of different types such as Ansi, Unicode, UTF-8 or binary content thanks to the buffer string type.

Conversions are automatically performed based on the functions or properties used.

```
Msg is string UNICODE
```

```
Msg = "Hello! ! привет !"
```

### OOP

The use of Object oriented programming (OOP) is optional with WINDEV.

The classes and the syntax of WLanguage allow for modern and efficient object-oriented programming.

The base method classes can be redefined visually from the project explorer; virtual methods are automatically supported.

Management of the instances' memory is

automated in most cases, when allocating as well as when freeing memory.

### WEBSERVICES

Handling web services is very easy in WLanguage.

The data handled by the web services appear as simple structures and the operations appear as simple procedures.

### HANDLING UI VIA PROGRAMMING

The ControlClone function lets you duplicate an existing control.

This allows you to customize UI even more via programming.

### MULTI-PLATFORM

Code written in WLanguage is multi-platform: 32 or 64 bits, Android, iOS and UWP but also Windows, Linux, Java, JavaScript, PHP, ...

Components and sets of procedure can be shared among several platforms.

### A VERY POWERFUL LANGUAGE

WLanguage is rich and powerful.

You can discover it via the "Express" version (free and without time limit) of WINDEV Mobile available from the [www.windev.com](http://www.windev.com) website.

## THE WLANGUAGE FAMILY OF FUNCTIONS

In addition to the traditional commands of a programming language (For, If Then Else, While, ...) WLanguage offers 5th generation type function families

No need to reinvent the wheel.

Details about these families, as well as the syntax of the functions can be accessed on the Internet.

Here are the "function families":

Window management  
Window controls management  
Action Bar management  
Mathematical functions  
View table management  
Character string management  
Dates and times  
Calendar functions  
Scheduler functions  
Multiline Zone functions  
Internal Window functions

Functions for managing radio buttons and check boxes  
Wi-Fi functions  
Drawing functions  
Charts: line, column, pie...  
HTTP functions  
Emails  
SMS  
InApp functions  
Geo-localization functions  
Mobile device management (vibration, led, volume, etc.)  
Sensor functions  
Mobile contact management  
Mobile calendar management  
iCalendar functions  
Notification functions  
Push management  
Management of multitouch  
General exception mechanism  
Database management functions (HFSQL and others)  
- SQL  
- Assign  
- Read commands, modification

- Useful commands  
- Custom error management  
- Filter management (temporarily store part of the table on disk)  
- Trigger management  
- Replication  
- Transactions  
- Other functions  
Print functions  
Management of list box and combo box controls  
Functions for managing the binary values  
Financial functions  
Matrix management  
Statistical functions  
Image animation  
Multimedia function (video, sound, ...)  
Functions for managing the memory zones  
Multilingual functions  
FTP, SecuredFTP functions  
NFC functions  
XML native functions

Clipboard  
Project management  
Socket functions (SSL,...)  
System functions  
The threads  
Disks, files and directories  
File archiving and compressing (ZIP, 7Z ...)  
3-tier  
Speech Synthesis functions  
Speech recognition functions  
Bluetooth LE functions  
Debugging functions  
Array functions  
Queue and Stack functions  
Map functions  
Facebook functions  
...

## 2 TEST AND DEBUG

### DEVELOPMENT, DEBUGGING ON THE PC VIA THE PROVIDED SIMULATOR

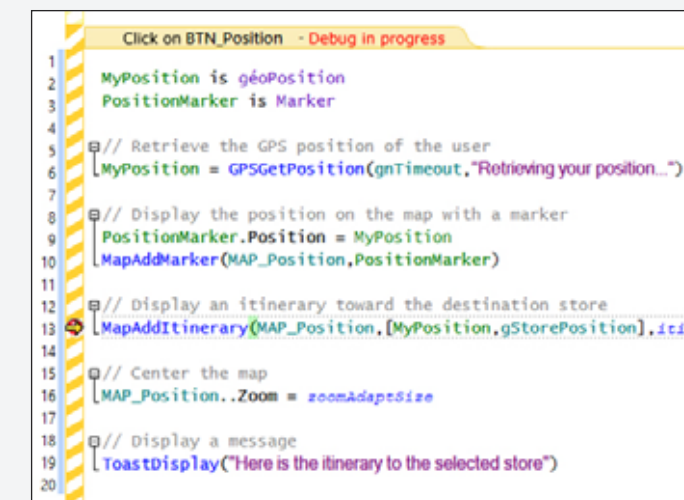
Development is done directly on the PC. Application testing is performed directly on the PC, thanks to a very powerful "simulation" mode.



Here a window being created and its execution in "simulation" mode on the PC.

### A POWERFUL DEBUGGER

The debugger offers advanced features: break points, resume, on the fly code modification, view variables' content...



Window with debugging in process





# MAIN MOBILE SPECIFIC FEATURES

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## WLANGUAGE: 90% LESS CODE

WINDEV Mobile 21 uses its own 5th generation language: "WLanguage" (see previous pages).

All the usual features of a powerful programming language are available: variable declaration, assignment, loops, OOP, etc.

Easy to learn and very powerful, WLanguage saves precious time for development teams. WLanguage is available in English (download the free Express version to discover it).

ANDROID, IOS, WIN 10 MOBILE-UWP

## ACCELEROMETER AND ORIENTATION CAPTOR SUPPORT

Some devices include an accelerometer and orientation captors; they can be controlled by user gestures!

The **Sensor** functions allow you to support this type of interface.

ANDROID, IOS, WIN 10 MOBILE-UWP

## COMPASS MANAGEMENT

Some devices come with an embedded compass: WINDEV Mobile 21 lets you support this compass in your applications.

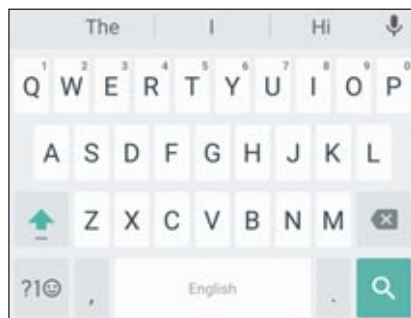
ANDROID, IOS

## CUSTOMIZING THE VIRTUAL KEYBOARD

The virtual keyboard comes up when needed if the device doesn't have a physical keyboard.

One button on this keyboard can be customized by your applications.

(Android even lets you display text in addition!)



A search magnifier is displayed here

## WI-FI



Wi-Fi support is very complete in WINDEV Mobile 21

The **Wifi** family of functions offers a large number of features for supporting Wi-Fi.

ANDROID, IOS, WIN CE

## BLUETOOTH



Bluetooth support is very complete in WINDEV Mobile 21.

The Bluetooth LE standard (for Low Energy), used mainly to manage connected devices (IoT), is supported.

The **BTxxx** family of functions offers a large number of features, among which:

- list of Bluetooth devices
- change in the phone's visibility
- accept connections
- get information about a device
- ...

ANDROID, IOS

## GESTURE & MULTI-TOUCH MANAGEMENT, 3D TOUCH ...

A mobile device is often touch-enabled: applications are at your finger tip(s)!

Applications developed with WINDEV Mobile 21 recognize finger gestures on the screen: scrolling, zooming (pinch"), ...

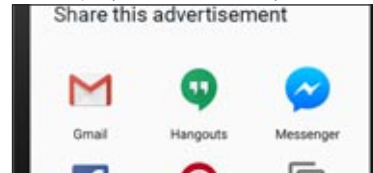
In your programs, events are proposed to manage the processes: vertical or horizontal move with one or more fingers while keeping them in contact with the screen, small move-



ANDROID, IOS

## SHARING FUNCTIONS (EMAIL/SMS/FACEBOOK, ETC.)

The standard window used to share content can be displayed automatically.

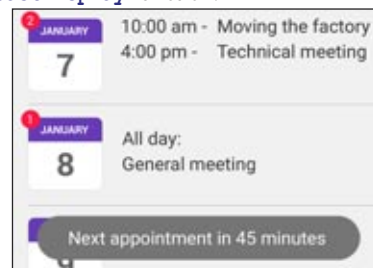


ANDROID, IOS, WIN 10 MOBILE-UWP

## TOAST

A Toast is an informational message that pops up on the screen to notify the user without requiring any validation, and without the message blocking anything.

To display a toast, simply use the **ToastDisplay** function.



Display a toast type message

ANDROID, IOS

## MAKE THE PHONE VIBRATE!



Thanks to the **Vibration** family of functions, you can make the phone vibrate on demand.

ANDROID, IOS

## ENABLE/DISABLE AN APPLICATION

The **Activation** and **Deactivation** events of an application let you define a process to run when the application is sent to the background or reactivated by the user.

This allows, for example, to refresh data automatically, or to request a password when the (secure) application is reactivated.

ANDROID, IOS, WIN 10 MOBILE-UWP

## SPLASH SCREEN WHEN STARTING THE APPLICATION

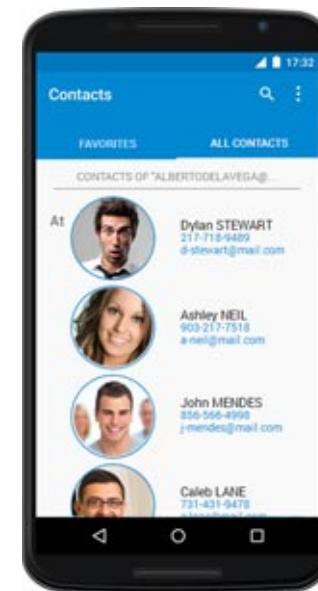
A splash screen can be automatically displayed when starting the application. Several parameters can be used to customize the launching of the splash screen.

ANDROID, IOS, WIN CE

## CONTACT LIST ACCESS

Reading, searching, creating, modifying and deleting contacts found in the phone is managed by WLanguage through the **Contact** family of functions.

Your applications can therefore share information with the contacts. For example, your application can automatically add a contact into the list of contacts.



ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## CAMERA/PHOTO CONTROL

The camera control directly displays images captured by the phone's camera. Photos and videos are supported.

What can be viewed can be saved (photos in JPG and PNG format, films in mpg, mp3 for-

mats).

The **click on camera control** event lets you execute a process when this control is clicked.

Usually it is for triggering the shutter for taking a picture or starting to record a video clip (and then stopping) by clicking the preview. This control also lets you display photos and videos.

For example, an insurance adjuster can take pictures and include them in a report, or the application can send them automatically to the headquarters, and include them automatically in the relevant report (in WINDEV format or in Word for instance).

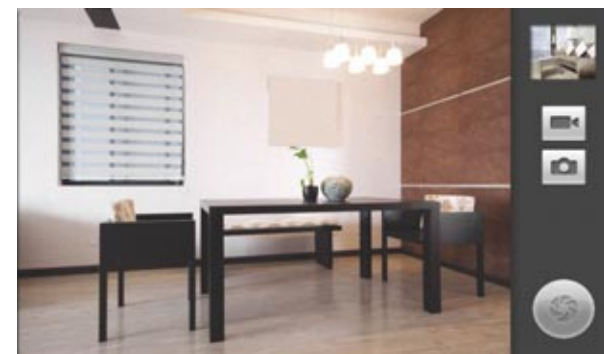
ANDROID, IOS, WIN 10 MOBILE-UWP

## MULTIMEDIA SUPPORT

In addition to the powerful Multimedia control, some multimedia functions are available in WLanguage.

The **AlbumPicker** function allows you to select an image in the device gallery or to save images in the gallery.

The application can add images to the gallery, or retrieve images from the gallery, based on the date for instance. ...



## IOT (INTERNET OF THINGS): THE BLUETOOTH OF CONNECTED OBJECTS (LOW ENERGY)

The Bluetooth LE standard (for Low Energy) is used to manage devices with

low energy consumption.

This is fundamental for managing IoT (Internet of Things).

The purpose of this standard is to allow the connected objects to operate for several months without changing bat-

tery!

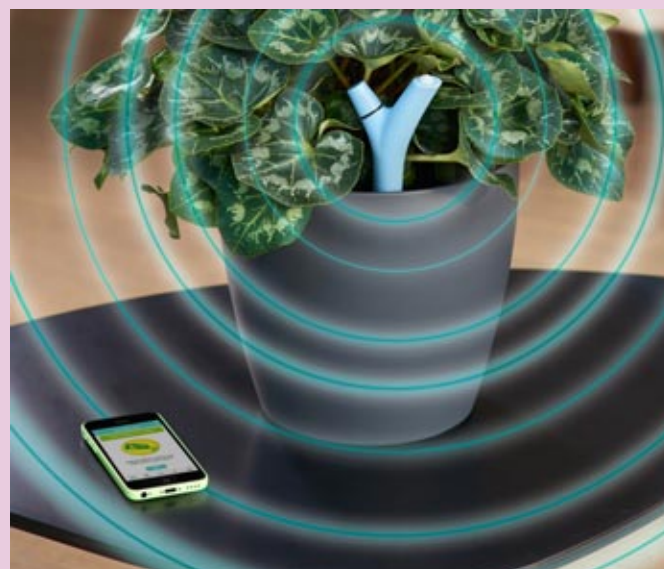
For this purpose, we're introducing the **BTLE** family of functions:

### SIGFOX

WINDEV Mobile 21 lets you use the SIGFOX low energy network.

Parrot - Flower Power - Intelligent captor for your plants

Polar - Cardiac frequency transmitter H7





ANDROID, IOS, WIN 10 MOBILE-UWP

## SPEECH SYNTHESIS

The [SpeechSynthesis](#) family of WLanguage functions lets your devices speak! Simply pass a character string or a text file.

ANDROID, IOS

## AUTOMATICALLY DIAL A PHONE NUMBER

The [tapiDialerCall](#) WLanguage function lets you trigger a call to a specified number.

ANDROID, IOS

## SENDING AN SMS

An app can open the SMS send window, which would already contain the text of the SMS and the recipient(s). The end user only has to validate the send.

ANDROID

## FINDING OUT THE CONNECTION TYPE AND THE NETWORK STATUS

The [MobileNetworkStatus](#) WLanguage function enables you to find out the network connection's type, and the quality of the reception signal.

It may be useful for an application to know whether it is connected to the Internet via Wi-Fi or 3G/4G.

For example, if the signal is spotty, a data transfer can be forbidden.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## MANAGEMENT OF NON-LATIN LANGUAGES

Non-Latin languages (Russian, Chinese ...) are supported.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## CALL TO REST & SOAP WEB SERVICES

WINDEV Mobile 21 offers integrated Web service support. Calling web services is easy to implement.

The Webservice used is imported into the source project and it is recognized by the development environment: types declared by the Webservice, procedures to call, ... Development is simplified.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## GET AND POST

Note that the [HTTPRequest](#) function is available. It allows, among other things, to send "get" or "post" requests to an application server (WEBDEV or any other type of Web server), which is useful to exchange data between applications.

ANDROID, IOS

## FUNCTIONS FOR HTTP FORMS

An HTML form returns as a result, once validated by the user, an Http form which con-

tains the data from the various controls in the HTML form.

ANDROID, IOS

## IDENTIFICATION VIA FACEBOOK

A connection mode for common applications is as follows: end users use their Facebook parameters (email, password) to authenticate themselves in the third-party application (here: yours!)

The benefit for the end user is that there are fewer passwords to remember.

WINDEV Mobile 21 lets you easily implement this type of authentication in your applications.

ANDROID, IOS, WIN 10 MOBILE-UWP

## ICALNDAR

iCalendar is a standard to exchange calendar and scheduler data.

A text file (.ics extension) contains the appointment details.

WINDEV Mobile 21 lets you easily read and write data in an iCalendar type file.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## XML

The advanced [XML](#) type is available.

Importing an XML file into the development environment automatically declares all the corresponding types necessary for easily handling the XML file.

Working with the XML file becomes child's play because the tags can be handled "in clear" in the source code. For example, [Book\[1\].Author](#) accesses the content of the "Author" tag of the first book in the XML file...

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

## JSON

JSON is supported.

ANDROID, IOS, WIN CE

## FTP FUNCTIONS

The FTP protocol is a file transfer protocol. The WLanguage [FTP](#) functions are available. This enables automatic data and document exchange through programming.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

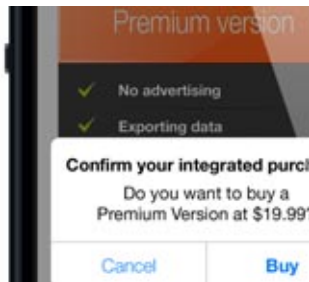
## THREAD

Mobile devices' processors are becoming more and more powerful, and come with several cores. The WLanguage [Thread](#) family of functions is available.

Parallel task management is also supported

ANDROID, IOS

## INAPP PURCHASE



*InApp purchase from an application (here on an iPhone)*

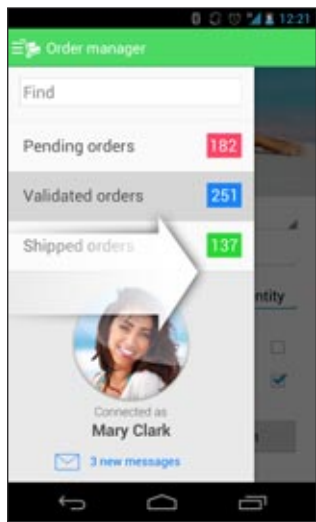
Inside an iOS or Android app it is sometime possible to buy options for the app.

This purchase is also done via the store, and is called "InApp purchase" then.

With WINDEV Mobile 21, it is possible to offer pay options in your apps.

ANDROID, IOS, WIN 10 MOBILE-UWP

## SLIDING MENU SLIDING WINDOW



*Sliding window. The window below appears grayed*

A window can come up from the left or the right of the screen.

The window that comes up can be partly displayed on top of the previous window, or can partly shift this window.

A typical use for this display is the display of a list of choices, or the configuration of an app.

The window can come up via a user gesture, or by programming.

ANDROID, IOS

## PUSH NOTIFICATION

A notification is a message that is displayed on the device, and is used to notify the user about a given event.

A push notification is sent from a remote application.

The notification sending application can be created with WINDEV 21 or WEBDEV 21. When sending the notification, you have the ability to specify an icon, a message, a sound to play, whether a led must be switched on, or whether a vibration must be triggered. The notification can also be sent from a third-party software.

You can program the process

to perform when the end user clicks the notification.



*Display of a Push notification on an iPhone*

ANDROID, IOS

## BAR CODES AND QR CODES



The QR Code, PDF147, UPC-E, Code39, Code93, Code128, Aztec, EAN 8, EAN 13, DataMatrix bar codes are decoded.

An application can get a bar code and decipher its content automatically.

ANDROID, IOS, WIN 10 MOBILE-UWP

## PRINTING IN PDF



You can print a PDF from a mobile application.

In iOS and UWP printing is done either via programming or via a report.

In Android, PDF printing is done via programming.

ANDROID, IOS

## NATIVE IOS & ANDROID FONTS

iOS is using character fonts among which some of them are specific to Apple: AppleGothic,... These fonts are owned by Apple.

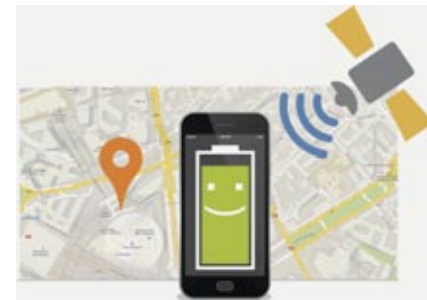
Android also uses its own fonts.

WINDEV Mobile 21 allows you to use these fonts in the editor. If this font is not available on Windows and it is selected by a control in a mobile window, a substitution font will be used temporarily to display in the editor and in the simulator of the development com-

and visible all the time or during the amount of time allowed.

ANDROID, IOS

## GEO-LOCALIZATION WITHOUT DRAINING BATTERIES



This feature automatically calls a procedure when the device is moved more than 1500 feet. This call is performed directly by the operating system, even if the device is closed.

For example, this procedure can store the position, send the position, detect the proximity of a given point: other user, store, charging station, gas station, bar, restaurant...

ANDROID, IOS

## GESTURES ON CHARTS

Gestures are supported on charts.

With 2 fingers, the user can enlarge or reduce the size of a chart. The chart can be moved using a finger. A double "tap" restores the original scale.



Reminder: this chapter only presents the features specific to mobiles. All the usual programming features are also available in WINDEV Mobile 21.

Don't hesitate to download the free version, WINDEV Mobile Express, to discover WINDEV Mobile's capabilities.





## DATABASES

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### HFSQL: THE RELIABLE, QUICK, EASY & FREE DBMS

# HFSQL®

WINDEV Mobile 21 comes with the powerful HFSQL database (HFSQL is the new name for HyperFileSQL).

Distribution of HFSQL is free.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### HFSQL CLASSIC: EMBEDDED

The HFSQL database can be installed directly on the device.

Your applications benefit from HFSQL's power.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### ACCESS TO HFSQL CLIENT/SERVER

WINDEV Mobile 21 applications directly access data that are stored in HFSQL Client/Server databases installed on a Windows or Linux server, in 64-bit or 32-bit, via Wi-Fi, network, Internet, 3G or 4G...

This means that an application found on a mobile acts in real time on enterprise data. Each device can easily access the company data.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### PROGRAMMING

Database programming is very easy: it is done either via SQL queries, or via high level WLanguage functions.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### ACCESS TO A THIRD-PARTY DATABASE

Accessing a third-party database (Oracle, SQL Server, ...) from a mobile is done via the **SQLExec** family of functions.

Simply install a (provided) web service that accesses the third-party database.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### DATA STRUCTURE DESCRIPTION

The description of the database structures is done via the data model editor that comes with the development environment.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### MANAGEMENT

Database management is easy.

All the required tools are provided: reindexing, automatic data modification, ...

The HFSQL Control Center centralizes the management for the Client/Server part.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### SECURITY: ENCRYPTION

HFSQL lets you encrypt data and indexes.

This is an important security feature for mobile devices, which can easily be taken away from their owners

The encryption key can be found in a table, in a program, entered by the user, or deduced from various elements.

ANDROID, IOS, WIN CE

### RESUME CONNECTION

The reconnection feature after an unexpected drop (Wi-Fi, 3G or 4G drop) is automatic.

The disconnected application reconnects with all the database contexts preserved.

For example if the application is positioned on the customer "SMITH" when the network goes down, when the network comes back up, the application will still be pointing to the customer "SMITH" and all the variables in the program will be correctly assigned.

This is an automatic security for your applications, and great comfort for your users.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### COMPLETE BINARY COMPATIBILITY FOR ANDROID, IOS, WINDOWS, LINUX...

HFSQL Classic, HFSQL Client/Server and HFSQL Mobile are fully compatible: data and indexes are stored in a unique format.

For example, a database can be copied directly from an iPhone to a HFSQL Client/Server server! no conversion is needed.

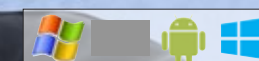
The tables (data and index files) can easily be shared or exchanged with the back office for instance.

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### MOBILE REPLICATION

Universal replication between an Android or iOS mobile on one hand, and HFSQL Client/Server and third-party databases (Oracle, SQL Server, ...) on the other hand is available.

This new features allows mobile devices to use recent embedded data, then update them, and this without a persistent connection, and without risk of data loss.



Your applications are linked to the enterprise's information system in any circumstances.

For instance, sales people are in the field, using their tablet to present products, take orders directly at the client's.

Since there is not guarantee that a 3G or 4G connection will be available at the very back of a building, nor a Wi-Fi access point, the application uses the embedded database found on the tablet.

Once the sales person is done, back to his car for instance, he can start a replication with the enterprise database.

access to SQLite, which allows easy data synchronization

ANDROID, IOS, WIN 10 MOBILE-UWP, WIN CE

### HOST YOUR DATA IN THE CLOUD



HFSQL databases can be hosted in the cloud.

The PCSCloud.net company (and other companies) proposes solutions that can be easily implemented.

This way the data is always accessible, without having to worry about the software or hardware infrastructure.

ANDROID

### SQLITE: NATIVE ACCESS

Native access to SQLite lets you natively access the data files found on Android devices via the usual WLanguage commands (**FileToScreen**, ...)

You can also access these files from a PC, to synchronize data for instance.

WINDEV 21 and WEBDEV 21 also offer native

HFSQL MOBILE CAPACITY	
Rows per table	300 millions
Size of a table	16 TB
Size of a row	16 TB
Size of a column	65,535 bytes
Columns per table	65,535
Keys per table	65,535
Key Size	65,535 bytes

### FEATURES

128-bit encryption

Referential integrity

Replication

Import Export

Transactions

Embedded

Compress/Decompress memos on the fly

### TECHNOLOGIES

Automatic Maintenance

Concurrent access management with HFSQL Client/Server

No management

Resume automatically after incident

Automatic deployment

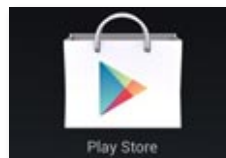
# REPLICATION



**Imagine**, 128 GB on a memory card. Now you can easily and at little cost embed large size (up to 300 million rows) secure databases onto your devices, tablets, mobiles and phones.



# DISTRIBUTION OF YOUR APPLICATIONS



The windev.com site contains hundreds of apps created with WINDEV Mobile, and distributed on iTunes and Google Play.

## DIRECT SETUP

Applications internal to the company are usually installed directly on the devices. It's easy thanks to WINDEV Mobile 21. The deployment varies depending on the operating system, please check the paragraphs specific to each system.

## DEPLOYMENT VIA THE STORES

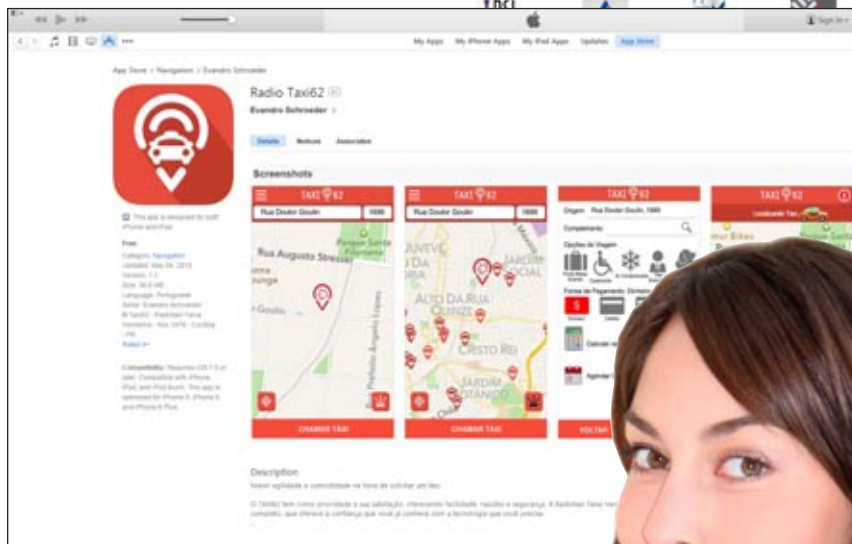
The applications developed with WINDEV Mobile 21 are easily deployed on PlayStore, Apple Store and Windows Store for a free or paid distribution. If you charge for your applications, you generate revenue for each sale. Depending on the operating system (iPhone, Android, Windows 10 Mobile), the publishing method to the market differs. Please check the "specific" paragraph for each operating system.

## PACKAGE OR BUNDLE CREATION

WINDEV Mobile 21 assists you in the creation of install files, called "packages" or "Bundle" depending on the operating system. The resource extraction functions let you granularly manage the resources embedded in the PAK (the PAK package is the install program of the Android app) or in the iOS installation bundle. The application can list the resources and extract several of them in a single operation.

## DEPLOYING DATA FILES

You can include the HFSQL data files as well as images, documents,... when creating the package (archive containing the executable and the files needed by the application). An automated file extraction mechanism from the downloaded package can be used to automatically install databases on the mobile.



2 popular stores: iTunes for iOS, and Play for Android

# ANDROID SPECIFICITIES (SMARTPHONE & TABLET)



WINDEV MOBILE 21 lets you create native applications for iPhone, iPad and iPod Touch, Android, Windows 10 Mobile, UWP, Windows CE, etc.

In addition to the common controls and features presented above, WINDEV Mobile 21 offers specific features for Android.

Therefore the features described below come in addition to the common features.

## WIZARD FOR WINDOW CREATION

WINDEV Mobile 21 offers a wizard that makes it easy to create windows following the Android standard. The wizard offers an "action bar" located at the top, a repeat area in the middle, a pull-up menu at the bottom (which is called using the "menu" key of the phone)...



The Android window creation wizard

## GENERATE REVENUES: AD CONTROL

The "Ad" control is available for Android. It uses the Google "AdMob" protocol. Your applications can display ads served by Google and generate revenues. Graphical formats and text formats are supported (banner ads and text ads").



Display ads in your mobile apps and generate revenues!

## "MATERIAL DESIGN" LOOK

The material Design look has been made popular by Google. By default, the applications created by WINDEV Mobile 21 use the Material Design's elements: look and animation of the Action Bar, look of the "info", "Error", "Dialog", "Combo" windows, of the Check box controls, progress bar ...

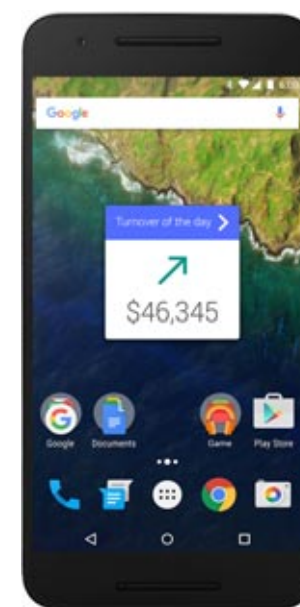
## PRINT FUNCTIONS GOOGLE CLOUD PRINT

The GglPrintDocument function lets you print an existing document via Google's cloud print.

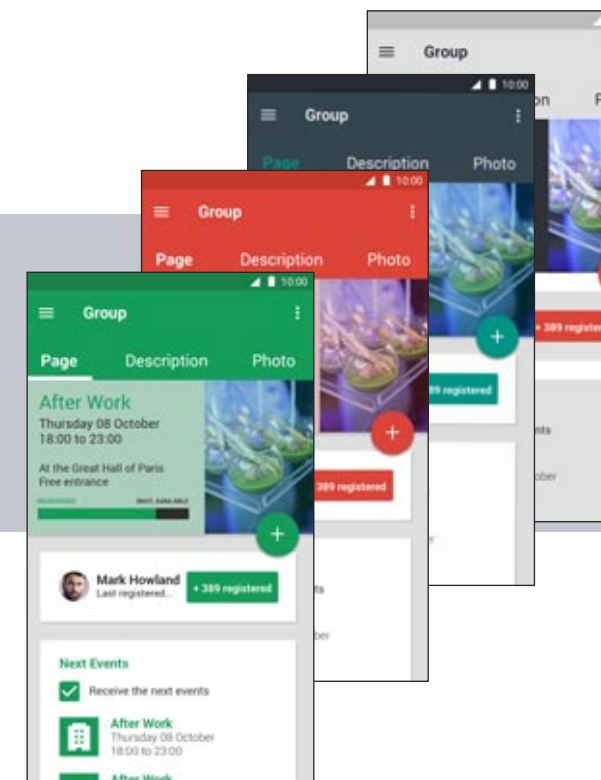


## CREATING WIDGETS

A widget is a window that can be pinned to a home screen. An application created with WINDEV Mobile 21 can contain one or more Widget type windows.



WINDEV Mobile 21 lets you create widgets



## NFC: DATA TRANSFER AND TOUCHLESS PAYMENT

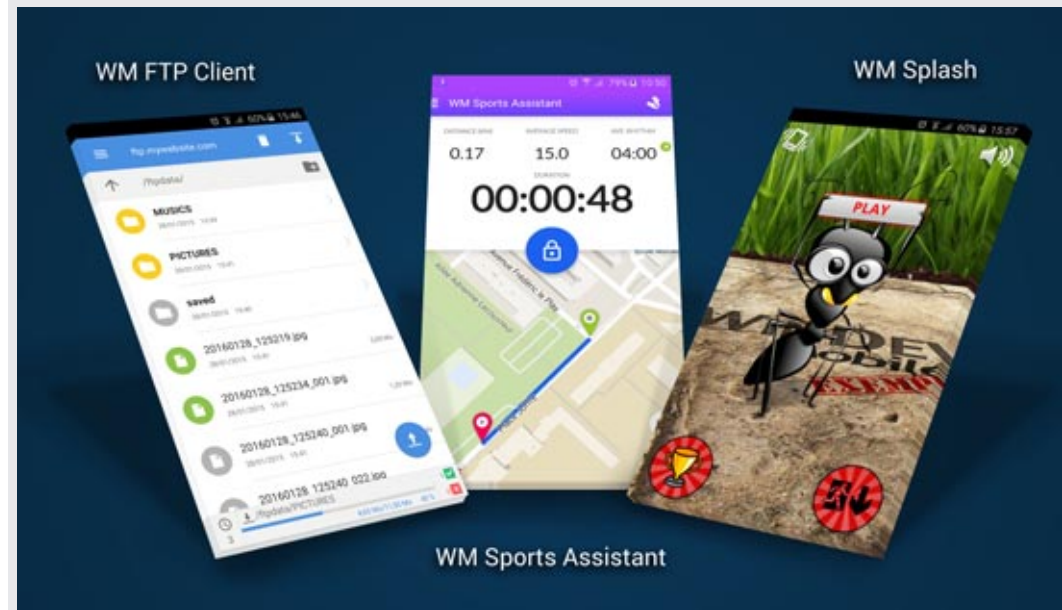
NFC, acronym for Near Field Communication, lets you transfer data between two devices without touching, or a mobile device and a machine, or with a chip that can be integrated almost anywhere (in a label, in a poster or in materials...). The NFC standard lets you read and write data. WINDEV Mobile 21 brings easy support for NFC to your applications. The NFC family of functions makes programming easy: NFCReadTag, NFCWriteTag, NFCSendTag and NFCStatus are used to manage the NFC standard. Thanks to this standard, it is now possible to exchange data between 2 smartphones just by having them close to each other.





## AVAILABLE EXAMPLES

### ANDROID EXAMPLES



A large number of examples are provided with Android

Among these examples, you'll find:

- **FTP client:** FTP client for Android device. Available on the Play Store.
- **Explorer:** file explorer for Android
- **Contact management:** custom contact management example
- **Order management:** order taking example (customer and product management, etc.)
- **Registration:** Attendance manager (seminar, ...)
- **GPS:** example on GPS features use (longitude, latitude, altitude, speed and direction)
- **Geo-localization:** Proximity detection management
- **RSS reader:** RSS stream reader with management of images and favorites
- **Password:** creation of a password "chest" (digicode, internet sites, etc.) Available on the Play Store.
- **Notes (reminder):** graphic note taking
- **Speech synthesis:** example of the use of speech synthesis features
- **System:** example for using system features specific to Android (toast, notifications, Wi-Fi, ...)

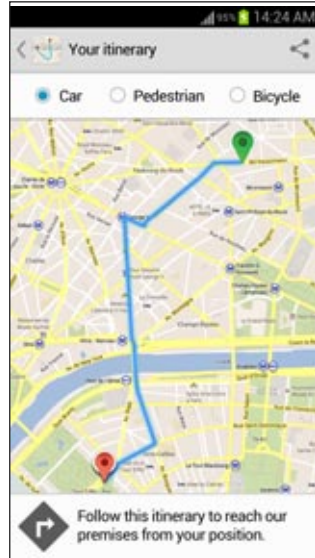
- **Game:** example of gaming application, usually intended for Google Play distribution. Available on the Play Store.
- **Sport Assistant:** sport following: distance calculation, average speed, display on a map, etc. Available on the Play Store.
- **Inventory:** example of inventory with backup in a database
- **Expense accounts:** complete expense management example. Available on the Play Store.
- **WM Food :** Display the composition of a food product by scanning its bar code (OpenFoodFacts database). Available on the Play Store.
- **Poll:** manage a poll on a tablet.
- **Shopping:** Shopping list management. Available on the Play Store.
- **Quiz:** Quiz management.
- **ToDo List:** management of a task list
- ...



This is also thanks to this standard that touchless payment can happen.

### CREATE AN ITINERARY ON THE MAP CONTROL

On a Google map, the [MapAddItinerary](#) type functions let you easily define an itinerary.



*The itinerary is drawn by the WINDEV Mobile 21 application*

### BUTTON FIXED ON THE SCREEN (THEREFORE FLOATING INSIDE THE WINDOW)

A floating button is fixed on the screen: it floats inside the window.

This is a button that will always be visible regardless of the scrolling performed by the user.

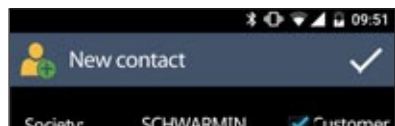
This type of button lets you create applications with the Material Design look.



### ACTION BAR



*"Action bar" in a tablet presenting the types of dishes*



*On a blue background, an action bar*

You can customize the "Action bar": the icons included, the popup menu, and the presence of a "back" button or not. You can also define "action bar" panes.

### START AN APPLICATION WHEN STARTING THE DEVICE

When generating the application, you can specify that the application must automatically start when the computer is switched on.

This is useful for instance for a self-service demo.

### RUN AN APPLICATION IN THE BACKGROUND

An application can be:

- in the foreground,
- visible,
- in use,
- in the background.

An application in the background is by default suspended by the system (to save the battery).

But in some cases, the application designer may want some processes to keep on running even though the application is in the background, for example to display notifications, or to play music.

It's possible via the "Persistent Threads" notion. Simply place the processes that need to run all the time in a procedure, and execute this procedure in a "persistent thread".

### VOICE RECOGNITION, VOICE SYNTHESIS

Phones are also good listeners!

Simply dictate a text to the [SpeechRecognitionTrigger](#) function for this text to be converted into character strings!

### CONTROL YOUR ANDROID WATCH

It is easy to create apps specifically for the smart watches that use Android.

Apps can also control Android and Tizen watches.

### FINDING OUT A DEVICE'S UNIQUE IDENTIFIER

Each Android device (phone, tablet) has a unique number inserted by the manufacturer (the ROM provider specifically).

The [sysIdentifier](#) function lets you read this number.

This number can be used to increase the security of an application: an application can be set to operate on specific or authorized devices only.

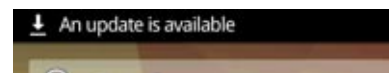


### CALLING JAVA (AND MAVEN) LIBRARIES

You can natively call Java libraries provided by third-parties: control a device

In the code editor, you can also directly enter Java code in lieu of WLanguage code (feature useful for troubleshooting !).

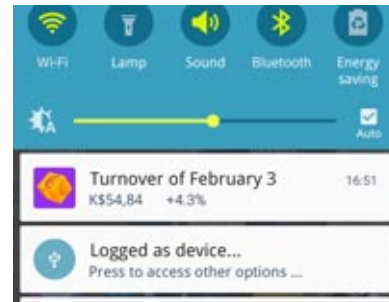
### NOTIFICATION



*A notification, top left*

Icons found at the top of an Android home screen are "Notification" icons.

They can be "expanded" to show their details



*The expanded notification*

Thanks to the [Notification](#) family of WinDev Mobile 21 functions, it is easy to add icons (and their details) to the icon bar and to delete them, to perform sound notification, vibration and light up the LED, and even display a progress bar.

For example: the application received a message, the information has been sent, the application is (or is not) connected, you have an appointment

5 types of notifications are supported by WINDEV Mobile 21:

- notification in the home screen bar
- sound notification
- notification by vibration
- Notification by switching the face LED on
- rich notification.



*Turn on the phone LED in the color of your choice*

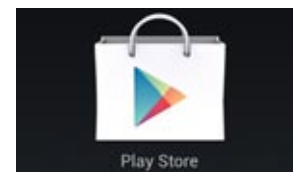
### RECALL AN APPLICATION FROM A NOTIFICATION

An application running in the background can send a notification to the system.

Clicking this notification can reactivate the application.

All you have to do is position the WLanguage [..ActiveApplication](#) property of the [Notification](#) type.

### DEPLOYMENT: EASY

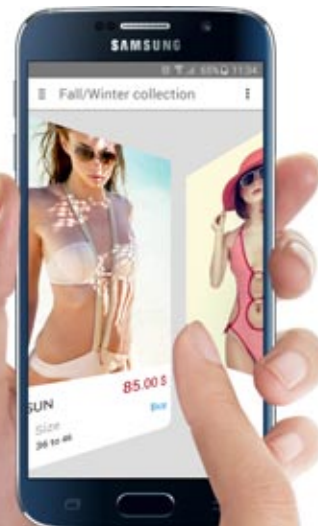


Your application's deployment is done either by directly copying the application from the PC to the device or by using the Play Store.

The applications deployed on Play Store can be free or not. If the application is not free, you get revenues every time your application is downloaded.

To be deployed, an application must be signed. The signature functionalities are provided by WINDEV Mobile 21.

Deploying an Android application developed with WINDEV Mobile 21 is very easy!







# IOS (IPHONE, IPAD) SPECIAL FEATURES

WINDEV MOBILE 21 lets you create native applications for iOS, Android, Windows 10 Mobile, Windows CE, etc.

In addition to the common controls and features presented above, WINDEV Mobile 21 offers specific features for iOS.

The following features are in addition to the common features.

## WIZARD FOR WINDOW CREATION

WINDEV Mobile 21 offers a wizard that makes it easy to create windows following the iOS standard. By default, a navigation bar is located at the top, with the "Back" button, a bar at the bottom, etc.



The iOS window creation wizard

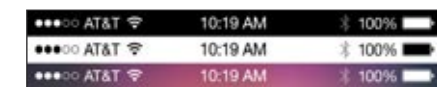
## SUPPORT FOR IOS 9

iOS 9 is supported in WINDEV Mobile 21. A skin template adapted for iOS 9 is provided.

## CHOOSE THE SYSTEM BAR

On iOS 8 and 9, WINDEV Mobile 21 allows the application to choose for each window:

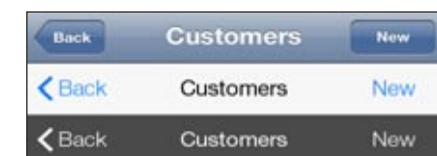
- not to have a system bar,
- to have a transparent system bar with white text,
- to have a transparent system bar with black text.



3 examples of system bars

## ABILITY TO CHOOSE THE NAVIGATION BAR

The navigation bar of an iOS application can adopt the project's skin template.



3 examples of navigation bars

## SENDING AND RECEIVING EMAILS

Functions for sending and receiving emails are available in WLanguage.

It is also possible to trigger by programming the opening of the standard outgoing mail window with the fields' contents already filled out (subject, title, attachment...).

## APPLE MAP CONTROL



The Map control is used to display a map in the formats supported by the iPhone (Google Maps and Apple Maps).

The map displayed can be used in your applications, markers can be set, the display mode (map or satellite) can be changed, etc..



## CREATE AN ITINERARY ON THE MAP CONTROL

On an Apple map, the [MapAddItinerary](#) type functions let you easily define an itinerary.

## SHARING FILES VIA ITUNES

An iOS application can be authorized to share files with a PC or a Mac.

At generation time, WINDEV Mobile 21 offers

an option that can activate file sharing. The end user can work with his data on the hardware of his choice. You can also copy HFSQL data files this way.



## FINGER ACTION ON CHARTS

On iOS, gesture is supported on charts. With 2 fingers, the user can enlarge or reduce the size of a chart.

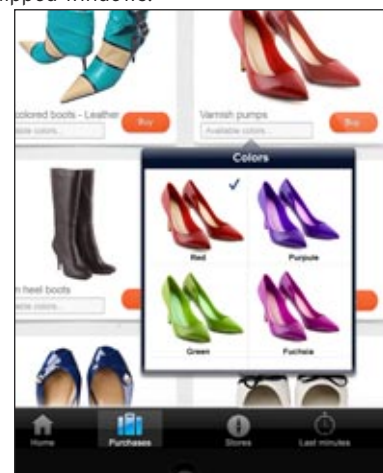
Pressing a finger on the chart displays the value of this area, or calls a programmed process.

## NOTIFICATION

Notifications are supported on iOS.

## POPUP

It is possible to open Popup windows. You can also create non-maximized and clipped windows.



Here a popup for selecting pumps' color (window excerpt)

## PDF CREATION

WINDEV Mobile 21 lets you create PDF reports through the report editor.

You benefit from the power of reports: bar codes, graphics, tables, multicolumn, etc. A report can be printed or sent via email.

## APPLICATION COMPILATION

The applications are compiled with Windows Mobile 21. They must be signed then. To do so, use your "ios developer" certificate obtained from Apple to sign your application. This operation is performed on a Mac.

## OBJECTIVE-C IN YOUR WINDEV MOBILE 21 APPS

You can natively call or include Objective-C code in your applications.

You can also directly enter Objective-C code in lieu of WLanguage code (feature useful for troubleshooting!)

## NATIVE CALLBACK TO WLANGUAGE

You can use APIs that call Callback procedures.

## SECURE HTTPS AND WEB SERVICES

The use of secure connections and web services is possible.

## FINANCE

All the WLanguage functions for financial features management are available for iOS.

## BUNDLE RESOURCE MANAGEMENT

There are functions to let you manage the resources embedded in the bundle more granularly (the bundle is the install for the iOS app to install).

The application can list the resources and extract several of them in a single operation.

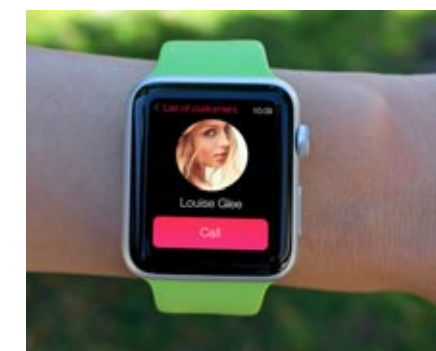
## WRITING A NUMBER ON AN APPLICATION'S ICON

The [SysIconBadge](#) function lets you include a number on the app's icon.

This is useful for displaying the number of messages received or information to process for instance.



## APPLE WATCH



Version 21 of WINDEV Mobile lets you create native applications for the Apple Watch. These applications can communicate with apps on iPhones or iPads.

Over 250 WLanguage functions are already available in this version.

## SPLIT WINDOW

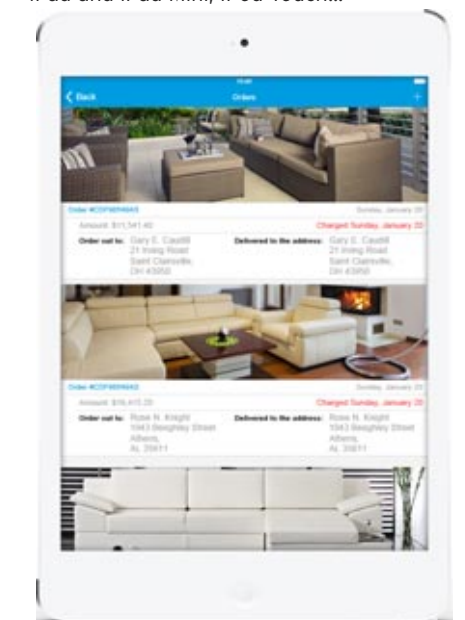


On devices where split is supported, 2 windows from 2 different WINDEV Mobile 21 apps can be displayed simultaneously side by side.

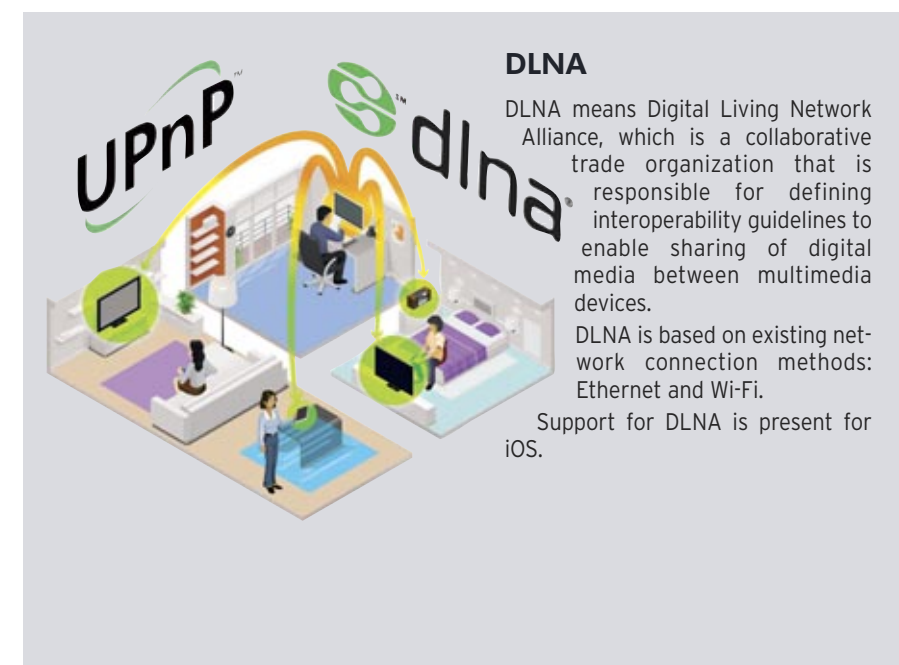


## ALL THE IOS DEVICES ARE SUPPORTED

WINDEV Mobile 21 allows you to develop applications for all the iOS devices: iPhone, iPad and iPad Mini, iPod Touch...



WINDEV Mobile 21 application on iPad mini



## DLNA

DLNA means Digital Living Network Alliance, which is a collaborative trade organization that is responsible for defining interoperability guidelines to enable sharing of digital media between multimedia devices.

DLNA is based on existing network connection methods: Ethernet and Wi-Fi.

Support for DLNA is present for iOS.





## DEPLOYMENT: EASY

### DEPLOYMENT OF APPLICATIONS

WINDEV Mobile 21 lets you choose one of 3 ways offered by Apple to deploy your applications:

- AppStore
- Ad Hoc distribution
- In-House Distribution.



The distribution of an application via the AppStore depends upon approval from Apple (your application must go through and pass a validation process).

An application distributed via the AppStore is visible and accessible by the public.

“Ad Hoc” and “In-House” type distributions (see below) let you distribute applications without having to validate them with Apple, and without having to share them publicly.

Your professional applications are protected this way from any unwanted publicity, and from download by third-parties.

You master the distribution of your applications and you don't have to pay any commissions.

### “AD HOC” DEPLOYMENT

The Ad Hoc deployment mode lets you deploy your application on a maximum of 100 devices.

The installation is done manually from each device.

The application does not need to go through Apple's validation process, and is not publicly available.

### “IN-HOUSE” DEPLOYMENT

The “In-house” deployment mode remove the constraints on the maximum number of devices: the application can be deployed on as many devices as you want.

This type of deployment also removes the constraints of the physical installation. The deployment is performed via a web server, which eliminates manual operations on each device.

The application does not need to go through Apple's validation process.

This type of deployment requires acquiring a special license from Apple.

### DEPLOYMENT ON THE APPSTORE

Deployment via the AppStore, Apple's online store, is possible for some applications.

Any application intended to be deployed on the AppStore must be validated and accepted by Apple beforehand.

*These 3 deployment methods depend only on Apple and may change at any time. You may need to have a license or a subscription with Apple, or to have special hardware from Apple. Please visit the Apple's web site to check the accuracy of the information and the specific conditions at the time you're reading this information.*

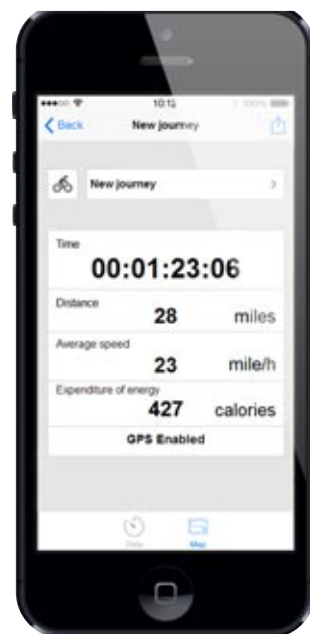
## AVAILABLE EXAMPLES

### AMONG THE IOS EXAMPLES

A large number of examples and their source code are provided for iOS.

Among these examples, you'll find:

- Food
- Geo-localization



- Poll management
- ToDo List
- Shopping (bar code shopping list)
- Stopwatch,
- Click Chart;
- CRM, Loan,
- Regular expressions,
- Financial functions,
- Contact management,
- Order management,
- Subscribers,
- RSS reader,
- Password,
- Expense accounts,
- Expense accounts,
- Poker,
- Stocks,
- System,
- Tic Tac Toe,
- FTPClient
- Sport Assistant
- Quiz
- Etc.

## UWP SPECIFIC FEATURES (WINDOWS 10 MOBILE)

WINDEV MOBILE 21 lets you create native applications for iPhone, iPad and iPod Touch, Android, Windows 10 Mobile, Windows CE, etc.

*In addition to the common controls and features presented above, WINDEV Mobile 21 offers specific features for UWP (Windows 10 Mobile).*

*The following features are in addition to the common features.*

### NATIVE UWP APPS

WINDEV Mobile 21 generates native applications for UWP (UWP is the acronym for Universal Windows Platform).

### TILE MANAGEMENT



A tile is made of an icon, a background color, and optionally some content.

You can customize the background color and the icon.

The [Tile](#) family of functions lets you modify the format of the tile (text, image, text & image, etc.) and its content which can be scrolling.

You can also display a counter in the corner of the tile.

### MAP CONTROL (BING)

The map control in Windows 10 Mobile lets you display “Bing” maps.

You can add itineraries, markers, ...

### CREATE PDF REPORTS

You can create PDF reports.

### TABLET/PC

Applications created with WINDEV Mobile 21 work on Windows 10 and higher.

Anchors and layouts let your applications adapt to the different screen sizes.

### CONTINUUM

The “Continuum” concept lets you plug a smartphone into a monitor. In this case, the application adapts to the the monitor and uses its capabilities. WINDEV Mobile 21 lets you create “Continuum” apps .

### DEBUGGING

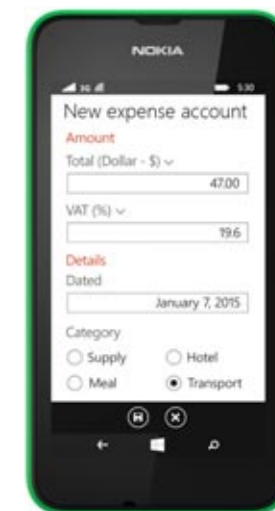
The debugger is available in “simulator” mode in the WINDEV Mobile editor.

### API: NATIVE CALLS TO .NET ASSEMBLIES

You can call .Net assemblies (universal Windows class libraries) and APIs (Universal Windows Component) from the WLanguage code.

The classes of the assemblies are handled natively from the environment (call to the methods of these classes).

You can implement “delegate” methods” that will be called back.



### WINDOWS STORE

Windows 10 Mobile and UWP applications are distributed by publishing them on the Windows Store of Microsoft.

Applications developed with WINDEV Mobile 21 are easily deployed either via direct copy to the phone (limited number of phones) or via the store.

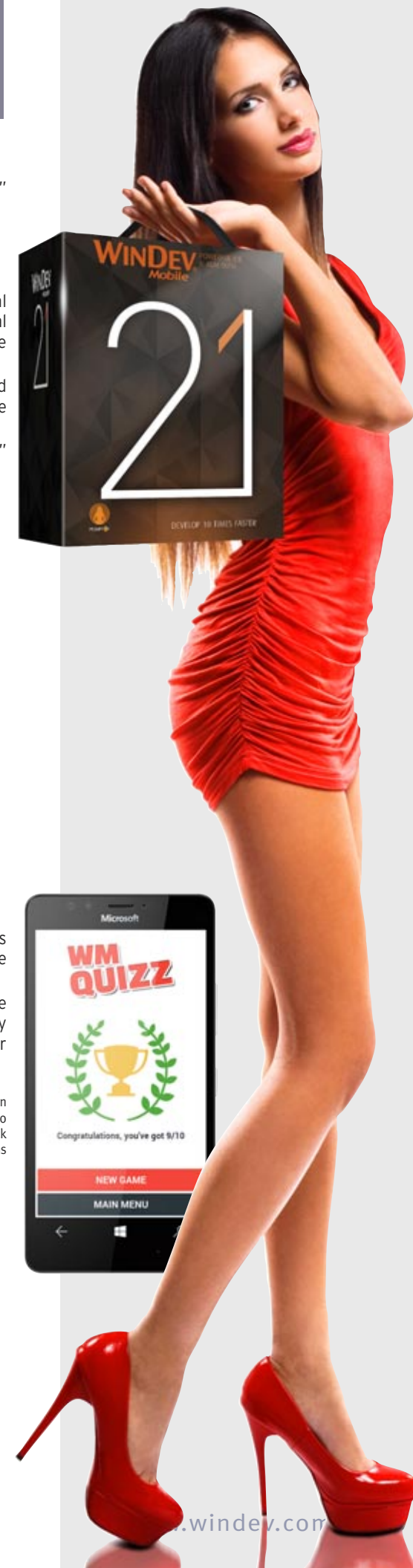
For deployment on the store, the conditions depend on Microsoft and may change at any time. You may need to have a license or a subscription with Microsoft. Please check the accuracy of the information and the specific conditions at the time you're reading this information.

### AMONG THE UWP EXAMPLES

Several examples are provided for UWP.

Among these, you will find:

- Password management
- Note management
- Stopwatch
- Management of orders
- Quiz







# WINDOWS CE SPECIFIC FEATURES

WINDEV MOBILE 21 lets you create native applications for iPhone, iPad and iPod Touch, Android, Windows 10 Mobile, Windows CE, etc.

In addition to the common controls and features presented above, WINDEV Mobile 21 offers specific features for **Windows Mobile and CE**.

These features come in addition to the common features.

## WINDOWS MOBILE & WINDOWS CE

Today, applications developed on Windows Mobile and Windows CE are mainly professional and industrial applications, deployed on special devices (rugged devices, ...)

WINDEV Mobile 21 allows you to easily develop applications intended to be run on Windows Mobile or Windows CE

## EASY CHARTS

A chart builder is available on Mobile: you create charts on Mobile devices without any programming

## TAPI ACCESS (TELEPHONY)

TAPI access (telephony functions) is done natively using WLanguage: automatically dial a phone number, ...

## DLL AND .NET ASSEMBLY CALL

Most suppliers of add-on hardware (GPS, scanner, bar code reader, RFID reader, etc.) provide access drivers for their equipments. These drivers are provided in the form of native DLLs or sometime as .Net assemblies.

These communication modes via DLL or via a .Net assembly are supported by WINDEV Mobile 21.

## DYNAMIC COMPILATION

Dynamic compilation (creation, compilation and code execution by an application) is available on WINDEV Mobile 21.

## PRINTED REPORTS

WINDEV Mobile 21 allows you to easily create some reports via the report generator included in the environment

The report is created in standard PCL mobile format

You can also create reports using the print commands from the **iPrint** family of WLanguage functions

For printers that do not respect the PCL standard, you can also program the control

sequences directly

## PRINTING BAR CODES: ALL!

Printing a bar code from the device can be useful!

WINDEV Mobile allows you to do this directly, via a connection between the mobile and the printer, or via the printer embedded on the terminal. The printer must simply be "PCL" compatible

The supported bar codes are: UPCA, UPCE, EAN13, EAN8, Interleaved 2 of 5, Codabar, MSI Code, Code 39, Code 93, Code 128, EAN 128, PDF 417, Datamatrix...

## RFID

Thanks to WINDEV Mobile 21 you can easily develop applications supporting the "RFID" technology".

The application remotely reads and writes information stored on a chip with an integrated antenna. The chip is embedded (or glued) inside an object or on packaging: complete traceability!



A reader, a RFID chip model (there are dozens of models)

## WHAT LINK TO THE PC?

If a link must be created, the following modes are available:

- Unidirectional or bidirectional replication (synchronization)
- Infrared link
- Bluetooth
- Wi-Fi
- Cable (ActiveSync on older Windows or controlled application)
- Modem or Internet link
- Telephone (Edge, 3G, 4G...)
- Other methods.

## DATABASES

### DATA ACCESS LOCAL, REAL TIME OR REPLICATED

Database access is done based on your needs and choices: local (data on the device), or in real time where the device is used (wireless network), or in real time anywhere in the world (3G, 4G, etc.), or by replication, the data is synchronized then (via ActiveSync or via replication)

## HFSQL

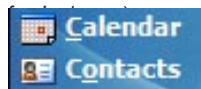
WINDEV Mobile comes with the powerful HFSQL database. This easily embedded database doesn't require any administration.

## AS/400

Native AS/400 access is offered (additional).

## CEDB

WINDEV Mobile 21 also natively supports "CEDB" type files, which are used by a large number of standard applications (Outlook



Your applications directly read and write in the Calendar, in Outlook, in the Task list...

## ACCESS TO THE IS DATABASES.

WINDEV Mobile allows easy access to the existing IS (Information System) databases. Applications access the current database in real time or via replication, using wired or wireless connections.

## REPLICATION

WINDEV Mobile lets you synchronize files via "ActiveSync" (old Windows) or via the "Universal replication" mechanism, which allows replication between different databases (HFSQL and Oracle for instance).

## DEPLOYMENT: EASY

## SUPPORTED PROCESSORS

All the ARM architecture processors are supported.

## MSI AND CAB SETUP

Generating mobile applications in "CAB" format (the entire application is stored in a .CAB file) allows you to "paste" this .CAB file onto the device that installs it later. The MSI format is also supported

## APPLICATION UPDATE

Updating an application is done automatically via a connection to the PC or a remote connection via ActiveSync (old Windows), 3G, 4G, Internet.

## TOOLS

### SPECIAL TOOLS PROVIDED WITH THE PRODUCT

In addition to the usual tools (that are supplied with WINDEV), WINDEV Mobile 21 is supplied with tools useful during the development, fine-tuning and presentation phases.

**WDEXPLORER** is a tool for viewing files and directories found on a mobile device from a PC.

**WDCEDB** lets you view and access the data found in the CEDB files (.cdb) of a mobile device: appointments, contacts...

**WDCapture** lets you build from a PC screen copies or videos of what is displayed on the screen of the mobile device connected to the PC.

**WRegistry** lets you easily view the content of a mobile device's registry.



## PROVIDED COMPONENTS AND EXAMPLES

Windows Mobile and Windows CE are operating systems of relatively older conception, thus a large number of examples and components are provided to make it easier to use them in a more modern way on devices.

### AMONG THE PROVIDED COMPONENTS:

#### Signature

Allows you to easily include a ready-to-use "Signature" control in your WinDev Mobile applications.

#### Time limit

This example explains how to implement a time limit, as well as a system for enabling the software.

#### GPS

Used to interrogate a GPS to retrieve a longitude, a latitude, a speed, an altitude.

**Specific: Falcon, Motorola, Pidion, Opticon, Datalogic, Paxar, Intermec**  
To access features specific to each of these models.

#### GANTT

Displays a Gantt chart.

#### Login Management

Manages the identification in an application from a login and a password.

## PC Directory Picker

Selects a directory from a WINDEV application.

## THE PROVIDED EXAMPLES

### Pocket .Net

Use example for a .Net assembly (here to list the Wi-Fi networks).

### Pocket Managing Contacts

Managing contacts.

### Pocket Managing Orders

Simplified management of orders/invoices.

### Pocket Inventory

Inventory management.

### Pocket Registered

Presence Manager: keeps track of attendance for a seminar.

### Sending SMS

This example sends SMS.

### Virtual Keyboard

Fully customizable virtual keyboards.

### Map

This example is a light version of WDMAP. It allows you to view and modify data tables in HFSQL Mobile format on a device directly

### PC CDB Browser

This example is used to access the standard databases (.cdb).

### Expense Reports

Manages business expenses.

### FTPClient

This example shows the content on an FTP server. It can also be used to download, rename or delete files.

### Using sockets

These examples present the functions for managing the sockets.

### Poll

Creates and conducts polls.

### Loan

This example is used to simulate loan calculations and to display the corresponding amortization tables.

### Financial functions

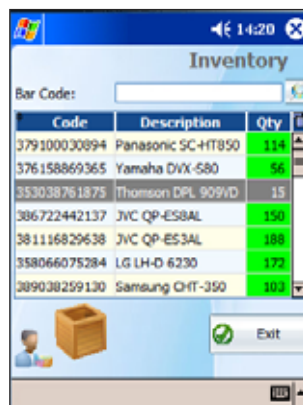
Use of financial functions.

### Stocks

These examples are used to manage the stocks. You have the ability to synchronize the data entered in the two projects on the device and on the PC.

### Password

Example for a "box" of passwords.



### Tasks

Lets you enter a list of tasks (with priority management, due date, automatic reminder)

### MIME extraction

This example is used to extract the attachments found in an email

### Poker

This example is used to play poker.

### Tic Tac Toe

This example illustrates the use of the stylus and object movement

### Slide show & Photo album



Image viewer for device. Lets you view, import and/or export a device's photos from/to a PC.

### Pool of threads

This example presents the use of threads. (parallel processes).

### Statistics

This example performs statistical calculations.

### Telephony

Telephony application usable with a device with phone capabilities.

### Notes

This example is used to draw graphic "notes" and save them with keywords.

### Managing the shopping lists

These examples are used to manage a list of stores, departments, products and purchases

### Beach Booking

These examples are used to manage the bookings for private beaches.

### Stopwatch

Visual digital stopwatch.

### APN

This example manages the device's camera.

These examples and components are provided with their source code. You can freely use these examples in your applications, or to analyze their architecture!



COMMUNICATION WITH MOBILES



Types of connection to the IS databases

	HFSQL Classic	HFSQL C/S	SQL Server	Oracle	AS/400	SQLite	Text file	Binary file	XML	Any database	Cloud
Android	•	•/•	•	•	•	•	•/•	•/•	•/•	•	•/•
iOS	•	•/•	•	•	•	•	•/•	•/•	•/•	•	•/•
W10 Mobile	•	•/•	•	•	•	•	•/•	•/•	•/•	•	•/•
UWP	•	•/•	•	•	•	•	•/•	•/•	•/•	•	•/•
W /CE	•	•/•	•	•	•/•	•	•/•	•/•	•/•	•	•/•

- Access by Web server
- Native access

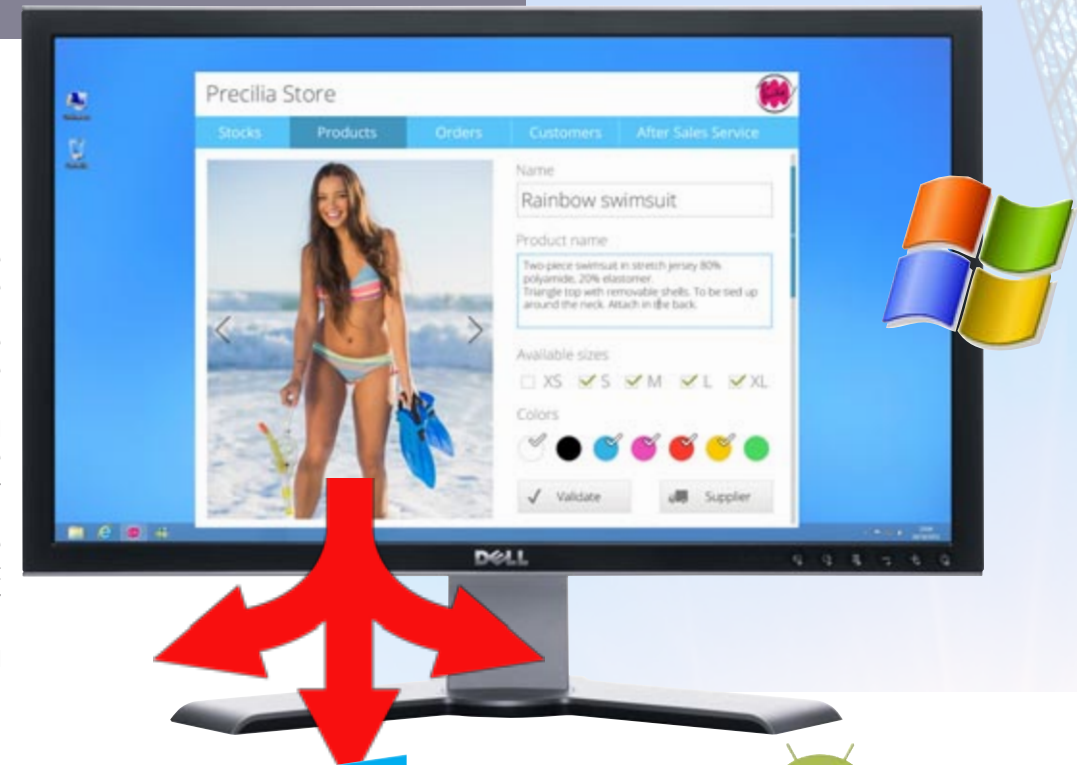
With WINDEV Mobile 21, you easily and natively access your mobile device's resources. Your applications totally integrates with your existing code (IS, database, web services, email, ...). Thanks to WINDEV Mobile 21, your mobile device becomes an intelligent peripheral of your IS.

WINDEV/WINDEV Mobile compatibility (native applications)



YOU HAVE EXISTING WINDEV CODE? BRING IT OVER TO MOBILE IN A FEW HOURS!

WINDEV applications come over to the mobile side quickly: resize the windows to adapt them to mobile sizes, delete processes not needed for mobile, massage the code a little bit, and voilà, you got a great mobile app! The portability between WINDEV and WINDEV Mobile allows you to create high performance mobile applications in record time. Your competitors who didn't choose the right development tools must redevelop, you smartly reuse your existing code! You gain time, quality, features all within budgets: congratulations!



EVERYTHING IS NATIVE AND COMPATIBLE

With WINDEV everything is compatible: code of course, but also windows, reports, queries, databases, data model ... From the mobile, you access the data whether local or via the company's information system, or via the cloud.



## QUESTIONS ANSWERS

**The same copy of WINDEV Mobile 21 lets you create applications for iPhone and iPad, Android, UWP, Windows 10 Mobile, Windows CE?**

Yes. And your code and windows are compatible.

**Do I need to own WINDEV?**

No, WINDEV Mobile is a stand-alone software. If you have existing WINDEV programs; you can directly transform your Windows or Linux applications into iOS, Android or Windows Mobile.

**What is the main benefit of WINDEV Mobile 21?**

The simple fact that you can develop an application for mobile devices with the same ease-of use as with WINDEV is a fantastic benefit!

The portability of the code, windows, classes, data ... is another unmatched benefit.

**Do I need to pay royalties on applications developed using WINDEV Mobile?**

No, you can freely distribute your applications developed using WINDEV Mobile, you don't have to pay any royalties to PC SOFT. Deploy without constraints!

**Can I run the test of the application currently developed on the development PC?**

The development is performed on a standard PC, and the application being developed can be tested at any time using the simulator provided with the product.

**Why is the Technical Support on WINDEV Mobile free?**

PC SOFT trusts its products and therefore offers free technical support for WINDEV Mobile. Fifteen inquiries (by Internet) are offered\*.

**Is there a professional Newsgroup dedicated to WINDEV Mobile?**

Yes; you can share your experience with the developer community.

**How long will it take me to get trained?**

If you know WINDEV, only one day is needed; otherwise a week is enough.

Contact us, we're at your service!

## APPLICATION EXAMPLES

Autonomous **mobile** application: order taking, delivery, meter reading, customer service

Custom appointment management, link to the company's IS

**Quote management**, real-time invoicing (email invoices)

Bank account management, stock orders, portfolio management

Application with replication (physical, via Bluetooth or Wi-Fi, or via phone or Internet or the **Cloud**)

Wireless local area network application: mobile communication with the enterprise's network in real time

Application with secure access to your enterprise's data

**Real-time** remote application, via 3G or 4G

Real-time car inventory for auto dealerships

Crop tracking, **GPS marking** of elements to monitor (vine for instance)

Live creation of pages for real estate (with photo taking)

**Industrial machinery control**

Geolocalization application, trip optimization

Dashboard for decision makers

Restaurant menu on tablet

Subscription management and app for reading magazines on tablet

Display TV program suggestions based on viewer profile

Game, quizz, MCQ, eLearning

Price comparison, restaurant locator, real-estate application, work site location, catalog, wine list, telephony, address directory, plot management, medication list, ideal weight calculation, car check, interactive rescuer, ...

Data aggregation

**time tracker** for services

Apps distributed on a **Store** or a Market

And any other application you may dream up

## CREATE OUTSTANDING MOBILE APPLICATIONS



## SEE COMPANY TESTIMONIALS ABOUT WINDEV MOBILE

Please visit [www.windev.com](http://www.windev.com)



## ACT NOW!

### TRAINING: EASY!

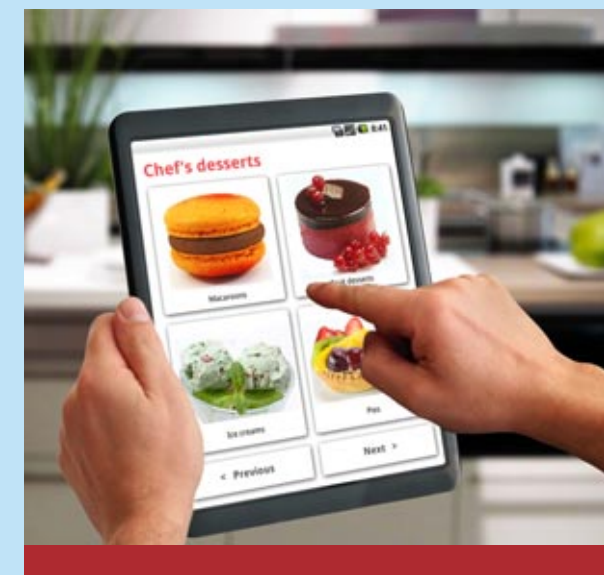
WINDEV Mobile comes with a complete online help system, and its documentation: a tutorial and a concept guide.

### ORDER TODAY, DEPLOY IN A WEEK!

With the WINDEV Mobile Integrated Development Environment you can now develop on tablets, Smartphones and industrial terminals.

Mobile computing is taking over the world; over a billion smartphones and tablets will be sold in 2016. WINDEV Mobile 21 is your best ally for developing today and quickly, high performance applications on this hardware.

### ORDER YOUR COPY OF WINDEV MOBILE 21 TODAY!





# WINDEV<sup>®</sup> *Mobile*

INTEGRATED DEVELOPMENT  
PLATFORM



[www.windev.com](http://www.windev.com)