

DEVELOP 10 TIMES FASTER

WINDEV®



INTEGRATED DEVELOPMENT PLATFORM

Windows, .Net, Linux, Java

Windows 11, 10, 8, 7, Server 2022, 2019, 2016, 2012

All databases
Free deployment

MULTI-PLATFORM CODE:
Windows, .Net, Linux, Java,
PHP, J2EE, Internet, Ajax,
Android, UWP, iOS ...



WELCOME TO A WORLD OF PERFORMANCE

INTEGRATED DEVELOPMENT PLATFORM IDE - DEVOPS

EVERYTHING IS INTEGRATED IN WINDEV

1 IDEAS, REQUIREMENTS

2 DESIGN

REQUIREMENT MANAGEMENT

UML
9 Diagrams

ANALYSIS
Data structures, CDM, LDM

RAD PATTERN

STYLE BOOK

FLEXIBLE MODELING

TEMPLATES
windows, reports, controls, ...

CODE STYLE

6 PRODUCTION

DYNAMIC AUDIT

CONTROL CENTERS:
- Applications
- Feedback

TELEMETRY
Collection and usage statistics, configuration, events...

GENERATOR OF REPORTS AND QUERIES

MONITORING ROBOT

DEBUG DUMP FILE

PROFILING

AAF
(Automatic Application Features)



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YOU

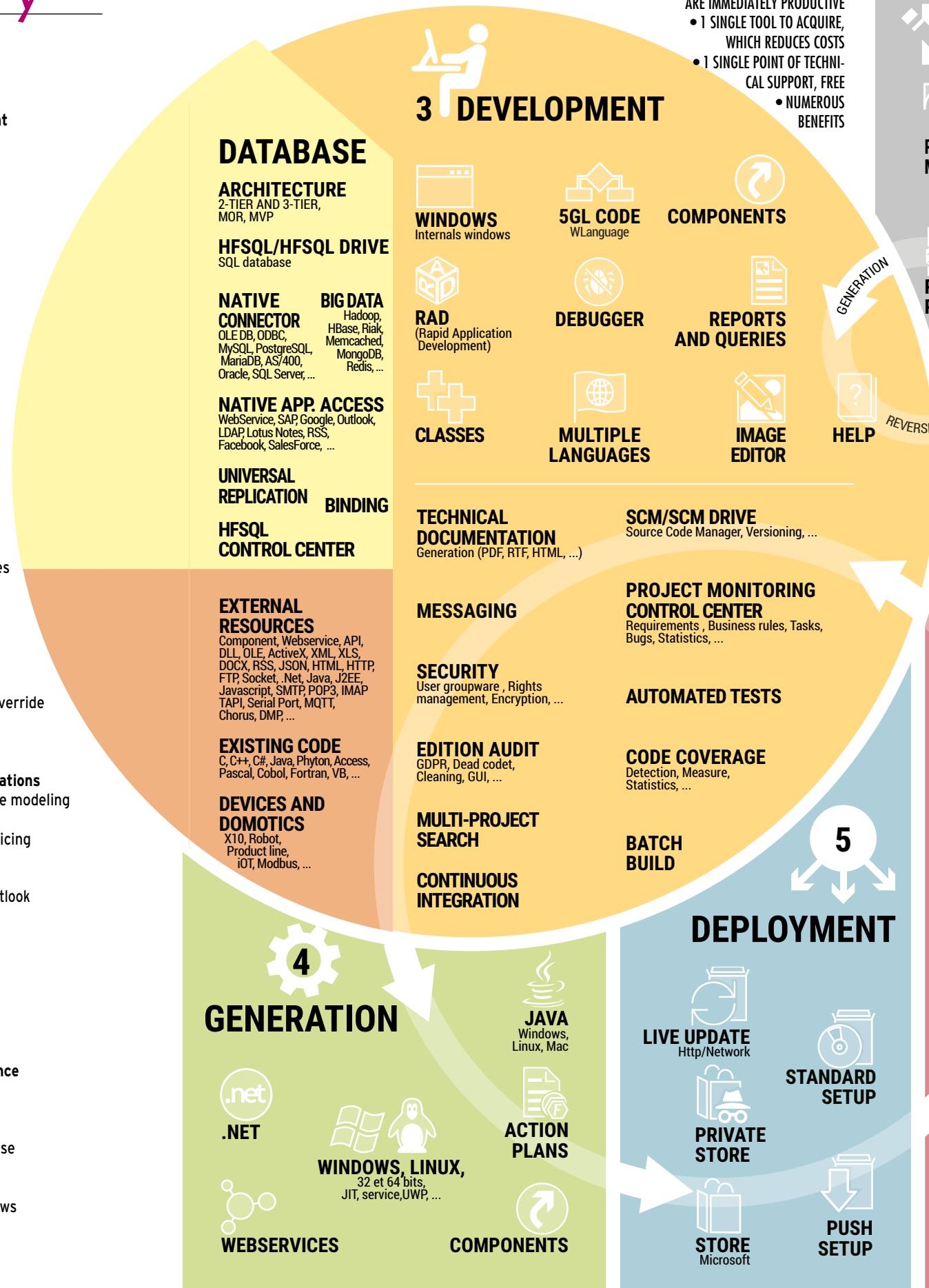
have to develop within shorter and shorter deadlines robust, secure, open and powerful applications for Windows, Linux, Java, Mac, .Net, Internet, Intranet, Android, iOS, for the Cloud, etc.

Thanks to WINDEV, your development teams can create applications that exactly match your needs, on time and with budgets you can't even imagine.

Join 180000 professional developers worldwide, choose WINDEV today!

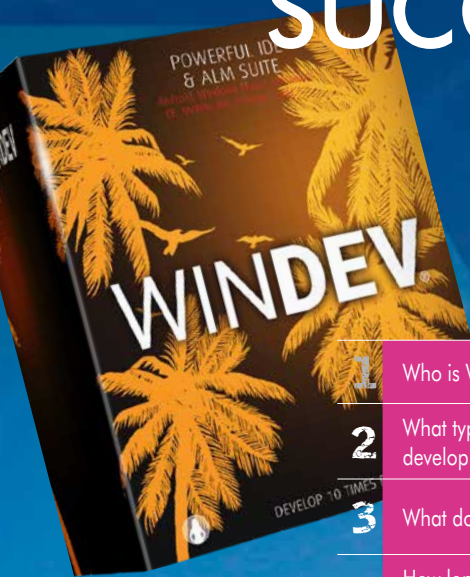


WINDEV keynote



- 1 SINGLE ENVIRONMENT: YOUR TEAMS ARE IMMEDIATELY PRODUCTIVE
- 1 SINGLE TOOL TO ACQUIRE, WHICH REDUCES COSTS
- 1 SINGLE POINT OF TECHNICAL SUPPORT, FREE
- NUMEROUS BENEFITS

SUCCEED WITH ALL YOUR PROJECTS THANKS TO WINDEV



97,6%

97.6% OF WINDEV USERS ARE SATISFIED WITH WINDEV.

1	Who is WINDEV for?	It is for any developer who wants to create Windows, .NET, Linux, Mac, Internet, Java, Android, iOS, cloud applications...
2	What type of applications can I develop?	Any type! Payroll, industrial, medical, inventory, EDI, CAE, ERP, CRM, EAI, back and front Office, .NET, Web services, catalogs, etc... There is no limit.
3	What do I have to know?	Having programmed at least once in your life is enough. The ease of development offered by WINDEV has become legendary.
4	How long does it take to get up to speed on WINDEV?	In most cases, one week is enough for self-training. A tutorial guide is supplied with the product.
5	How much time will I save by developing with WINDEV?	Our customers have stated gains of a factor 3 to 10 depending on their previous tool. Maintenance will also be much faster. You'll take 1 month to build what used to take you a year...
6	Do all the modules come as standard with the product?	Yes, everything is included, from conception to maintenance, the application lifecycle (ALM) is supported with the same operating mode.
7	Are the developed applications cross platforms?	Yes. Applications developed with WINDEV can easily move to mobile and Internet, Intranet and SaaS.
8	I already have an application. Will I be able to use it with WINDEV?	Yes, WINDEV supports all the computer standards (languages, databases, protocols, etc.).
9	I am currently using another language. Would these skills be useful?	Yes, and you will appreciate even more the power and ease-of-use of WINDEV and its 5GL.
10	My company, already uses a database. Can I keep it with WINDEV?	Yes, of course, all the industry databases are supported.
11	Can I develop n-tier, SOA, SaaS, Cloud applications with WINDEV?	Yes, of course
12	Can I create/consume Webservices with WINDEV?	Yes, of course, create them, use them and host them (SOAP and REST).
13	Can I freely distribute the integrated HFSQL database?	Yes. HFSQL comes with the product (Linux, Windows, Mac, Android, iOS) and can be freely redistributed with your applications, regardless of the number of workstations or servers..
14	How powerful is the WINDEV language?	WLanguage is a 5th generation language (5GL), which is simple yet very powerful. The number of code lines you have to write (or generate) is reduced by up to 90% compared to a 4GL.
15	What size development team does WINDEV support?	Up to 1,000 developers, on the same project, on one or more sites. A versioning tool (SCM) is supplied.
16	My application contains 1,500 windows and tables with several million records...	This is common with WINDEV; see the testimonials on windev.com to compare implementations.
17	How can such an environment be marketed at such a low price?	Our high volume sales allows us to keep the price low.
18	I've read that technical support is free. Is this true?	Yes, it's free (15 free custom inquiries). It can be accessed by email. Custom assistance and consulting are also available.
19	Who uses WINDEV?	All kinds of professional entities: software companies, hardware manufacturers, IS departments, lab engineers, government offices, city councils, administrations, individuals...
20	WINDEV is therefore a "must have" for professional developers?	Yes, absolutely. More than 180,000 professional developers have already chosen it.

FREE EXPRESS VERSION
Download now!

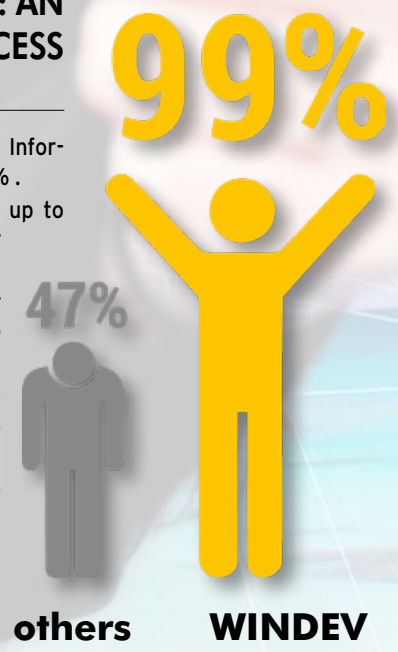


GDPR REGULATIONS
WINDEV helps you, see page 81.



PROJECT SUCCESS: AN EXCEPTIONAL SUCCESS RATE

The average success rate for Information System projects is 47% .
With WINDEV, this rate goes up to 99.07% (source: September 2022 survey).
One of the main reasons for this success rate is the complete integration of WINDEV.
Choosing WINDEV is ensuring the success of your projects and your clients' projects.
With WINDEV your projects succeed.



WINDEV IS UNIQUE

WINDEV is the only fully integrated, comprehensive professional development environment.
The environment manages all phases of development, from specifications to maintenance (Application Lifecycle Management, ALM) and for all targets: Windows, Linux, Internet, Android, iOS...
Training is much faster. A developer is operational in just one week.
The Technical Support covers all the modules (and it is free).
The speed at which you will develop applications with WINDEV is legendary. So is its ease-of-use.
And its power always surprises...
It's the reason for its success, and for your success.

AUTOMATIC BENEFITS

- The software created with WINDEV systematically provides the application with a set of advanced functionalities, without programming, thanks to the exclusive AAF technology (see p 42).
- The users automatically get a reporting tool (Reports and Queries, see p 48 to 52).
- Industrialization of the software creation process (Continuous integration): With WINDEV, it's automatic.
- Therefore, the high quality of the applications built is less dependent upon the experience of the development team.
- Your teams don't spend their time "reinventing the wheel"»: you deliver faster.

CREATE SUCCESSFUL PROJECTS WITH WINDEV: IT'S A GIVEN

What best characterizes WINDEV is the success rate of your projects: a project started under WINDEV is a project that will be completed.

*Do you have a software idea?
Create this software with WINDEV.*

YOUR APPLICATIONS ARE CROSS-PLATFORM



WINDOWS, LINUX, JAVA? RECOMPILE!

WINDEV creates applications to run on Windows, Linux and Mac.

WEBDEV recompiles them to run on the Internet or Intranet.

WINDEV Mobile recompiles them in order to operate on tablets or smartphones ...

All these applications can run in the cloud.

The **cross-platform development** Windows, .Net, Linux, Mac, Internet, Intranet, Tablet, Smartphone, Terminal, Windows or Linux server... is made **extremely simple** thanks to the **compatibility** between WINDEV, WEBDEV and WINDEV Mobile.

You **use the same project**, the same code, the same objects and the same elements on all platforms...



Develop your applications 10 times faster with WINDEV.

Create **WINDOWS 32 bits , 64 bits & UWP applications.**

WINDEV allows you to create **native Java applications.**

Simply ask WINDEV to generate the Java code of your project.

WINDEV allows you to create **native Linux applications.**

Thanks to WINDEV, without knowing Linux, you can create **sophisticated and robust Linux applications.**

MANAGER

Simply recompiling an application when changing target gives you a competitive advantage.

It guarantees your future and your ability to respond to changes

AAF TECHNOLOGY

Several automatic features are available

MAIN POINTS

Portable code and objects (including for Web browser and Mobile code)

Same code and windows for all the platforms

WINDOWS application



This Window application has been recompiled for theWe platforms below.

JAVA application



LINUX application



CAPITALIZE ON YOUR EXISTING WORK
EXAMPLE OF WINDOWS APPLICATION RECOMPILED FOR DIFFERENT PLATFORMS

With WINDEV, WEBDEV and WINDEV Mobile, by developing "once only", you can create:

Native applications for:

- Windows
- Linux
- Mac
- Java

sites for :

- Windows
- Linux
- PHP sites
- sites for Mobile

Native mobile applications for smartphones and tablets for :

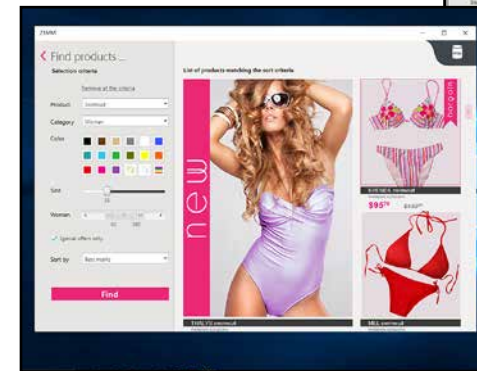
- Android
- iOS
- Windows UWP

All the applications run natively.

Site with **LINUX** server with WEBDEV

PHP site with WEBDEV

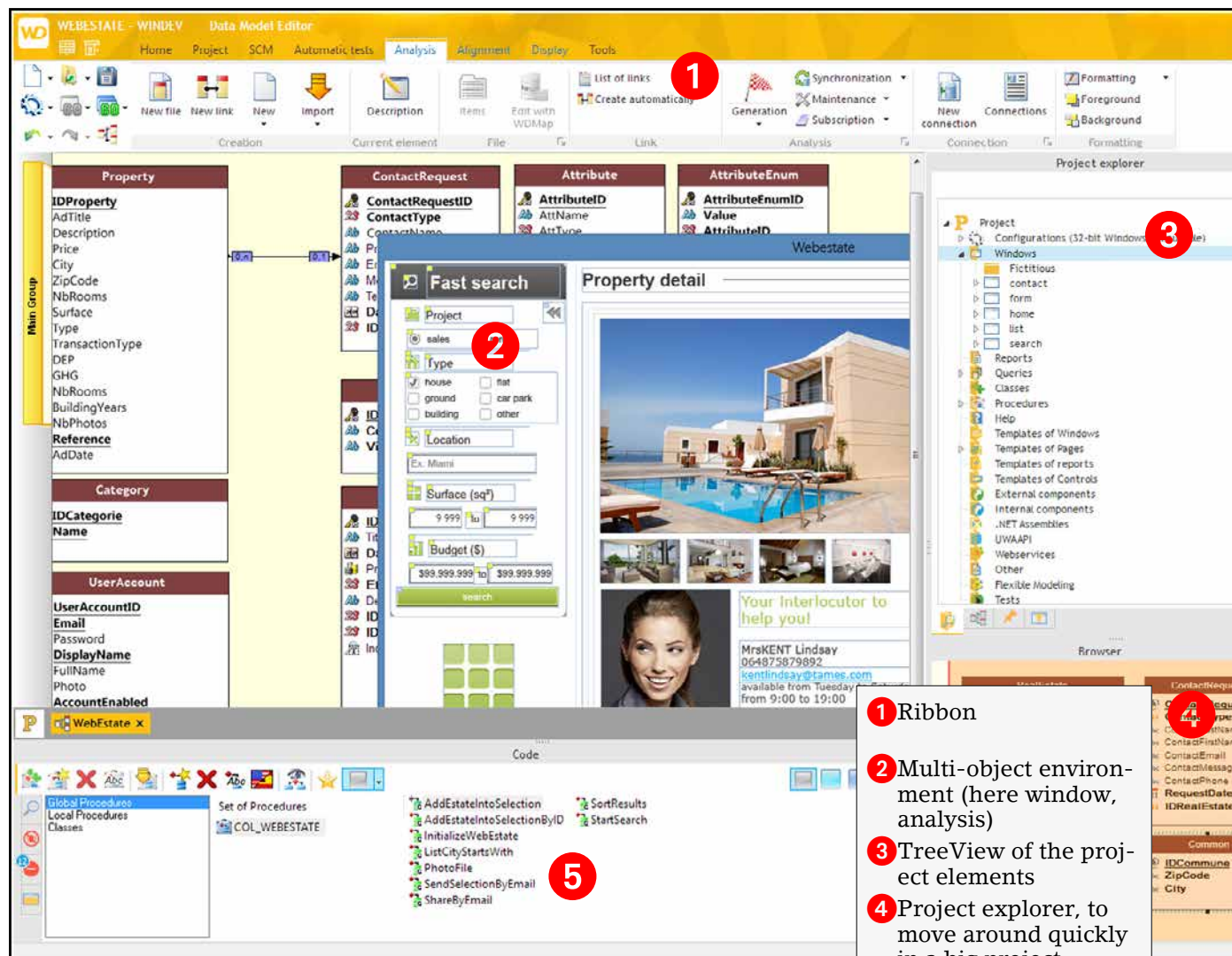
UWP application



Application on **SMARTPHONE, TABLET** and **CHROMEBOOK** with WINDEV Mobile, Android, iOS



WINDEV



- 1 Ribbon
- 2 Multi-object environment (here window, analysis)
- 3 TreeView of the project elements
- 4 Project explorer, to move around quickly in a big project
- 5 Bottom pane, for advanced information

The WINDEV environment displays a table is aware of all unnecessary programming, increases the application's speed, and makes development a lot easier. This integration, which is unique in the market, provides instant profitable benefits.

The WINDEV environment benefits from a "strong link" between the different elements: data, controls, queries, business rules, tests... Everything is integrated, each feature is aware of the others. For example, the feature that displays a table is aware of all the characteristics for each piece of data in each cell, the link with the database is always updated, automatically. This saves a lot of time, reduces the potential for forgetting something or for bugs, avoids

THE ONLY ONE IN THE WORLD!

The environment is truly unique (which explains its success) in term of integration and richness.

Everything comes with the product: there is **no need to get** libraries or add-ons for each specific aspect (PDF, images, basic administration, help, barcodes, OPC, link with SAP, Lotus Notes, Outlook, SNMP, Google Apps, etc.).

Everything is immediately available and perfectly integrated, and contributes to the phenomenal development speed possible with WINDEV.

HUNDREDS OF EXAMPLES AND WIZARDS

In addition to the **tutorial provided**, WINDEV comes with **hundreds of examples** and wizards as standard: this accelerates productivity.



```
// For all invoices waiting to be paid
FOR EACH Invoice WHERE InvoiceStatus = Pending

// Find the customer linked to the invoice
HReadSeekFirst(Customer, CustomerID, Inv
IF HFound(Customer) = False THEN
// If the customer is not found, display
Error("The customer corresponding to th
RETURN False
END

// Send a reminder email to customer
ReSend(Customer.Email)

// Flag this invoice as resent
Invoice.FollowUpDate = Today()
```

A COMPLETE ENVIRONMENT, TOTALLY INTEGRATED

FULL COMPATIBILITY WITH EARLIER VERSIONS

WINDEV respects your existing work. No migration phase is required with earlier WINDEV versions: simply recompile the application to make it work in the latest version.

Existing components work directly without having to be recompiled with the latest version of applications. The latest version of WINDEV directly opens a project from an earlier version.

Different versions of the environments can coexist on your PC; the latest version license also launches earlier versions.

TECHNOLOGIES

Refactoring (intelligent renaming)
Unlimited Undo/Redo
Live data
Zoom
Rulers, snap-on
Customizable style with your images
WYSIWYG
Multi-screen mode
Unlimited backup

CTRL E: SEARCH EVERYWHERE

Using the Ctrl E key combination allows you to search for an element anywhere inside your project and open it.

F4 : REDO ACTIONS

This feature allows you to re-run one or more actions that were just performed on another element, or a set of elements. The [Shift] [F4] key combination will redo all the actions performed since the control's selection.

This feature allows you to speed up sets of modifications in the editor.



INTEGRATED TECHNOLOGIES

These technologies bring standardization, ease of development, sharing of existing code, increased reliability and better overall quality of applications.

ALM	Full application lifecycle management
AAD	Aided Application Development, automatic operations to improve your applications
POC	Performance Optimization Center (Profiler)
SCM	Collaborative Source Code Manager (SCM, versioning tool)
AAF	Automatic Application Features
ADU	Automated Deployment and Upgrades ("Live Update" for your applications)
DSS	Synchronization with the data schema
rRAD	"real RAD", automatically generates full applications
AAA	Automatic Application Architecture : code and window patterns
ASBS	Automatic support for style book
EDA	Embedded Database Access
CUSTOM FOLDER	Organization of the data schema, analysis and projects

YOUR TEAMS ARE IMMEDIATELY PRODUCTIVE

The architecture of the editor allows for its total control within a few minutes. Everything is very intuitive and always a keystroke or a mouse click away.

The modules are totally integrated, sharing the same data dictionary: each module (project, database, GUI, setup, queries, reports, ...) shares the information of the other modules, and can, by default, propose the most logical actions.

SOME EXCLUSIVE TECHNOLOGIES EASE YOUR TASKS

In order to improve your comfort and productivity, the environment uses many exclusive technologies:

- perfect WYSIWYG (with zoom)
- «7-tab» technology, to define all the control parameters via a simple click (saving thousands of code lines)
- Modifier, for a quick access to properties
- Panel, for the list of project elements
- Permanent popup menu
- AAD and POC
- Unlimited UNDO and REDO, copy/paste history
- Immediate "GO" of the project without re-compilation, etc.

FULL DOCUMENTATION IN 1 CLICK

WINDEV can generate a full documentation in just 1 click (printer, PDF, HTML...). The documentation is built by reverse analysis of the project, and therefore it is always updated (see page 92).

COMPARATOR ("DIFF")

Immediately detect all the modifications made to an element (interface, code, analysis, etc.) between 2 versions with the integrated versioning tool.

FREE TECHNICAL SUPPORT

We trust our tools: Technical Support is provided for free*, for all the modules included in WINDEV!

TIME SAVINGS MONEY SAVINGS

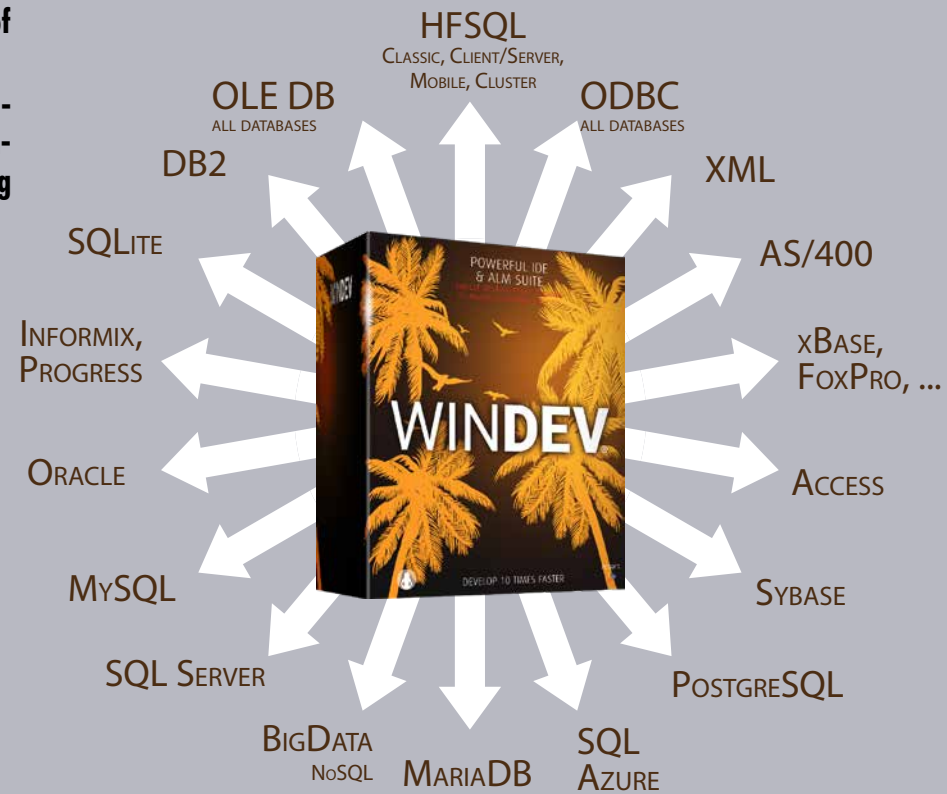
With WINDEV, you will reduce development times.

You will save large amounts of money. You deliver faster.

WINDEV offers a complete, integrated, user-friendly environment that automates tasks and saves you significant time in all phases of development.

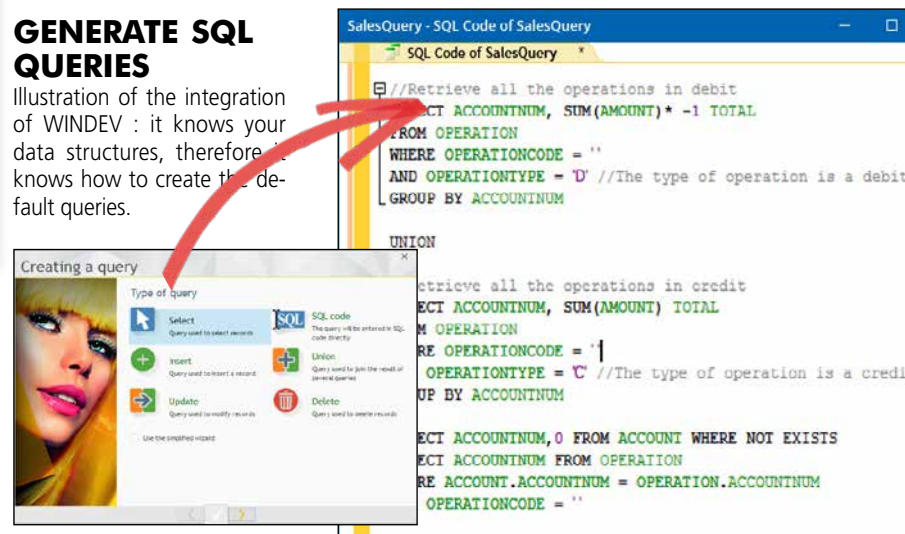
ALL DATABASES ARE SUPPORTED

WINDEV allows you to use the database(s) of your choice. This total openness ensures the possibility to interface with any existing system.



GENERATE SQL QUERIES

Illustration of the integration of WINDEV : it knows your data structures, therefore it knows how to create the default queries.



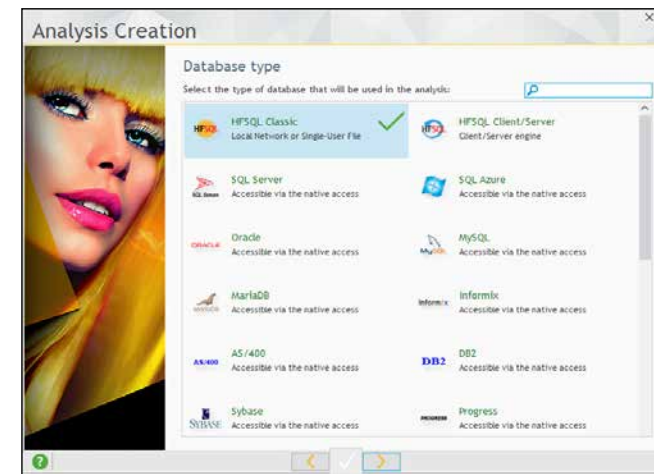
BIG DATA, NOSQL



WINDEV allows you to use Big Data Hadoop and MongoDB technologies easily, directly in WLanguage. WINDEV offers a native connector to Hadoop (HBASE, Hive, HDFS), MongoDB, Memcached and Redis. With WINDEV, you are ready for Big Data!

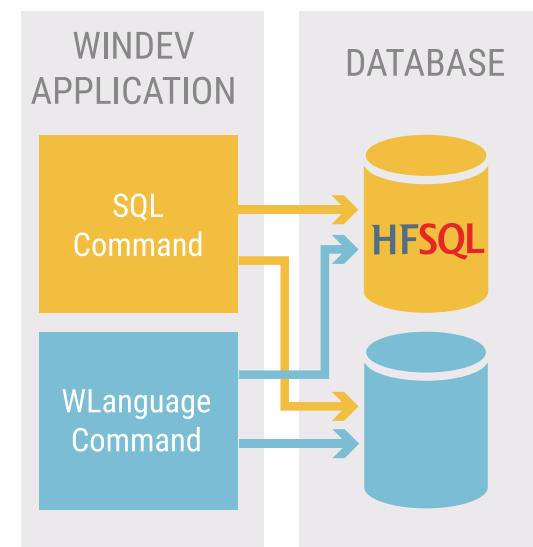


WINDEV integrates into all IS seamlessly



Defining or reusing a database is very simple with WINDEV

PROGRAMMING IS IDENTICAL REGARDLESS OF THE DATABASE



HFSQL :
HFSQL Classic
HFSQL Client/Server
HFSQL Mobile
HFSQL Cloud
External database :
Oracle
SQL Server
MySQL
etc...
Natively, via ODBC or OLE DB

REPLICATION BETWEEN HETEROGENEOUS DATABASES

Replicate any database: HFSQL, Oracle, AS/400, MySQL, SAP, mobile...



With any database: HFSQL, Oracle, AS/400, MySQL, SAP, mobile...

ALL DATABASES ARE SUPPORTED

WINDEV can read and write in all the databases, using native access (connector), OLEDB or ODBC (JDBC in Java).

WINDEV INTEGRATES INTO YOUR IS

WINDEV is open, and integrates perfectly with your existing Information System, to boost it!

THE STORED PROCEDURES

WINDEV applications support database stored procedures.

EASY CLIENT/SERVER

Client/Server development is very simple with WINDEV, because the 5GL commands from the HRead* WLanguage family are supported on top of SQL commands.

This makes your source code more independent from the database, and programming more flexible.

REVOLUTIONARY PROGRAMMING

In addition to SQL, WINDEV offers a 5th generation language totally suited for managing databases.

A command such as **ScreenToFile** corresponds to hundreds of lines of code in a traditional language!

ScreenToFile assigns all the window controls' content into the right database columns without having to program anything.

No risk of oversight from the developer, no maintenance needed if the window or database evolve. This is how data must be managed: without risk.

WINDEV: THE IDEAL TOOL FOR MANAGING DATA

WINDEV is the ideal tool for accessing all kinds of data.

The full integration of the database structure in the environment allows for incredibly fast development: each environment module knows the data you're using, and offers you the names of databases or items for each operation.

PERFORMANCE

The WINDEV Client/Server mode is implemented in the WINDEV kernel, and therefore is extremely fast.

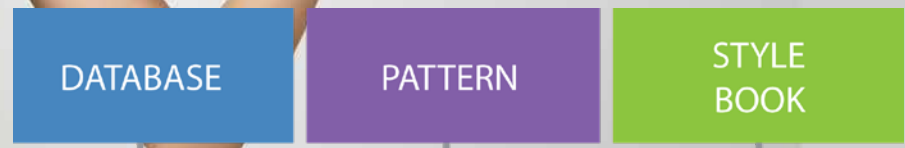
HFSQL

WINDEV comes with the powerful HFSQL database (see p. 70 to 73).

WINDEV supports all databases on the market, with identical programming.

RAD AND APPLICATION GENERATOR : INDUSTRIALIZE YOUR CODE

AUTOMATICALLY GENERATE YOUR APPLICATIONS



OPTIONAL USE

EVERYTHING THAT IS GENERATED CAN BE MODIFIED



INDUSTRIALIZE CODE GENERATION: CREATE YOUR OWN PATTERNS

AAA: AUTOMATIC APPLICATION ARCHITECTURE ("PATTERN")

A constant worry for the project manager is to ensure that programmers in the development team follow the company standards.

The AAA technology lets you create your own RAD generation patterns. You decide what goes into the windows, the control location, what code will be generated by the various RAD options: entire application or partial code. The increase in productivity and in code security is phenomenal. For a small investment (pattern creation), each use of the pattern will help standardize the future developments without imposing constraints. A RAD pattern is easy to create:

it is a simple WINDEV project. The applications automatically respect the style book. The project manager is therefore sure of the consistency of the programs built (code and UI). And the generated code is already tested! Patterns are the answer to your constant needs for quality control and style book enforcement.

Generating complete processes or applications in a few clicks is a standard feature of WINDEV.

You create a complete application, ready to use, in just a few clicks. This way you can answer a request for proposal really fast or validate a model really quickly. WINDEV also allows you to create your own RAD patterns.

MANAGER

RAD (optional use) generates entire applications or specific processes. RAD also enables you to create prototypes. The time saving is really noticeable.

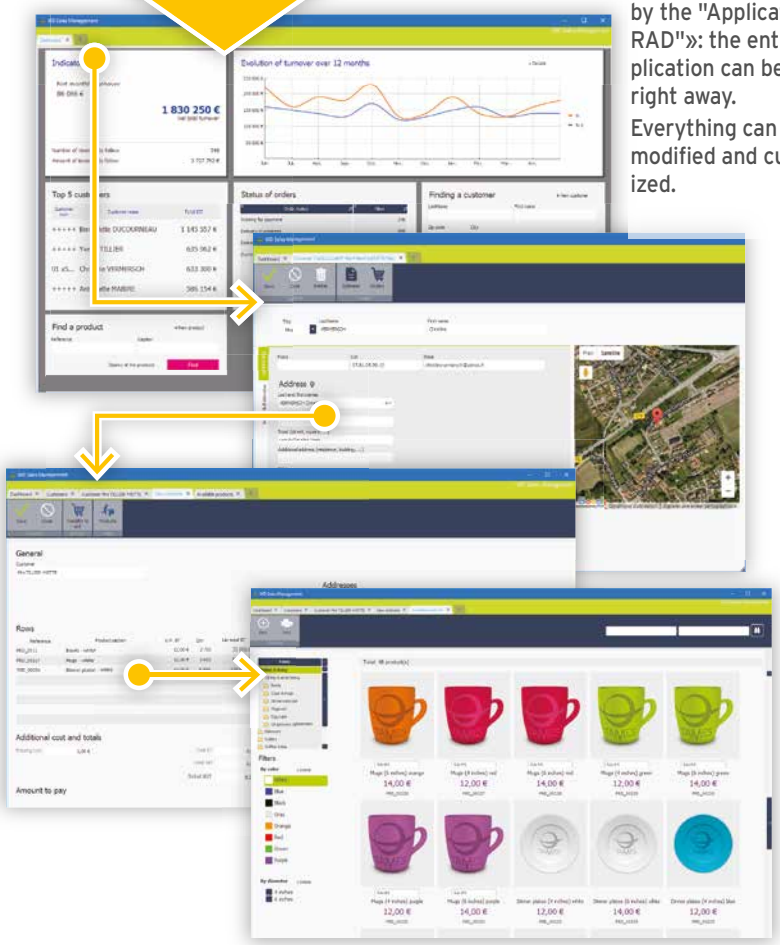
AAF TECHNOLOGY

The generated applications automatically benefit from all the AAFs

MAIN POINTS

- Immediately usable application
- A prototype in a few minutes
- Patterns
- Customization

Create an application (or a prototype) in 6 clicks



Example of an application automatically generated by RAD. Here are some of the windows generated by the "Application RAD": the entire application can be used right away. Everything can be modified and customized.

With WINDEV you can write your own programs, or use RAD. Rapid Application Development gets its full meaning!

6 STEPS TO CREATE AN APPLICATION WITH RAD

With the WINDEV's RAD an application is defined in 6 quick steps :

1. Define or retrieve the analysis (data model): tables, columns, keys, indexes, links...
2. Click the "RAD" icon ...
3. Select the tables that will be used by the application.
4. Choose your application's style book (skin template) and pattern.
5. Choose the additional features to include: automatic backup, help, report generator...
6. Validate: the application is generated.

It's that simple. The entire application (code, menus, windows, reports, ...) is generated in a few seconds.

EVERYTHING CAN BE CUSTOMIZED

The created application is ready to be run. You can modify it and customize it as you wish.

AUTOMATIC DEPLOYMENT

Deploying the application (DVD, USB, network, download...) is automatic via the setup procedure generator supplied with the product.

ANSWERING A REQUEST FOR PROPOSAL? A PROTOTYPE!

You can also use a RAD application as an answer to a request for proposal: the prospect will directly use the future application. Are you software consulting company? You will win tenders thanks to WINDEV!

INSTALL A READY-TO-USE APPLICATION IN RECORD TIMES

An urgent application must be created and deployed as quickly as possible? Create this application with RAD, and deploy it immediately. You can customize it and develop additional features while users can already use this first version.

Time to market is crucial in a competitive world. With WINDEV, you can offer fast time to market to your company and your customers.

CREATE YOUR OWN RAD PATTERNS EASILY

WINDEV lets you create your own RAD patterns: see opposite.

MASTER THE LIFECYCLE OF YOUR APPLICATIONS: ALM CONTROL CENTER



The dashboard of the ALM Control Center, project and quality monitoring

WINDEV includes a powerful integrated ALM Control Center to manage Projects and Quality.

The Project Monitoring Center allows you to easily manage all aspects of your projects' lifecycle.

The project Monitoring Center is completely integrated to the environment and interacts with the editors: window editor, project editor, code editor (SCM), ...

All the information is shared.

MAIN FEATURES

The ALM Project and Quality monitoring center offers the required features for managing a project's life cycle.

A BENEFICIAL INTEGRATION

Unlike the third-party tools that are heavy to implement, the WINDEV Control Centers are natively integrated in the editors.

The link with the environments is natural.

The use is intuitive and non intrusive.

The development cycle is mastered, the project manager has access in real time to specific information about the project's status and quality.

Multi projects, multi teams	✓
Scheduling: assignment to teams, progress monitoring,...	✓
Requirement management, organization in folders	✓
Management of tasks	✓
Management of incidents	✓
Management of customer requests and feedback (p. 101)	✓
Dashboard	✓
Progress statistics, block list, counters	✓
Integration into the IDE (p. 8-9)	✓
Link with continuous integration (p. 16-17)	✓
Link with the test tool (p. 90-91)	✓
Link with the SCM (link between check in and task or incident) (p. 78-79)	✓
Data access via a component	✓
Deployment tools (p. 96-97)	✓

MANAGER

The Control Centers allow you to manage all the organizational tasks required for developing applications.

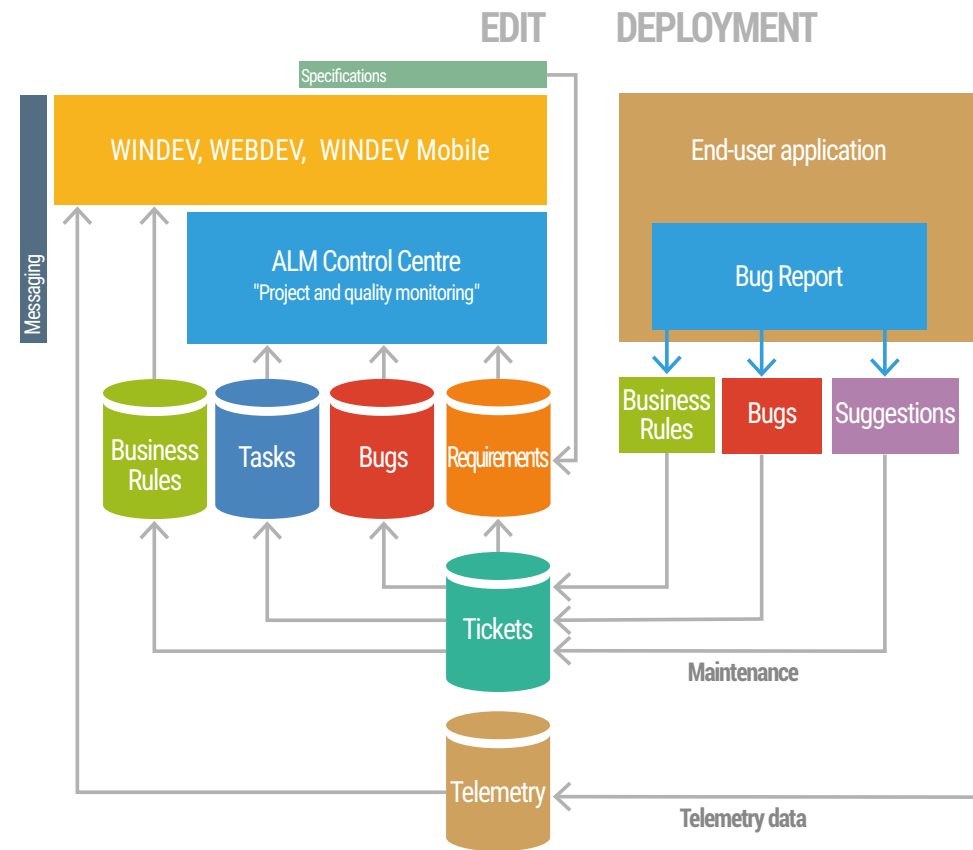
AAF TECHNOLOGY

The feedback and suggestions from customers can be processed automatically.

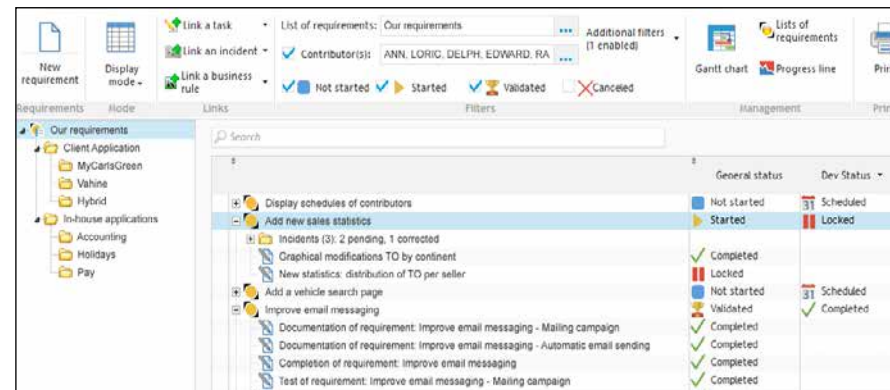
MAIN POINTS

Fully integrated to the environment
Industrialization without constraints.

Agile development



MANAGE THE LIFECYCLE, MANAGE THE SCHEDULES



List of requirements for a folder

REQUIREMENTS MANAGEMENT (BACKLOG ITEMS)

The Project Monitoring Center allows you to define and follow the status of each requirement for each version of the project.

A requirement corresponds to a feature that must be developed/corrected in the software.

Each requirement can be linked to several tasks (development task, test task, documentation task, ...), bugs, business rules...

TASK MANAGEMENT

Each member of the team can access his task list

and change the priorities, add comments, see the linked requirements...

The project manager has access to an overview of the team tasks and their status.

MANAGING THE QUALITY

The Project Monitoring Center allows you to inventory the incidents reported for an application, and assign them to a developer.

It enables you to centralize the information, to track bugs, to calculate statistics, and prevent oversights (see the bug tracking "Feedback" component later in this same document).

ALM: APPLICATION LIFECYCLE MANAGEMENT

Managing the Application Lifecycle Management (ALM) of your applications with WINDEV is a guarantee of success for your developments. The governance of applications, the production of software and their implementation are industrialized by the integrated WINDEV tools.

AGILE METHODS

WEBDEV is designed for agile methods: Scrum, eXtreme Programming, RUP, CMMI,...

The methods for Agile development are based on an iterative development: instead of delivering all at once a program meant to answer a set of requirements set in stone, development is done through iterative deployments in short time frames.

TIME TRACKING

A time management tool is included with the environment.

Based on an intuitive communication method, this tool asks each team member to validate the task on which he's working in real time.

The current task is proposed by the tool, that deduces it from the current action.

A summary report is available.

SOURCE CODE MANAGEMENT

A powerful versioning tool (SCM see page 78) is included in the environment.

LOCAL, REMOTE, IN THE CLOUD

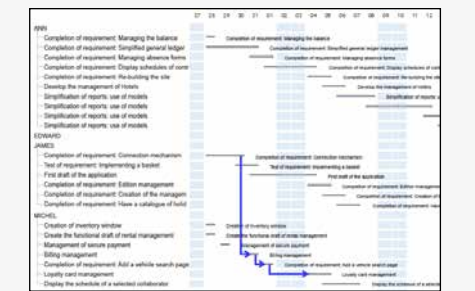
The Control Centers can be used remotely, via Internet, VPN or via the Cloud.

EASY MONITORING OF SCHEDULES

The Project Monitoring Center lets you easily manage a team's schedule, define the requirements for each iteration and analyze iteration analysis!

Totally integrated in the development environment, the Project Monitoring Center provides vital help in making your projects successful within deadline.

If you invoice by the hour, the Project Monitoring Center enables you to easily keep track of your resources.



CONTINUOUS INTEGRATION AUTOMATE BUILDS

The software factory concept is used to automate the process for creating applications.

It allows you to implement a "continuous integration" methodology.

The Software Factory allows you to save man/weeks of work each year. It also allows to avoid human errors, increase the correction speed, automatically increase the quality level.

Software industrialization is made easier by WINDEV.

MANAGER

The software factory automates hundreds of version creation tasks. This automatically industrializes processes.

MAIN POINTS

Saves time on operations
No risk of operation oversights
Automatically increases quality
Decreased project cost

EXAMPLES OF USE

There are numerous examples of the use of continuous integration, including:

- automatic compilation of your projects at night: the smallest error, the smallest incompatibility is detected
- executing automated tests on different machines
- identical reproduction of an already performed compilation (to perform maintenance on an already deployed application)
- automation of manual tasks: compilation of course, but also updates, flag positioning, deletion of temporary files, file renaming, license number update, create the install program...

EASY IMPLEMENTATION

Implementing continuous integration is easy. Everything is integrated in the environment. Using the editors, simply:

- 1- Define "generic" action plans with the actions to perform (via the action plan editor)
- 2- Deploy the action plans on the coordinator (from the environment)
- 3- Trigger the action plans: instantly or schedule their execution (at night...) using the software factory administrator
- 4- View execution reports

STATUS REPORTS, REPORTS, METRICS

All the execution status reports for the action plans are stored. The execution times, the potential errors are stored. Statistics are edited. A history of all the builds is stored.

Continuous integration saves you several weeks each year, eliminate human errors, and therefore reduces costs while automatically increasing the quality of your applications.

Example: Compile your applications every night



NIGHT_BUILD		
001	Starting WINDEV	Starting WINDEV
002	Starting WINDEV	Opening a project from the...
003	Starting WINDEV	Recompiling the project
004	Closing the project	Starting the static audit
005	Updating the components	Running the automatic test...

ACTION PLAN EDITOR

The first step in a continuous integration is to define an "action plan". The action plan editor lets you define the sequence of actions to perform automatically.

- Among the proposed actions, you'll find :
- Project opening (full project name on the network or in the SCM)
 - SCM update

- Update templates
- Update the components
- Refresh the styles
- Project directory clean up
- Delete automatic tests' data
- Clean the _WEB directory
- Clean up project's system files
- Delete a HFSQL file's records
- Compilation
- Rebuild the graph
- Run tests
- Generate a component's documentation

- Add a user manifest
 - Select a configuration (#configuration)
 - Generate a configuration (#version, #label, #copy-right)
 - HTML generation
 - Creation of setup
 - Setup
 - File copy (#source, #target directory)
 - Execution of a .bat, .exe, etc.
 - Running a script
 - check out/check in of translations (multilingual applications, requires the great WDMMSG tool)
 - Run WLanguage code
 - Send a status update email
 - Temporisation
 - Etc...
- The errors that may occur during the action plan's execution can be managed. The actions can be configured, or defined in WLanguage.

THE "SOFTWARE FACTORY" CONCEPT

The software factory is used to manage and automate the application creation process.

SOFTWARE FACTORY: COMPILER

With the "software factory", application creation is automated.

The compilation of the source code is handed over to a robot on a build machine.

The report produced by the robot enables the project manager to find out the stability level of the project, and the programmers to immediately correct potential compilation errors, and this in extremely reduced time frames.

This robot can also run automated audits and automated tests.

INDUSTRIALIZE

One of the purpose of the software factory is also to automate all the manual tasks (minor or major) up to the application setup creation process.

Once the final product obtained, the software factory allows for the automation of the clean up phases, organizing and saving the different elements of the application.

The build phase industrialization, is the end of errors and oversights, the end of time spent on menial operations.

CONTINUOUS INTEGRATION

The continuous integration is a set of practices that consist in, among other things, checking that there is no regression for each modification made to the source code.

This check is performed almost in real time, each night in most cases. Every evening, each developer checks back in the modifications made during the day.

An action plan is defined and programmed to start every night and on all the projects :

- the retrieval of all the SCM elements
- the retrieval of all external components
- a general compilation
- the generation of all the executables, components,...
- the running of the tests, etc...

The robots return status report allowing you to know the status of the product version generated.

Responsiveness, time saving, ease of implementation, improved quality, agility: you're a winner.



PROJECT DASHBOARD: MONITOR YOUR PROJECTS

All Project Managers seek to have a global and synthetic vision of the progress status of the projects they lead.

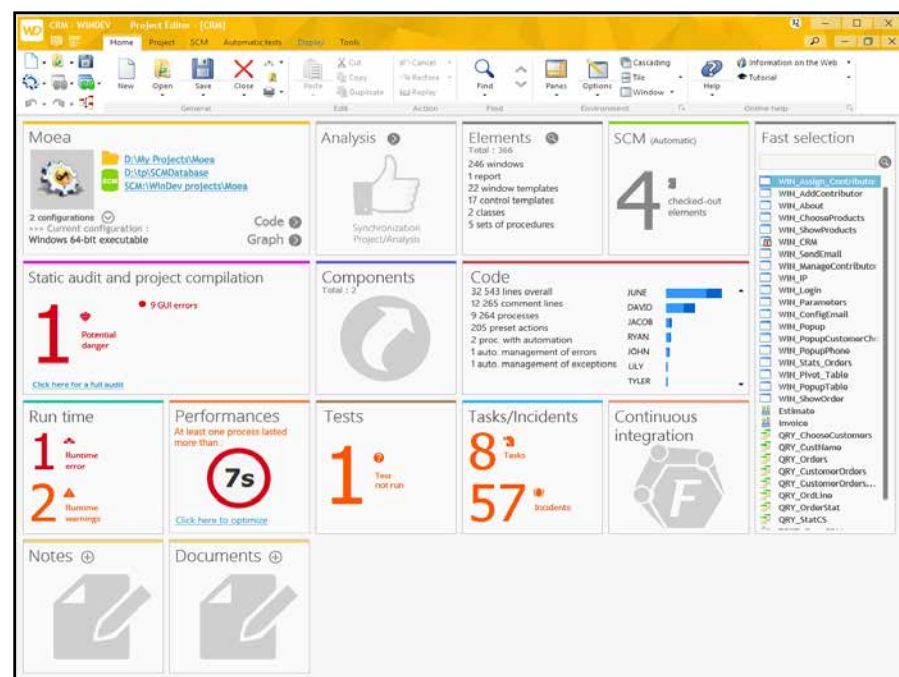
The QA Manager wants to know the number of bugs and their priority, and follow up their status.

The product manager would like to know what new features are requested by the users.

The "Dashboard" concept automatically provides this high-level view of a project's progress, of the overall quality, and for the deployed projects, of the needs for maintenance and bug fixes.

The various lights and dials provide real-time notifications: bug fixing, optimization, ...

A SYNTHETIC VIEW OF EACH PROJECT



THE STATE OF YOUR PROJECTS IN REAL TIME

INDICATORS TO MONITOR EVERYTHING!

(Caution : don't confuse this feature with the Dashboard control that is available for your WINDEV applications).

The dashboard's elements are presented as widgets, which you can easily configure, move, resize or hide.

This way only information you care about will be displayed.

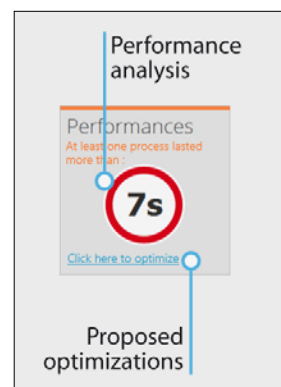
MEASURE...

The dashboard is used to display widgets for :

- the project overview

- the project statistics: number of windows, lines of code per developer, ...
- incidents
- tasks
- the current status of the project's automated tests
- code audit, static audit
- the result of the last dynamic audit for the last GO
- the list of elements checked out from the SCM
- the result of the action plans for continuous integration
- quick preview of the latest profiling
- analysis of the size of the executable
- status of the components used by the project
- display of Custom-Menu commands
- links to documents
- date of last extraction and reintegration for WDMMSG
- etc.

With the WINDEV dashboard, see your project's status at a glance



PROJECT DASHBOARD

- Information and access to the main project elements
- Detected dangers and start of static audit
- Indicates the status of components and proposes the suitable action
- Code statistics and code search by author
- Project statistics and fast selection of project elements
- Indicates the checked-out elements and the ones to retrieve in SCM
- Fast selection of project elements
- Project/Analysis synchronization



Legend :

- Nothing to report
- Information
- Quick access
- List
- Caution
- Danger
- Find
- Link

THE MOST BEAUTIFUL INTERFACES (UI/UX), IN A FEW CLICKS

Your applications benefit from user friendly and attractive windows

CREATE FABULOUS INTERFACES

The WINDEV UI/UX generator allows you to easily create great-looking windows that respect the Windows standard but are custom designed.

STYLES AND SKIN TEMPLATES : STYLE BOOK

The use of "style sheets" and "skin templates" (see p. 46) helps you standardize the entire look of your windows, by applying a sophisticated and user-friendly **style book**, even without any graphics knowhow.

FULLY CONFIGURABLE WINDOWS

The windows can be fully customized: title, icon, size, initial position and size, opening animation, resizing and size saving, automatic adaptation of size to content, scrollbar, DDW, popup menu, background image, opacity, message bar, moveable menu bar + customizable color, toolbar, grip, MDI, frame type, splitter and automatic anchoring, management of planes and tabs,...

A window can support up to 10,000 controls. The windows are advanced objects that contain the description of their controls. Therefore, each window knows how to display its controls and manage the input without any programming.

The window editor lets you create and modify objects independently from the application's source code.

SECURITY

When you define a control, it automatically executes the security controls defined during its setup.

Secure your applications.

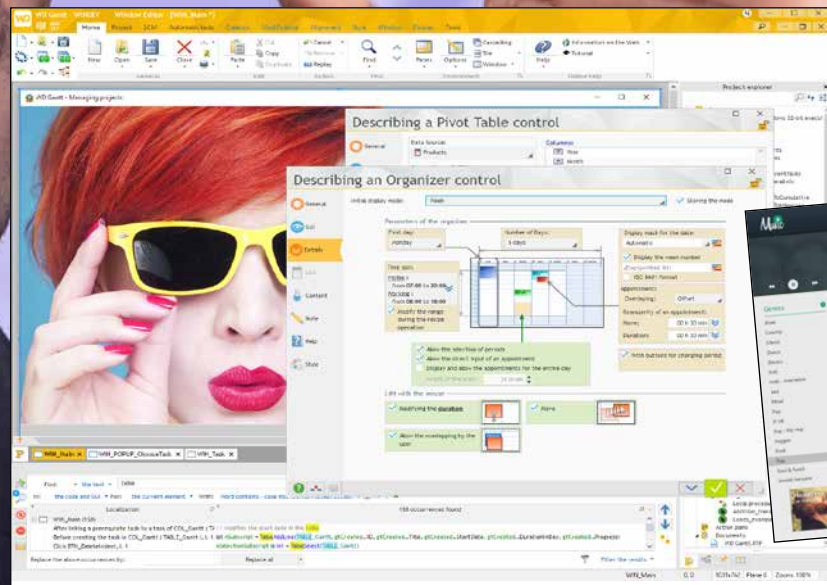
GUI/ UX OBJECTS: NO CODE REQUIRED

WINDEV uses an **innovative** approach for managing the interface's elements: the controls are created interactively in the GUI/UX editor, and their description, behavior and security settings are stored in the window directly. There is nothing to code : maximum efficiency and no risk!

Pages 22 to 33 present some powerful controls in detail.

Pages 34 and 35 list all the available controls. Pages 36 and 37 present some very rich controls. Pages 38 to 41 present the "7 tabs", the control visual description

With WINDEV, create stunning interfaces easily.



BENEFITS

This approach for working with WINDEV controls will save your teams a great amount of time when creating and maintaining your applications. It brings better reliability to your applications.

WINDEV's interface generator (GUI, UX) is certainly the easiest and **most powerful** generator in the world! You can easily create superb interfaces, visually, with a few clicks (WYSIWYG).

VISUAL CONTROL CREATION

Creating windows is very intuitive: all you have to do is Drag/Drop the controls from the ribbon with the mouse.

Still with the mouse :

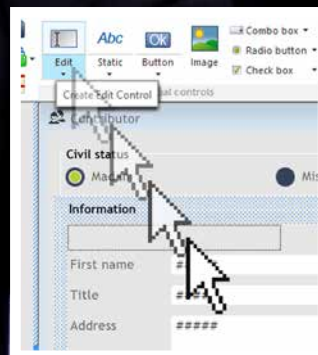
- select a control, resize it, move it,
- then edit its properties ("7-tab" technology, see p40-41),
- and lastly enter the code (p 60-63) in the relevant events: everything is WYSIWYG.

Click the "GO" icon to run an instant test of the window.

A control can have over 200 features (presentation, security, data link, etc.).

SMART MAGNETISM

Positioning and resizing controls is easy thanks to an intelligent "magnetism" systems that takes into account the layout of the other controls, as well as the basic rules of UI design: margins, space between controls, alignment...



EASY PROTOTYPING

Thanks to its window creation mode, the UI generator enables you to easily and quickly create interface prototypes that you can also reuse!

MANAGER

An attractive, efficient interface insures a better productivity for the users. And it makes your applications stand out. WINDEV is the only tool in the world to offer this integrated GUI/UX concept.

AAF TECHNOLOGY

Automatic & assisted input
Input masks
Spelling checker
Persistence of the content of controls
Resizing combo boxes
Export to Word, Excel, XML, etc.

MAIN POINTS

Arguably the best interface generator in the world (and the easiest to use).

YOU'LL NEVER BE LIMITED

The windows offer a powerful settings, without having to enter a single code line:

- automatic style book (skin template, see page 46)
- customizable menu bar/ribbon
- icon
- resizable or not
- adaptive design
- multilingual (see p 95)
- automatically store the size and position

- animation at opening or closing
- presence (or not) of system buttons
- configurable sizing handle
- free shape
- popup menu
- plane management
- MDI, modal window, non-modal window
- toolbar
- inheritance (window templates, see page 68)
- internal windows

- dim disabled windows (DDW)
- initial and maximum width/height
- automatic closing
- AAF (see p42)
- automatic creation of the window's documentation (see p 92)
- database context linked to the window
- Unicode

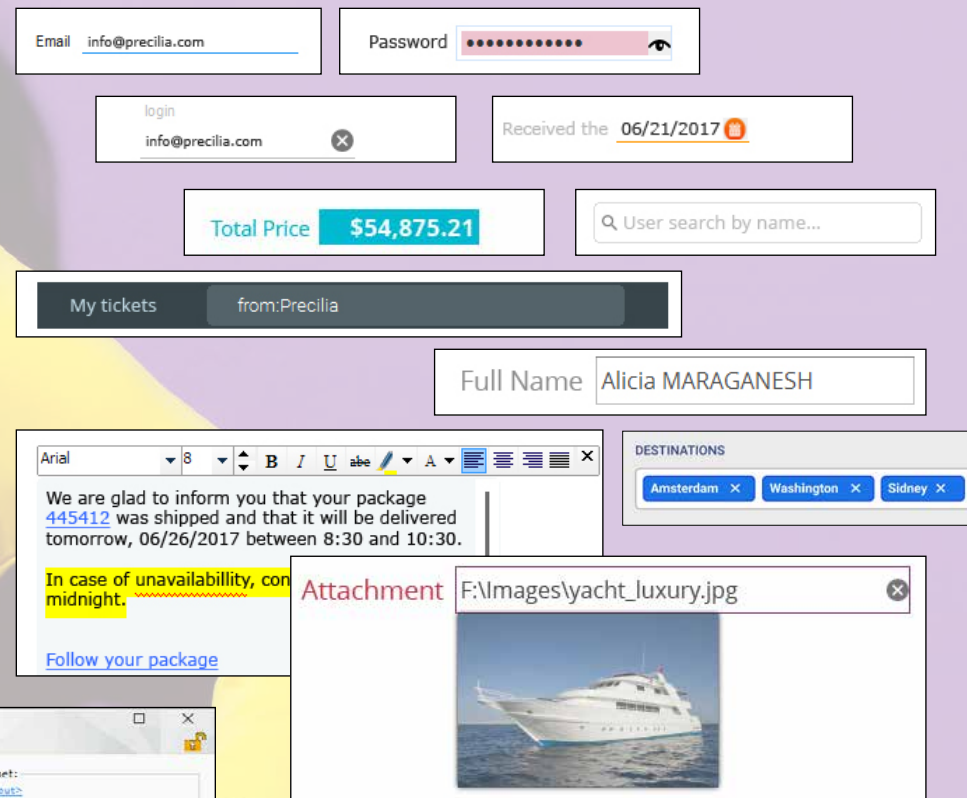
They operate in Windows, Linux, Java, iOS, Android, UWP and they are Internet compatible.

The controls found in the windows (up to 10,000 per window) offer even more parameters (see next pages).

See the complete list of controls on page 34.

Continues >>>

DETAILED EXAMPLE: THE EDIT CONTROL



The **Edit control** is one of the most commonly used controls. This control illustrates the **power** of the WINDEV window editor: developers **save** hundreds of lines of code by configuring this control in the environment. The end user will benefit from **secure assisted input**: the application will receive pre-validated data.

The WINDEV Edit control filters the information sent to the application; the end user benefits from assisted input, the application receives "verified" data. Here are some style examples for Edit controls.

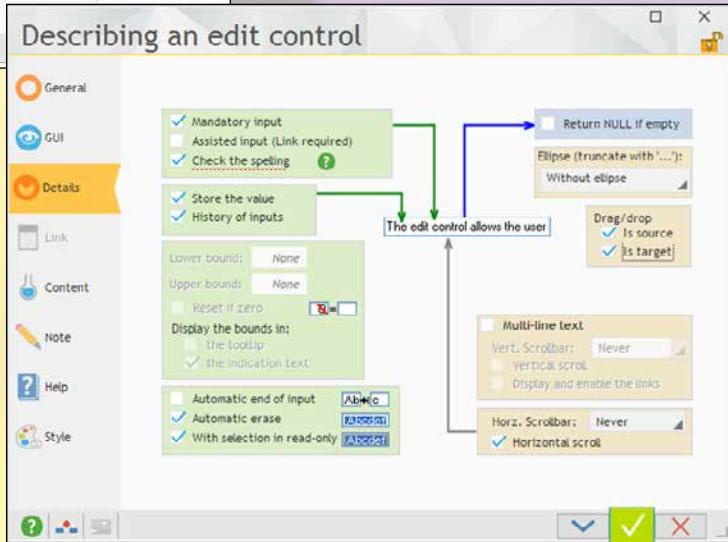
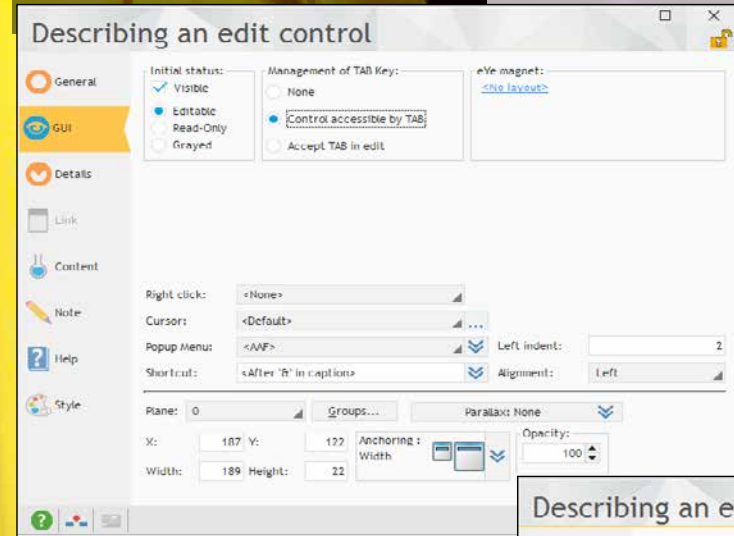
"7 TABS" : HERE ARE SOME OPTIONS FOR A "TEXT" CONTROL

Here are some of the options offered for a "Text" type edit control.

This control offers thousands of setting combinations.

All the formatting, assisted input, checks are performed by the WINDEV framework, and don't require any coding: your application is more robust, your application is faster, the development time is shorter.

You deliver efficient applications, immediately. (see p 40-41 for "7-tab" description examples)



MANAGER

Defining the characteristics of a control without coding allows you to better secure your program. The end user is also assisted, while still respecting the style book

AAF TECHNOLOGY

The edit control benefits from a large number of AAFs: calendar, input history, etc.

MAIN POINTS

Interface creation is made easier
The data entered are checked and formatted without code

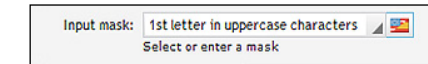
A WINDEV control is equivalent to saving a thousand lines of code

And even better, for controls such as Cube or Scheduler

EDIT CONTROLS: SETTINGS EXAMPLE

A "simple" WINDEV **edit** control offers **incredible power**.

Here are some settings possibilities (via the "7-tab" or via programming) for the "Text" edit control :



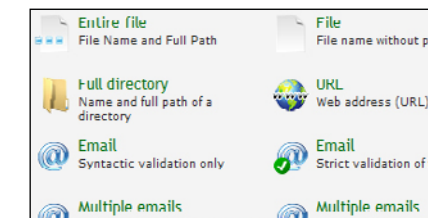
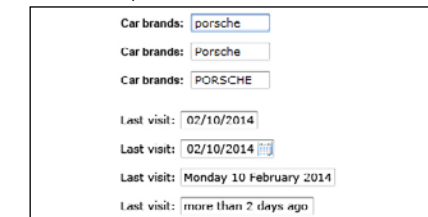
TEXT

Text: single line or multiline (automatic management of scrollbars, scrolling), RTF, HTML, Unicode management, ...

Automatic formatting toolbar for HTML and RTF edit controls

MASKS

Numerous preset **masks** are available: text (uppercase characters, first letter uppercase), numeric, currency, date, time, duration, password, file path, IP address, zip code, ...



Example of preset input mask

The mask can be customized with a regular expression.

The input can be defined as mandatory, it can allow a maximum number of characters, check the numeric bounds (min and max).

ENDLESS POSSIBILITIES

Other functionalities can be defined; the following are also proposed, for a simple text:

- token input
- associated caption
- alignment
- spelling checker
- assisted input according to the values from the database (automatic data reading)
- popup

WRITING DIRECTION

The writing direction is managed in the windows. The `..TextDirection` avoids having to maintain 2 separate windows to support languages that write from left to right and languages that write from right to left.

NOITCERID GINTIRW

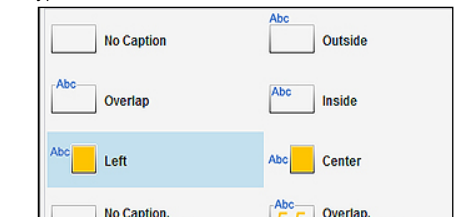
- menu display
- autosave values entered previously (to propose them again later)
- automatic drag and drop
- context-sensitive help (hint text, tooltip, link to the help editor, etc.)
- visible or invisible control
- control in edit mode, read mode or grayed
- control accessible by TAB
- left indent (in pixels)
- control content alignment (left, centered, right)
- right-click action
- aspect of hover cursor
- standard or custom popup menu
- control access keyboard shortcut
- plane containing the control
- control groups to which the control belongs
- position
- size
- control behavior when the window is resized (anchoring)
- control opacity
- automatic control change when the maximum character number has been reached
- selection of the whole text when entering a control
- ability to select content in a read-only control
- return NULL if no value is entered
- change control background (or border) color when the cursor enters the controls
- truncate caption if too long (ellipsis)
- ...

A large number of advanced parameters can be defined for controls Date, Time, URL controls, and more .



STYLE

The **style** of each element is taken from the current charter and can be totally modified: font • color • size • presence and location of a shadow • attributes (bold, underlined, italic, strikeout) • shadow color • position • background color • type of border • frame color, etc.



Positioning of the control's caption: you have choices...

Configuring this feature rich attributes is easy, it's done visually and intuitively with the 7-tab technology (see pages 38 to 41).

CODE/INTERFACE SEPARATION: SECURITY, SPEED

The control definition is done in the window editor, in a very visual way. No risk of error.

SECURE INPUT

All the available parameters make it possible to secure data input: maximum number of characters allowed, type of characters allowed, etc. Therefore, your application has fewer checks to perform: decreased risk of bugs, increased speed.

THOUSANDS OF PARAMETER PERMUTATIONS

The range of available parameters answers your requirements.

AAF

Like all the controls, the edit controls benefit from AAFs (see page 42).

Example: if the edit control is a date, the user can bring up a calendar. No programming is required.

Similarly, the previous input of an end user can be stored to allow for faster input (input history).

STYLE BOOK ENFORCEMENT

The edit control automatically respects the style book.

Everything can be modified, in the editor or by programming.

LESS CODE

Since most processes are automated, and the control benefits from the data binding, you save hundreds of lines of code.

PROGRAMMING THE CONTROL

The processes to program are entered in the control's events: control focus, modification, hover, exit control... (see page 60, the code editor)

EVERYTHING CAN BE MODIFIED BY PROGRAMMING

there are always special cases!
Everything that is created in the window editor can be modified by programming.
You'll never be stuck.

ABILITY TO CREATE A CONTROL VIA PROGRAMMING

The usual control creation mode is to use the window editor.

You can also create controls from scratch, by programming, and associate processes to them.

The Edit control is a perfect illustration of the power of the WINDEV window editor.

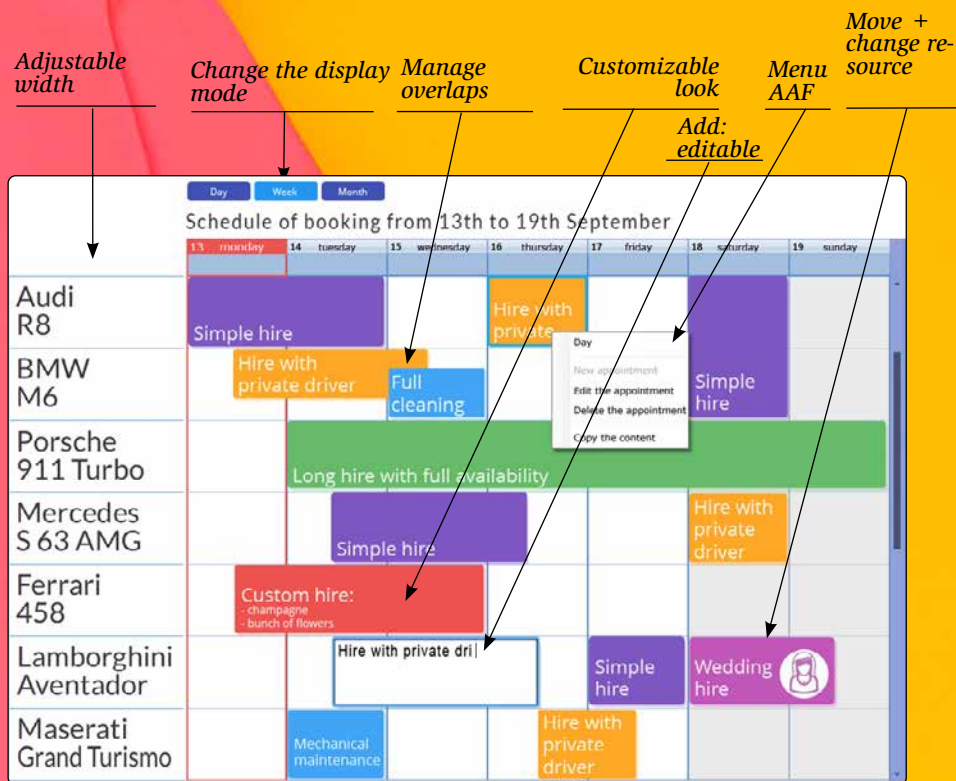
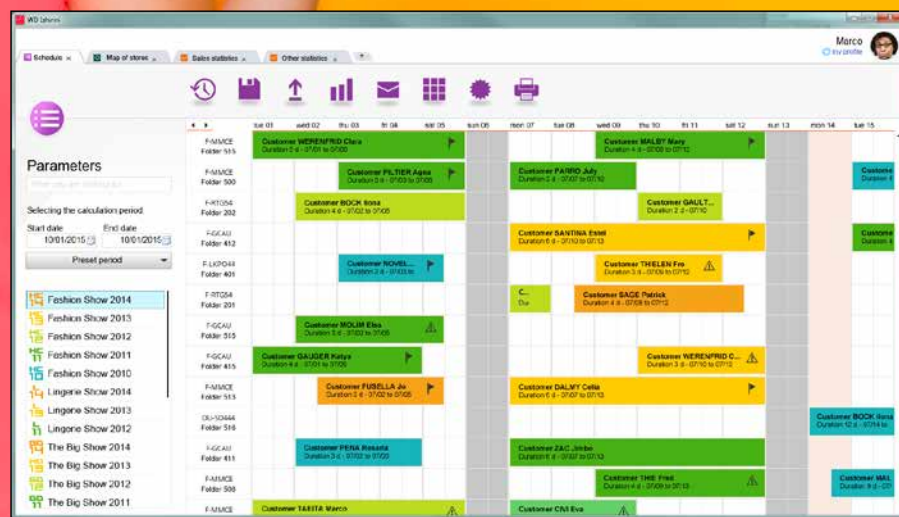
See the complete list of controls on page 34.



SCHEDULER CONTROL: RICH AND POWERFUL

A Scheduler control is very useful to manage the display of multiple resources and it is used in many applications or sites. Thanks to WINDEV, you just need a few hours to use an advanced and fully customizable scheduler in your applications. You save weeks.

A SCHEDULER IN YOUR APPLICATIONS? EASY!



+ Resizing + Background color for holidays

See the complete list of controls on page 34.

MANAGER

Programming a Scheduler control without WINDEV can take several weeks; with WINDEV it's a few hours.

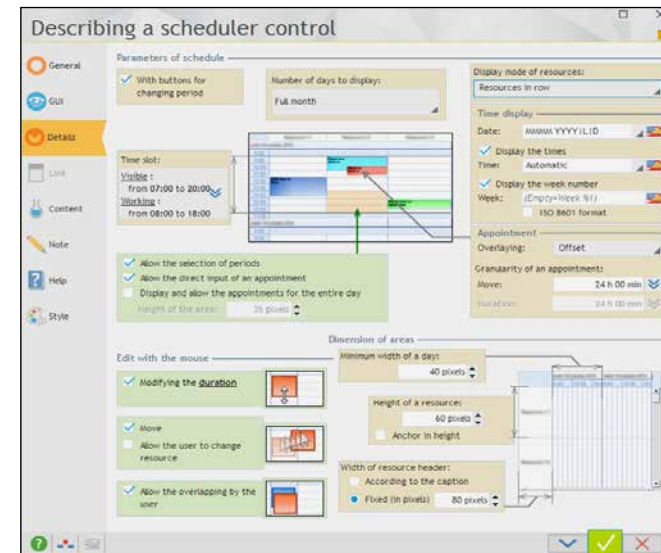
AAF TECHNOLOGY

Add appointments, modify duration, time, assign to another resource: all the required AAFs are available

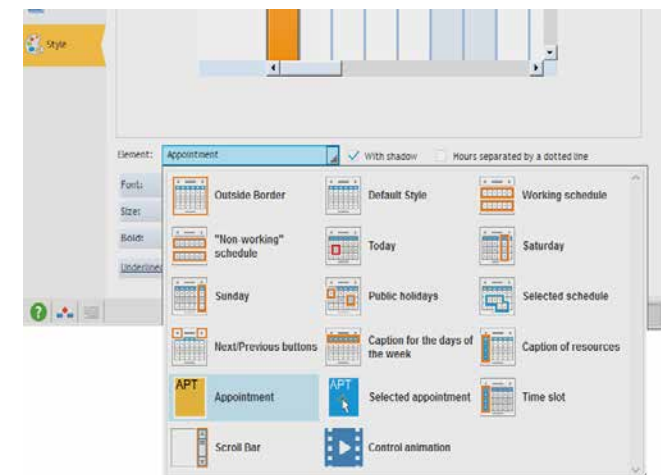
MAIN POINTS

Extremely simple programming
Total customization

Save weeks
of programming

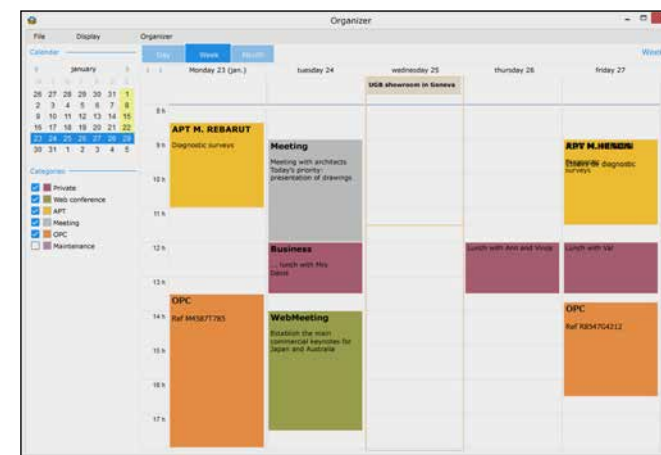


The description of a Scheduler control is done like for all the controls via the "7-tab" technology. In just a few clicks you define the advanced features of the control.



The customization capabilities are very advanced. Here the appointment style changes depending on its status: selected, not selected, etc.

Like with any controls, everything can be modified by programming if necessary.



ORGANIZER CONTROL

WINDEV also offers an "Organizer" control.

The main difference between a Scheduler control and an Organizer control?

An organizer is for one resource (a person, a room, ...), a scheduler concerns several resources.

CUSTOMIZATION OF APPOINTMENTS

You can fully customize the display of each appointment.

It is possible to display several controls in the same appointment: image control (to display a star, or a distinctive symbol, label of any size, borders, ...

LOOK OF THE SCHEDULER CONTROL

The look of a scheduler control is easily defined at a granular level via the "7-tab" window. The settings can be modified by programming. Among the parameters used to define the style, you benefit from:

- external border
- line
- working schedule
- Saturday, Sunday
- holidays
- non-business hours
- today
- selected schedule
- next/previous buttons
- caption for days of the week
- appointment
- selected appointment
- time period
- scrollbar
- animation when changing period
- etc.

FEATURES AIMED AT THE END USER

End users have access to a lot of automatic features (AAF) in a Scheduler control.

You don't need to program anything for the end user to benefit from these features.

Via these automatic features, the scheduler control offers:

- adding an appointment
- editing an appointment's title
- moving an appointment from one time slot to another
- moving an appointment from a resource to another one
- modifying the duration of an appointment
- deletion of an appointment, etc.

FILL THE SCHEDULER CONTROL

The Scheduler control is filled either by programming or automatically via data binding.

Imagine: your schedules are automatically fed with information from your tables and files (HFSQL, Oracle, MySQL, etc.), object instances (OOP), an iCalendar file or advanced WLanguage types (Outlook, Google, etc.).

These operations can be performed in read and write modes.

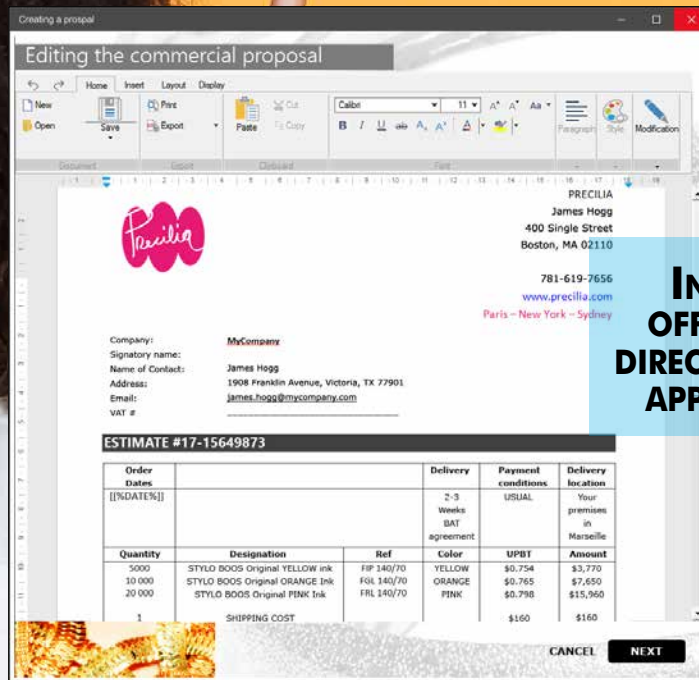
OFFICE CONTROLS :

- SPREADSHEET
- WORD PROCESSING
- PDF READER
- IMAGE EDITOR

Thanks to the Office controls, end users no longer have to leave your application to manage their documents.

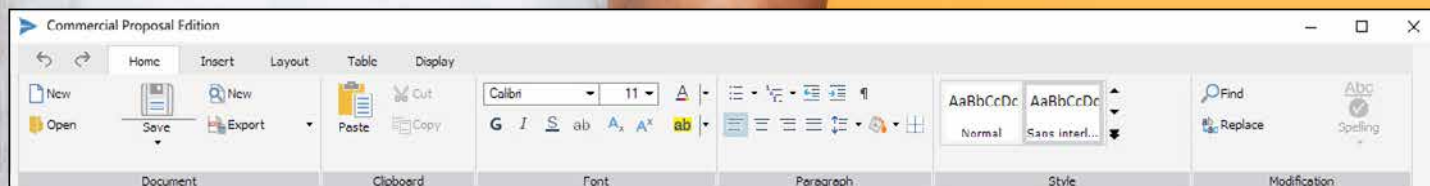
No need to install any external software on the computer.

The controls and their content can be fully manipulated via WLanguage, which offers very extensive capabilities for configuration and automation.



INTEGRATE OFFICE TOOLS DIRECTLY IN YOUR APPLICATIONS

Include a Word Processor in your applications. Easily interact with this control by programming.



STANDARD FORMATS

The Office controls support the following standards: DOCX, XLSX, PDF, JPEG, EPS, GIF, ...

You can also store documents in HFSQL files.

USE BY PROGRAMMING

One of the benefits of

the Office controls is that they can be handled by programming, in WLanguage, like any other control.

The document, paragraph, fragment advanced types and their numerous properties let you create, modify and retrieve texts via programming.

All the customization and configuration capabilities are available, you have total control! You can use programming, for instance, to check content entered by the end user before printing, such as amounts entered, to warn him in case of inconsistencies.

PROGRAMMING EXAMPLES

- Generate a sales proposal according to data stored in files
- Insert images by programming
- Modify the formatting
- Prepare a text to customize
- Position values or text, retrieve values or text.
- Find texts in archived .DOCx
- Prepare custom mailings
- ...

Sophisticated controls required in your applications

MANAGER

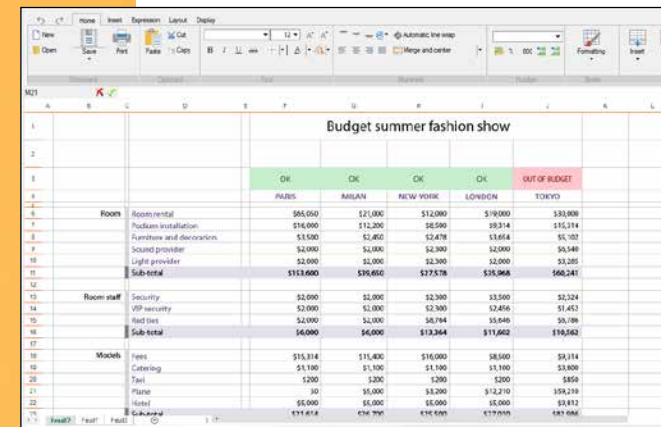
Application-integrated tools: end users no longer have to switch between applications. no additional software to buy and manage.

AAF TECHNOLOGY

The Office controls offer the features expected from these types of controls.

MAIN POINTS

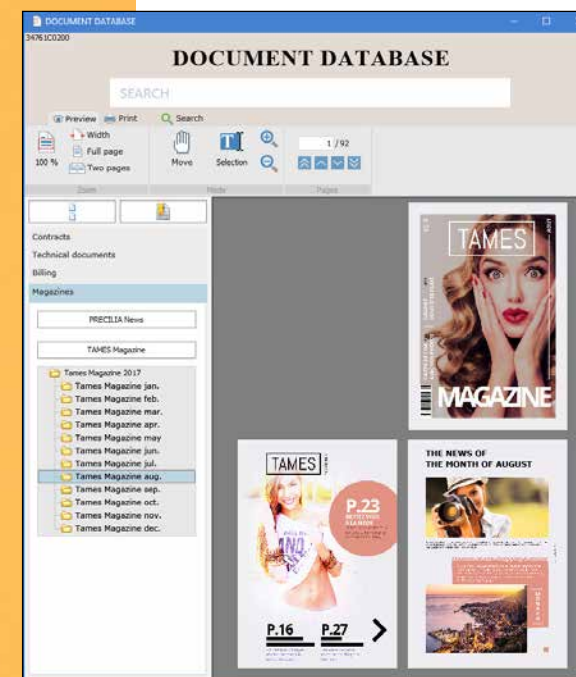
Integrated into the application
Support standard formats
Fully programmable and configurable
Dictionary



SPREADSHEET CONTROL

Include a spreadsheet directly in your applications.

You can fill the sheets by programming.



PDF READER CONTROL

View PDF directly in your applications.

Users don't have to exit or run an external module.

The reader can be a specific window, or it can be directly integrated into a window of your application.

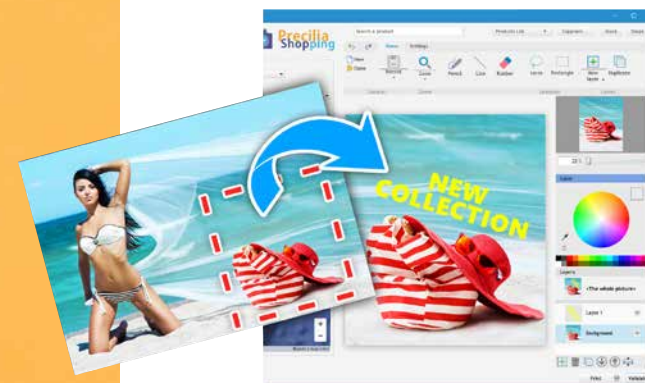


IMAGE EDITOR CONTROL

End users can edit and modify their images directly your application! All the standard formats are supported.

The control uses the features of the environment's image editor (see page 53)



CONSIDERABLE BENEFITS

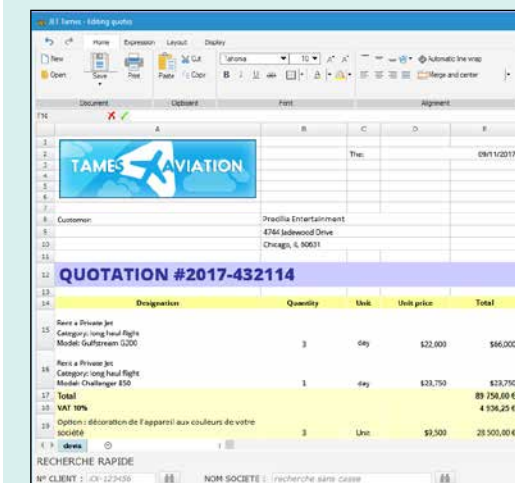
The integration of office controls into your applications offer several advantages:

- Nothing to install, no license headache
- You manage controls: you control the content, with all the power of WLanguage
- Your clients don't leave your applications
- Common interface
- Nothing to order, nothing to pay
- All your customers use the same program (and not 10 different versions of PDF reader for instance), support is easier, deployment is better.

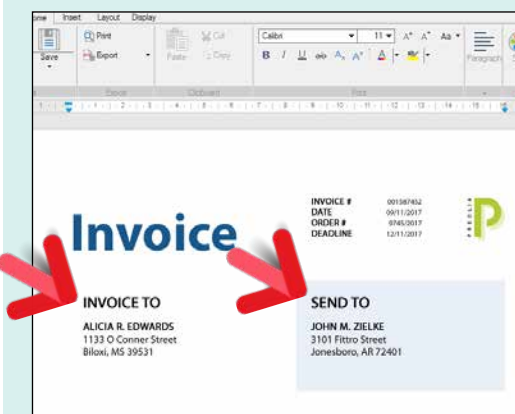
SPELLING CHECKER

A spelling checker is provided with the Word Processing control.

You can also download dictionaries for many languages.



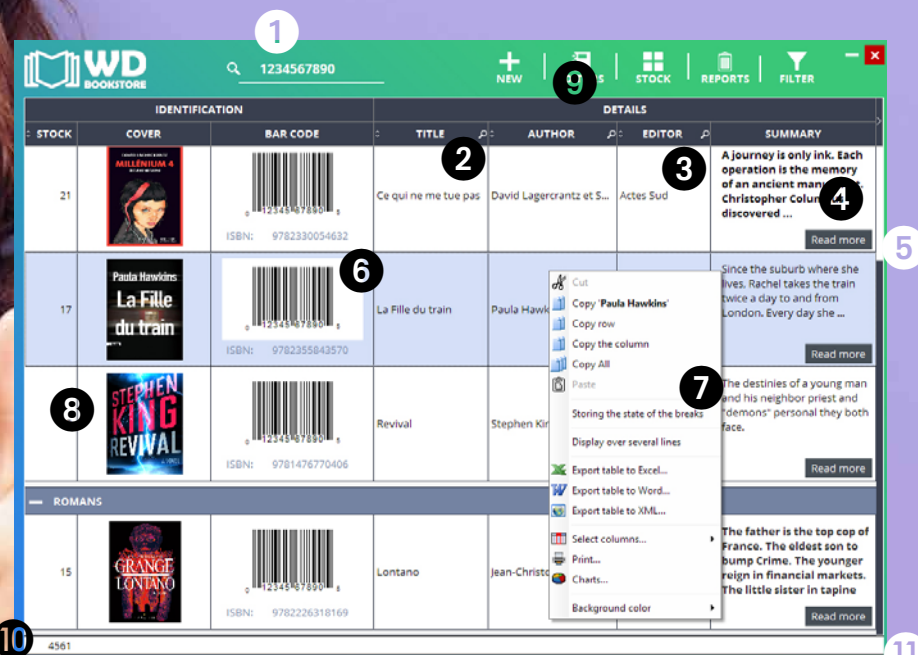
Spreadsheet : Example of Spreadsheet control in an application



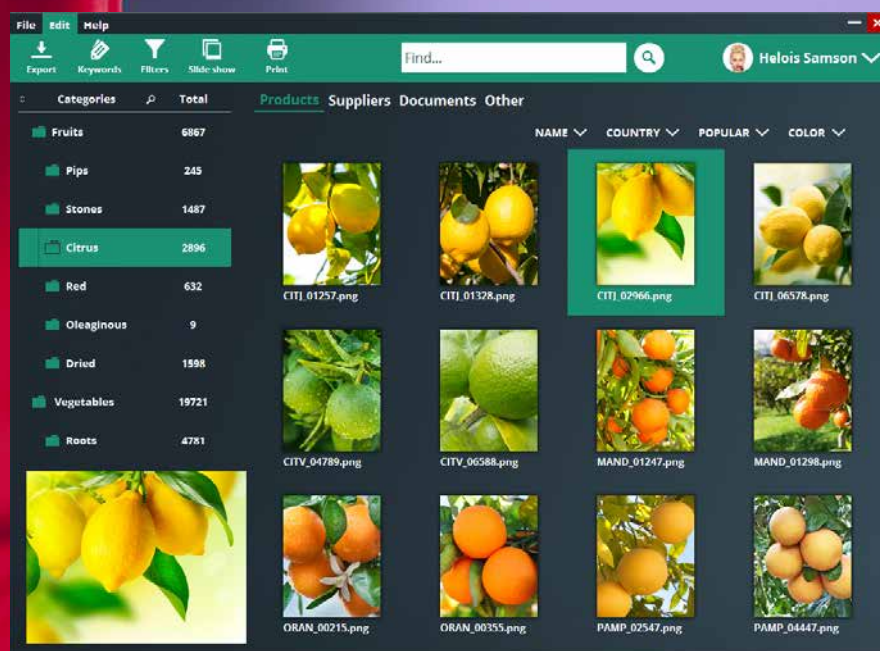
Word Processing : Example of "Text areas" (addresses) in a document

TABLE CONTROL (DATAGRID) POWERFUL

POWERFUL INTERFACES



With WINDEV, you create rich, high-performance view tables.



A window that automatically displays a "image memo" item (Blob) from the database.

Visualizing (and entering) table content is easy with WINDEV. Create easily ergonomic, beautiful visualization windows that offer all the features users expect.

- 1 Search included in the control
- 2 Magnifier for automatic search
- 3 Different fonts, sizes and colors in a cell (RTF)
- 4 Multiline cells
- 5 Proportional scrollbar boxes (also displays the record number)
- 6 Bar code display
- 7 Automatic menu for exporting to XML, EXCEL, WORD, OpenOffice, for creating charts, for selecting columns to view, for printing...
- 8 Image
- 9 Cell merging
- 10 Automatic column total (users can add them themselves thanks to AAFs)
- 11 Resizable table

Also :

- Automatic fill via a query
- Store custom configuration
- Column move by the end user
- Horizontal tables...

MANAGER

Applications use a lot of table controls. The WINDEV Table control is user-friendly and sophisticated.

AAF TECHNOLOGY

Several automatic features are available: sort, move, totals, search...

MAIN POINTS

Very powerful and customizable control

Superb tables (datagrids) in a few clicks

SLANTED HEADER

The column headers can be slanted (by degree).



Table with slanted column header

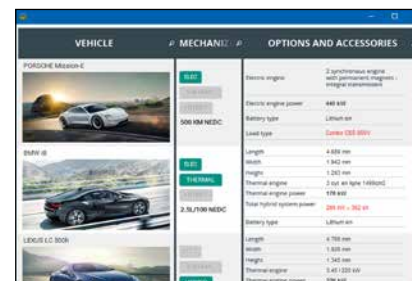
MERGED HEADER

Column headers can be merged, and one or more over-header can be set.

	2016	2017
RVICE	260,840.00	280,410.00
	658,050.00	551,210.00
	341,220.00	364,036.00

COLUMN TYPES

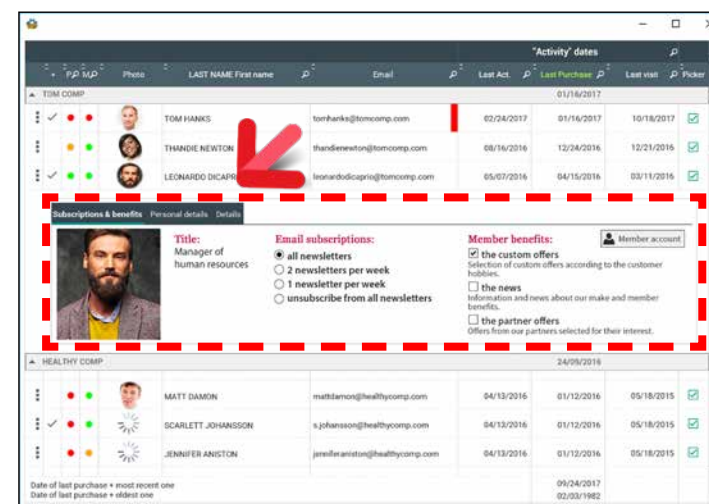
Several types of columns can be present in a visualization table: text, editable text, combo box, image, check box, progress bar, any control, and even a table inside a column cell (tables inside tables).



Each piece of content is different

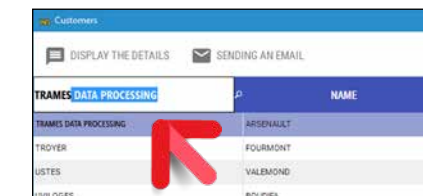
TABLE ROW = WINDOW

A table row can be... a window! Selecting a row can automatically open a window : product form, customer, ...



SEARCH INSIDE THE TABLE

End users can search in the table: starts with, contains, ends with, does not contain... greater than, less than, equal to, different from...



The user can sort based on one column, or multiple columns successively.

END USERS ADD TOTALS

The Table control gives users the ability to define their own automatic totals, counts and averages in a break.

BUCA RATON	8,296.23
HOLLYWOOD	1,820.69
MIAMI	1,704.95
Total FLORIDE	\$11,823.87
Total Country	\$27,307.79

End users can add a total to a column

EXPORT TO EXCEL

The end user can also export the content of the table to Excel, to perform calculations or simulations (see page 43)

TABLE WITH BREAKS

Model	Hat	Type	Usage
- Swimsuit size : 90			
Bali	C	2 Items	Sport
Houla	D	1 Item	Sport
- Type of cup : D			
Bali	D	2 Items	Sport
Sava	D	2 Items	Hobbies

A table may contain breaks.

TABLE CONTROL (DATAGRID)

Applications often use "table" controls (grid). The reading of the data is optimized by the table: a table can contain millions of rows and still be easy to navigate.

EASY CREATION

Like all the WINDEV controls, a table control is easily defined, visually in the editor using the "7-tab" technology.

Customization is extensive, with quasi endless possibilities. Everything is totally customizable: row color (even, odd), thickness and color of the grid, fonts, size, color, header height, background image, opacity, scrollbar design, etc.

PROGRAMMING

A Table control can be used for input and/or display.

It is filled by programming, either automatically or by data binding.

You can select multiple lines, as well as columns, individual cells, sort, filter, etc.

BREAKS

A table may contain one or more nested breaks. You can make the break header always visible.

POWERFUL AUTOMATED FEATURES (AAF)

The Table control offers a large number of powerful AAFs (see page 44s).

The end user can move columns, sort, search, set filters, export the table to Excel...

The end user can also add totals, averages on the columns: useful because too often the developer forgets to display some information!

The WINDEV Table control is very powerful.

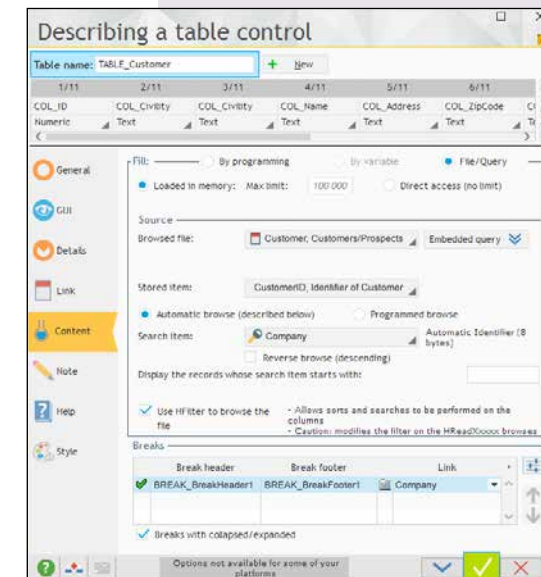


CHART CONTROL : RICH

A powerful Chart control comes with WINDEV.

The Chart control proposes charts and a 3D spatial view charts.

Creating charts for your applications is **extremely simple**.

You benefit from a wide range configuration possibilities.



Charts for users of your applications



An image can be added in the background or on the chart, which makes the chart even more stunning. Here, a column chart showing a nightclub's entries.

ALL TYPES OF CHARTS!

WINDEV offers all the types of chart:

- Line charts
- Bar charts
- Area charts
- Pie charts and their variations : donut, semi-circle and sunburst

- Scatter charts
- Bubble charts
- Radar charts
- Surface charts
- Waterfall charts
- The stock charts (Japanese candlestick, bar chart, min/max chart)

- Composite charts
- Trend lines
- 3D scatter charts
- 3D Pyramid.

A chart is a control like any other control, it can be found in a window with other controls.



See the complete list of controls on page 34.

WATERFALL CHART

The Waterfall chart is a column chart that allows you to represent the sums (positive or negative) of several series.

Used mainly in the financial field, it allows for instance to view the evolution of a value over time, or to see the impact that various elements have on this value.

"SURFACE" CHART

A Surface chart is used to represent correlated analogical data, according to 3 axes. For example, represent the resistance of a material according to pressure and temperature.

SUNBURST CHART

The Sunburst chart is a pie chart containing several levels of hierarchical data.

For example, the chart presents data for the entire world. The first level corresponds to the data grouped by continents, the second level corresponds to the data grouped by country,...

COMPOSITE CHART

A Composite chart lets you group several types of charts into just one.

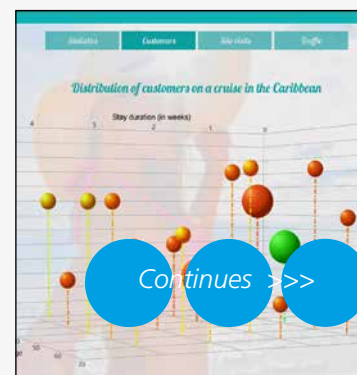
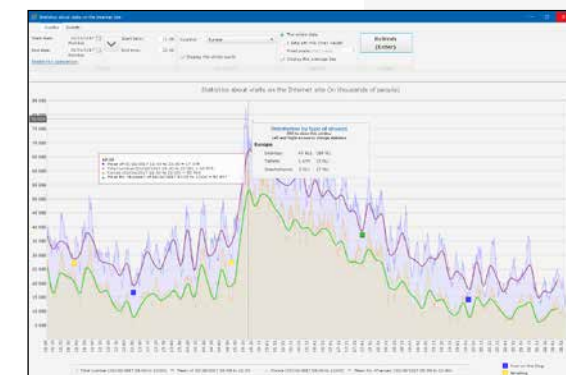
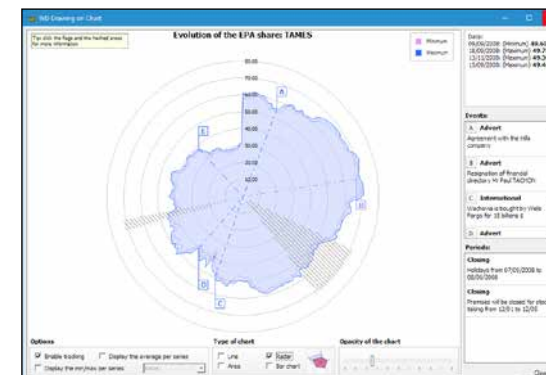
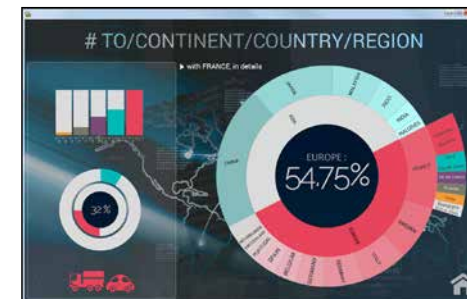
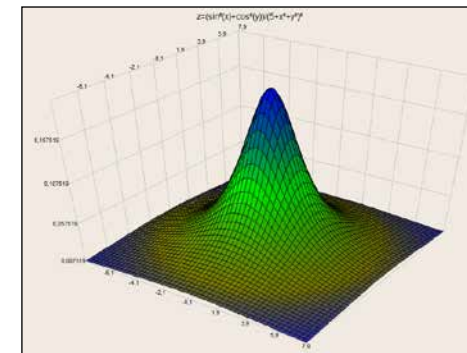
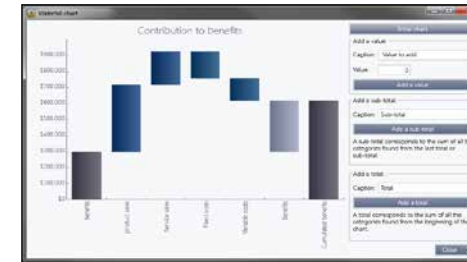
For example, a bar chart with a line chart.

CHART ANIMATION

You can animate the display of a chart. The first time the chart is displayed, each bar seems like it springing out of the X axis.

When a value changes, the bar (or the pint on the curve) progressively moves to its new value.

These animations are available for bar charts, line charts, bubble charts.



THE CHART CONTROL

WINDEV comes with a powerful and easy-to-use chart control.

This control offers a large number of data visualization capabilities.

The wizard for chart creation allows you to create a dynamic chart in just a few clicks.

This chart is fully customizable.

FILL

The control is filled by programming or automatically by data binding.

Data can be fed in real time, to create a sliding graph.

SOPHISTICATED OPTIONS

A chart is defined like any other control, in the editor via the "7-tab" technology.

The available options are plenty: marks of axes, time scales, logarithmic scales, grid, size and color of the points, line thickness, bar thickness, legends, titles,...

CUSTOMIZATION AND STYLE

Charts are highly customizable. There are some parameters common to all the types, and some that are type specific. For example:

- Customization of series color and use of gradient colors
 - Custom tooltip on data
 - Animations each time the chart is drawn
 - Display an image in chart background
- Examples of parameters specific to pie charts:
- Choice of the starting angle
 - Pulling out the sections
 - Display the labels
 - Use of realistic light effects ...

PRINTING CHARTS

Chart printing offers many options.

THE END USER CAN HIS OWN CHART

End users can also create charts via the user menu (AAF feature), allowing all users of your applications to graphically view the requested data.

The Chart control is included as standard, like all the other controls.

CONTROL PIVOT TABLE CONTROL (ROLAP CUBE)

YOUR DATA COMES TO LIFE

Country : France		Period								
Products		2013				2014				
		1st trimester	2nd trimester	3rd trimester	4th trimester	1st trimester	2nd trimester	3rd trimester	4th trimester	
+	eBooks	\$11 401 020 Qty : 250 051	\$18 985 617 Qty : 285 029	\$15 746 638 Qty : 255 883	\$14 984 142 Qty : 241 325	\$13 236 757 Qty : 226 729				
-	Books									
	Audio Books	\$16 512 800 Qty : 320 051	\$15 974 741 Qty : 315 038	\$15 446 54 Qty : 315 810	\$16 249 210 Qty : 330 211	\$14 286 321 Qty : 286 582				
	Paper books	\$26 432 074 Qty : 512 890	\$24 287 453 Qty : 489 031	\$23 747 988 Qty : 412 700	\$22 018 055 Qty : 408 214	\$23 745 963 Qty : 410 520				
+	High-Tech	\$35 471 615 Qty : 198 003	\$27 859 634 Qty : 185 209	\$29 451 102 Qty : 120 817	\$28 014 999 Qty : 118 820	\$32 320 984 Qty : 156 729				
+	Sports and Leisure	\$9 503 178 Qty : 120 020	\$10 214 987 Qty : 285 028	\$11 124 832 Qty : 315 883	\$10 187 210 Qty : 298 012	\$8 129 823 Qty : 286 729				
+	Games	\$56 954 850 Qty : 812 015	\$51 875 327 Qty : 785 011	\$50 871 039 Qty : 775 712	\$49 012 444 Qty : 721 543	\$49 238 981 Qty : 699 541				
+	Music & DVD	\$34 123 198 Qty : 513 052	\$29 875 602 Qty : 465 027	\$31 954 214 Qty : 315 883	\$31 987 871 Qty : 310 140	\$30 017 985 Qty : 286 757				
+	Jewellery	\$19 421 144 Qty : 90 051	\$18 987 325 Qty : 84 029	\$18 786 147 Qty : 86 541	\$19 120 014 Qty : 88 141	\$18 951 051 Qty : 75 721				
+	Kitchen and House	\$65 867 602 Qty : 482 911	\$64 875 621 Qty : 478 880	\$59 526 749 Qty : 471 741	\$58 140 798 Qty : 471 741	\$63 146 847 Qty : 471 741				
Total		\$275 687 481 Qty : 3 299 044	\$262 936 307 Qty : 3 268 616	\$256 655 256 Qty : 3 078 109	\$249 714 743 Qty : 2 988 147	\$253 074 712 Qty : 2 976 082				

This pivot table contains several dimensions: countries 1, families 2, years 3. The family and year dimensions have "hierarchies": subfamilies 4 products, quarters and months. Here the end user has expanded the details of the "product" family by clicking "+". The user can expand all the data and dates that offer the "+". Everything is automatic, no programming is needed to expand.

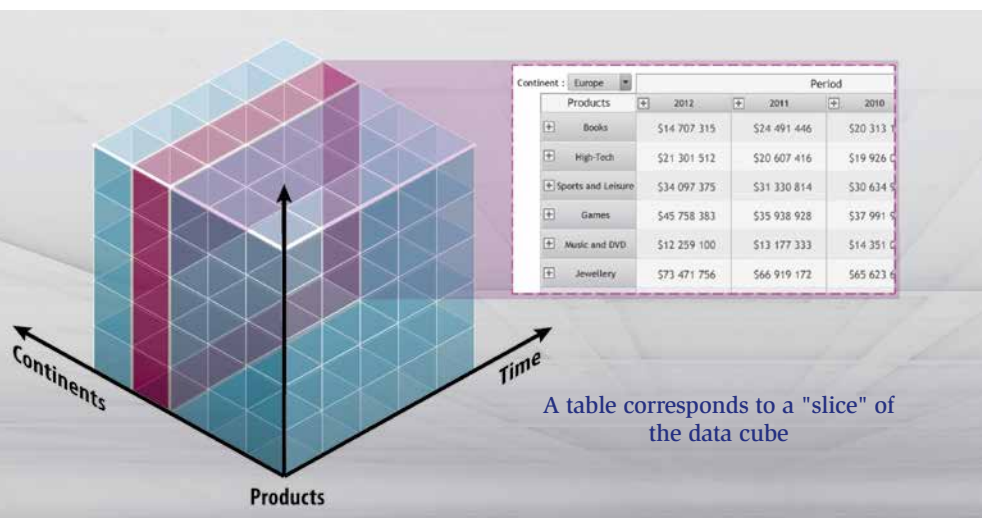
MORE FUN THAN A RUBIK'S CUBE!

Why is the Pivot Table control also called a "cube"? This is

because it often visualizes data in 3 dimensions. The visualized table corresponds to a "slice" of the cube, but it is possible to view all the slices based on

all the axes.

Actually, the number of dimensions that a pivot table can handle is unlimited.



Pivot Table control: decision makers love it.

The Pivot Table control dynamically displays data coming from the crosscheck of different files found in a database.

For example: the volume of sales according to product families, products, regions, over time, with or without details.

Everything is displayed dynamically, including row and column headers.

The pivot table performs the calculations.

This pivot table control is also called ROLAP.

MANAGER

The Pivot Table control, also called "rOlap cube" is great: you can analyze the data from your information system, on the dimension of your choice.

AAF TECHNOLOGY

The end user can fully customize the Pivot Table control

MAIN POINTS

An unbelievable control!

Offer data analysis to your end users

2nd trimester	3rd trimester	4th trimester	2014	2013	Total
\$13 976	\$11 160	\$11 966	\$404	\$374	430
66	77	80	12	16	374
\$1 160	\$22	\$1 966	\$404	\$374	430
6	77	80	12	16	374
\$3 289	\$31 918	\$10 414	\$58 507	\$103 961	
44	118	82	48	638	
\$203	\$1 966	\$404	\$18 668	\$70 877	
32	82	349	482		

Data folding AAF: the end-user collapses or expands the table with one click!

Period		2015	2014	2013
		1st trimester	2nd trimester	3rd trimester
+	eBooks	\$11 401 020 Qty : 250 051	\$18 985 617 Qty : 285 028	\$15 746 638 Qty : 255 883
+	Audio Books	\$16 512 800 Qty : 320 051	\$15 974 741 Qty : 315 038	\$16 249 210 Qty : 330 211
+	Paper books	\$26 432 074 Qty : 512 890	\$24 287 453 Qty : 489 031	\$23 747 988 Qty : 412 700
+	High-Tech	\$35 471 615 Qty : 198 003	\$27 859 634 Qty : 185 209	\$29 451 102 Qty : 120 817
+	Sports and Leisure	\$9 503 178 Qty : 120 020	\$10 214 987 Qty : 285 028	\$11 124 832 Qty : 315 883
+	Games	\$56 954 850 Qty : 812 015	\$51 875 327 Qty : 785 011	\$50 871 039 Qty : 775 712
+	Music & DVD	\$34 123 198 Qty : 513 052	\$29 875 602 Qty : 465 027	\$31 954 214 Qty : 315 883
+	Jewellery	\$19 421 144 Qty : 90 051	\$18 987 325 Qty : 84 029	\$18 786 147 Qty : 86 541
+	Kitchen and House	\$65 867 602 Qty : 482 911	\$64 875 621 Qty : 478 880	\$59 526 749 Qty : 471 741

In this Pivot Table control (PVT), the end user has expanded the details for the year 2015 in quarterly format. He can then expand the months in the quarter ("+" button)

Country : France		Period				
Products		2015	2014	2013	2012	
+	Books	\$14 707 315	\$24 491 446	\$20 313 163	\$17 076 416	
	Audio Books	\$21 301 512	\$20 607 416	\$19 926 046	\$18 429 315	
	Paper books	\$34 097 375	\$31 330 814	\$30 634 905	\$30 632 210	
+	High-Tech	\$45 758 383	\$35 938 928	\$37 991 922	\$41 694 016	
+	Sports and Leisure	\$12 259 100	\$13 177 333	\$14 351 033	\$10 487 416	
+	Games	\$73 471 756	\$66 919 172	\$65 623 640	\$63 518 210	
+	Music & DVD	\$44 018 925	\$38 539 527	\$41 220 936	\$38 723 210	

This PVT contains an additional dimension: the country, which automatically filters the table. The end user has expanded the details of the "Books" product family

Products		Period				
		2015	2014	2013	2012	
+	America	\$20 313 163	\$17 076 416	\$24 491 446	\$14 707 315	
+	Europe	\$19 926 046	\$18 429 354	\$20 607 416	\$21 301 512	
+	Asia	\$30 634 905	\$30 632 292	\$31 330 814	\$34 097 375	
+	Africa	\$37 991 922	\$41 694 069	\$35 938 928	\$45 758 383	
+	High-Tech	\$14 351 033	\$10 487 472	\$13 177 333	\$12 259 100	
+	Europe	\$65 623 640	\$63 518 285	\$66 919 172	\$73 471 756	
+	America	\$41 220 936	\$38 723 201	\$38 539 527	\$44 018 925	

In this PVT, the revenue for each product family is detailed per continent. If the end user expands the continent (by clicking "+"), each country will be displayed

Country : France		Period			
Products		2017	2016	2015	2014
+	eBooks	\$19 401 020	\$18 985 617	\$15 746 638	\$13 236 757
+	Audio Books	\$16 512 800	\$15 974 741	\$15 446 547	\$14 286 321
+	Paper books	\$26 432 074	\$24 287 453	\$23 747 988	\$23 745 963
+	High-Tech	\$35 471 615	\$29 859 634	\$27 451 102	\$26 320 984
+	Sports and Leisure	\$9 503 178	\$10 214 987	\$11 124 832	\$8 129 823
+	Games	\$56 954 850	\$51 875 327	\$50 871 039	\$49 238 981
+	Music and DVD	\$34 123 198	\$29 875 602	\$31 954 214	\$30 017 985

Of course the PVT style can be fully customized.

The Pivot Table control is a true powerhouse. It saves months of development. It adds enormous value to WINDEV by itself.

PIVOT TABLE: AUTOMATIC FILL

Filling the PVT control is very easy: It is automatic!

The WINDEV rOlap engine automatically reads the data and performs the necessary calculations for all the possible levels of details. It automatically fills the row headers and the column headers.

AT RUN TIME

The end user can choose the level of details for the data displayed.

The displayed result can be exported like any WINDEV table: Excel, Word, PDF, email, ... or automatically printed.

HOW TO DEFINE IT?

Defining a Pivot Table control is very simple with WINDEV: simply answer the wizard's questions.



Simply define the core content of the table and the dynamic headers of the rows and columns. The table's content is defined by one or more calculations to perform on one or more items, and/or by WLanguage code.

Then, all you have to do is define the file item that will be used to create the column headers and the row headers.

PERSISTENCE OF THE RESULT

The execution's result can be stored, and then reloaded later, without having to re-read the data files (olapSave and olapRestore functions).

This allows you to avoid recalculating the entire cube for data that won't change anymore, such as last year sales figures.

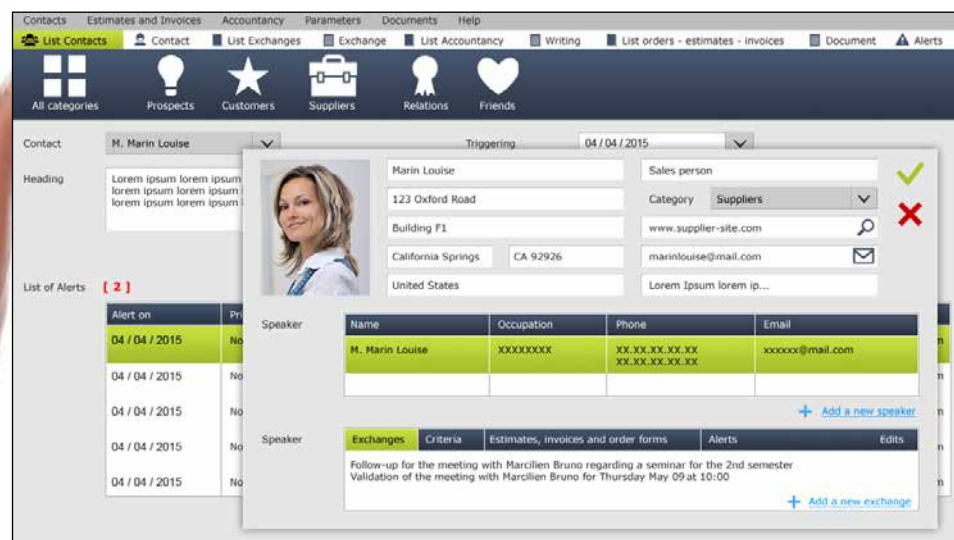
PERIOD COMPARISON

The end user may ask to compare a given period to the same period of previous years. For example, compare sales from February 2019 to February 2018 to 2015.

Creating a Pivot Table is very easy, and the result is breathtaking.

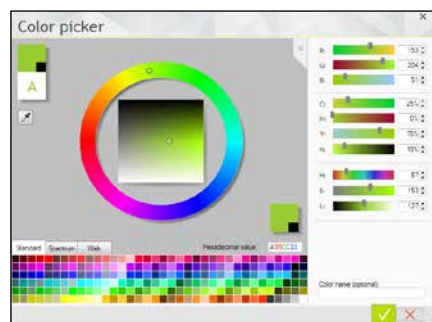
AND THE OTHER CONTROLS...

All the controls in WINDEV are powerful and sophisticated. All the controls offer dozens of configuration, security and customization possibilities.

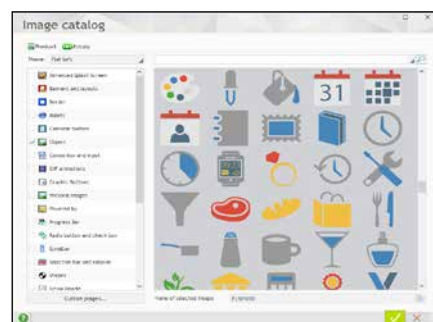


LIST OF CONTROLS

- WINDEV offers all the sophisticated controls you may need in an application, fully customizable and ready to use:
- layout control
 - dockable panel control
 - formatted edit controls
 - token control
 - display control (formatted text)
 - tabs
 - drop-down list boxes
 - combo boxes
 - auto-filled-combo boxes
 - images
 - animated images
 - image gallery
 - scrollbars
 - graphic buttons (icons)
 - animated graphic buttons
 - text buttons
 - push buttons
 - buttons with count-down
 - check boxes
 - single &
 - multi-column radio buttons
 - arrays
 - graphic list (tree-view)
 - treeview table
 - tree map
 - drawer
 - OLE controls
 - ActiveX control
 - click area
 - "spin" button
 - slider
 - progress bars
 - HTML controls
 - icon bars
 - geometric shape
 - splitter
 - status bar
 - camera
 - video conferencing
 - RTF
 - loops
 - sidebars
 - chart
 - bar codes
 - carousel
 - organizer
 - scheduler
 - organization
 - chart
 - rating
 - repositionable note
 - ribbon
 - pivot table
 - timeline
 - dashboard
 - Gantt
 - spreadsheet
 - word processing
 - PDF reader
 - image editor
 - Google map
 - wire
 - ...



Advanced color picker for control styles



WINDEV comes with over 10.000 "clipart" (buttons, images, etc.). Use them freely in your windows, buttons,...

NON-RECTANGULAR AND TRANSPARENT WINDOWS

WINDEV allows you to create windows of any shape, and manages the opacity of controls and backgrounds.

CONTROL BY PROGRAMMING

The usual control creation mode is the window editor.

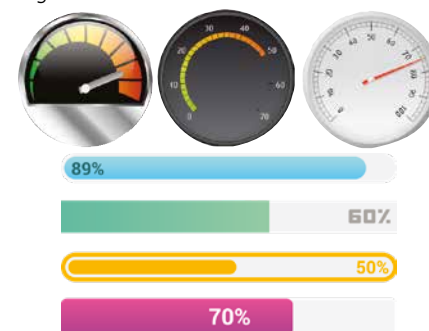
You can also create controls from scratch, by programming, and associate processes to them.

You can also clone controls via programming.

PROGRESS BAR CONTROL

Controls offer unlimited richness and configuration.

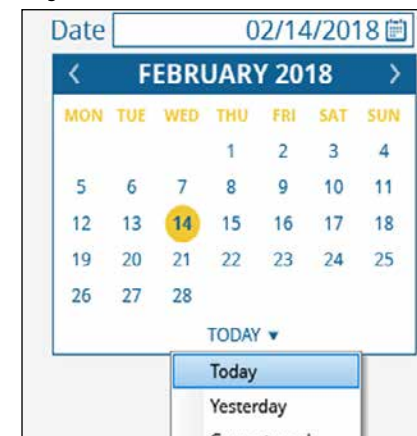
Here's an example from the progress bar settings window



DATE CONTROL WITH AUTOMATIC CALENDAR

This control is used to enter and display a date. The integrated input mask prevents from entering invalid dates.

The control shows a mini icon that opens a (fully customizable) calendar to make input easier. The calendar can also be displayed by programming.



DATE/TIME MASK : «2 HOURS AGO», "YESTERDAY", ETC...

Powerful date and time masks are offered.

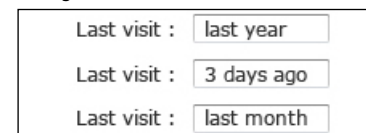
Mask	Example
Automatic	Automatic
MM/DD/YYYY	02/08/2017
MM/DD/YY	02/08/17
DDD DD	
DD/MM/YYYY	08/02/2017
DD/MM/YY	08/02/17
YYYY/DD/MM	2017/08/02
YY/DD/MM	17/08/02
DDDD DD MMMM YYYY	wednesday 08 february 2017
Dddd DD Mmmm YYYYY	Wednesday 08 February 2017
Dddd DD Mmm YYYY	Wednesday 08 Feb 2017

Date masks

But WINDEV goes further in date formats!

For representing dates and times, a large number of applications use a terminology based on the spoken language.

Instead of displaying "This event occurred at 14:28 pm", automatically display "This event happened 2 hours ago" (or 2 days ago, or 3 weeks ago, etc.).

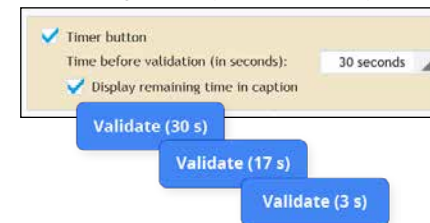


HEXADECIMAL MASK

The edit and static controls offer an "Hexadecimal" mask. This allows you to display a binary buffer in a readable way.

VALIDATE BUTTON WITH COUNTDOWN (STOPWATCH)

This type of button is used to display a countdown and to validate the window if no action is performed by the user: very useful to prevent from locking a batch process for example!

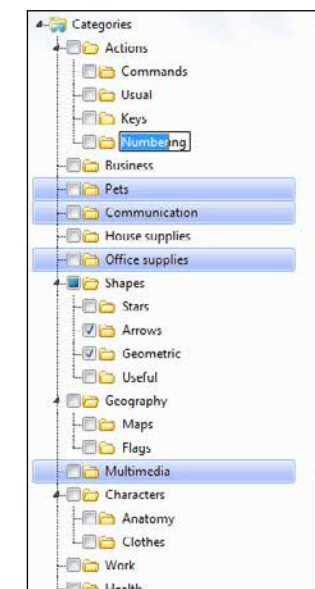


TREEVIEW

The "TreeView" control is very powerful.

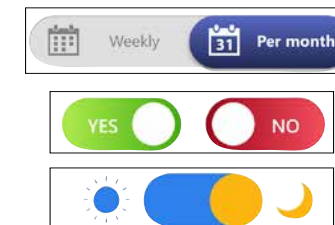
Among the numerous features, you can benefit from:

- input
- the end user can perform a multi-selection
- checkmarks
- the element displayed can be multilingual elements
- data binding
- drag & drop automatically managed between two Treeview controls
- configurable background color
- a tooltip can be displayed automatically when hovering over a row (content configurable by row)
- ability to change the image of the expand button
- colors can alternate on the treeview rows
- configurable row height
- Etc, ...



CHECK BOX CONTROL

This control offers different modes, the classic modes, and an additional graphic mode: clickable switch.



TOKEN EDIT CONTROL

The token edit control allows you to create sleek interfaces for choosing between options.



AND EVEN MORE CONTROLS: VERY POWERFUL, VERY SOPHISTICATED

The window editor allows you to create all types of controls: button, radio button, clickable area, scrollbar, menu, tab, map, spin, image, video and image gallery (see page 86).

Don't forget that the (free) Express version of WINDEV enables you to try and test all these controls.

The following pages also present several sophisticated controls that come as standard for your applications.

MANAGER

The WINDEV window editor lets you create all the types of controls, from the most sophisticated ones to the simplest.

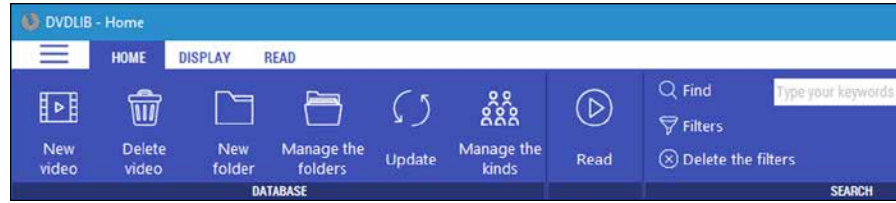
AAF TECHNOLOGY

All the AAF are available for controls (see pages 42 to 45)

MAIN POINTS

The controls created with WINDEV respect the style book of the application. Each control has dozens of possible settings

All controls comes as standard and are fully integrated



WYSIWYG MENU GENERATOR

The menu editor lets you create fully configurable menus based on Windows standard.

RIBBON CONTROL

A Ribbon control offers a menu feature that is shaped like a ribbon. It is used to present in a small surface a large number of controls arranged logically in order to perform choices.

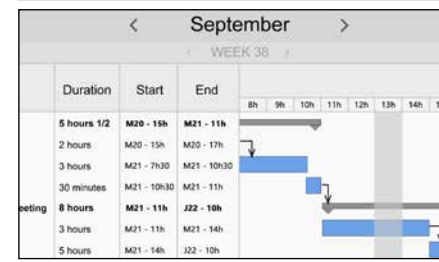
EDITING A RIBBON CONTROL

A ribbon control includes several panes. Each pane is represented by an icon and a caption. Each pane contains groupings separated by a vertical line.

A group can contain controls of any type: icon, button, combo box, static, edit area, looper... In the editor, to add a control into a grouping, all you have to do is copy it or drop it.

At run time, each group automatically organizes its controls based on the available width.

GANTT CHART CONTROL



In a "Gantt chart", tasks are organized in rows, and time units in columns.

The dependency links between tasks are materialized by arrows that link the relevant tasks.

The display of the tasks according to their dependencies is done automatically.

When the user moves a task, all the related tasks are automatically updated.

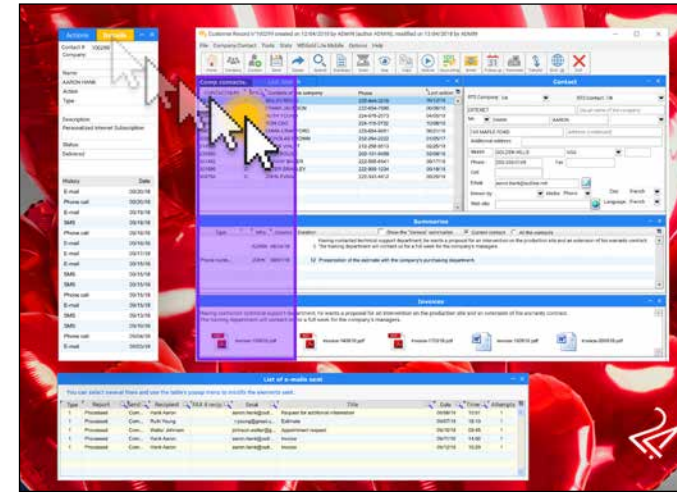
A "Gantt Chart" is used to manage :
 • the duration of tasks
 • the progress of tasks
 • the dependencies between tasks, the color of the tasks
 • the markers
 • the display granularity: in minutes, times, days, weeks
 • the period displayed
 • the display or not of the week numbers...

DOCKABLE PANEL : END USERS REARRANGE THE AREAS

The Dockable Panel control allows you to easily organize the software interface into areas end users can freely move.

Users can detach and move the areas you have previously defined

Dockable Panels allow creating sophisticated interfaces with ease.



End users will be amazed by the customization possibilities available to them. And for your teams: no code required!

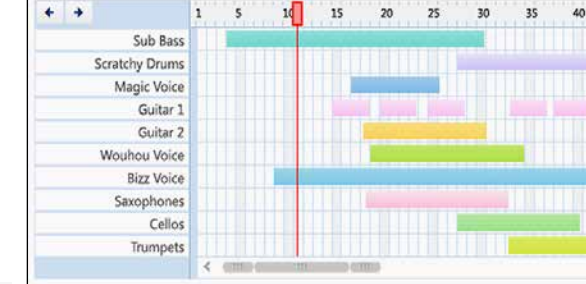
TIMELINE CONTROL

The Timeline control is used to represent the chronology of close events, which can happen in parallel.

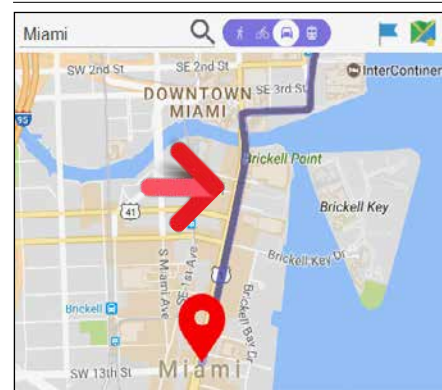
This control is used for example to:
 • make a video montage
 • represent automated events...

The granularity can be as fine as the microsecond.

The scale of the displayed timeline can be modified by the end user through a slider. The marker can be moved with the mouse or by programming.



MAP CONTROL



The WINDEV map control is used to manage Google Maps in applications: display a map, position markers, draw paths,...

DASHBOARD CONTROL



Data is shown in widgets. These widgets can be moved, hidden and automatically resized, directly by the end user.

The end user can customize his dashboard (persistent customization).

Widgets are clickable, and can start any process or window.



The widgets found in the dashboard are just "internal windows".

You can define different layouts and load the one that suits the context of use.

A WLanguage process lets you refresh a widget at regular time intervals or on demand.

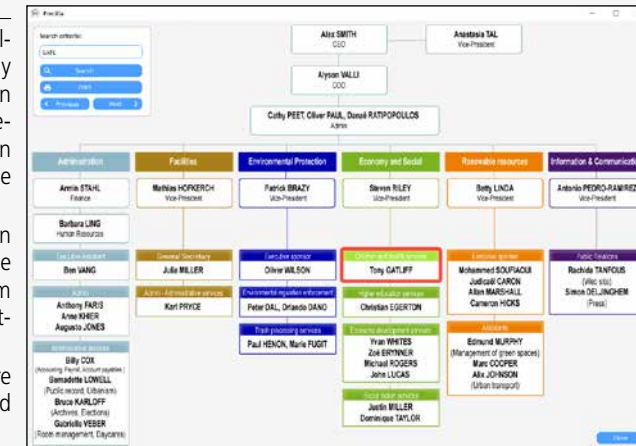
ORGANIZATION CHART CONTROL

The Organization chart allows you to automatically display an organization chart, a hierarchy of elements, dynamically based on the data found in a database or in variables.

The organization chart can be horizontal or vertical. The data can be displayed from top to bottom and from bottom to top.

Links between elements are automatically deduced and can be direct or broken.

A treeview control can contain several trees (several roots).



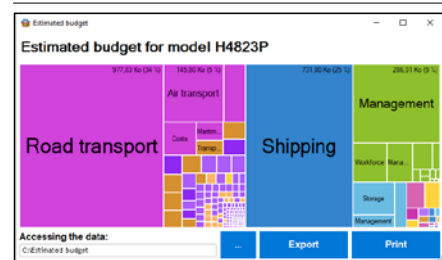
REPOSITIONABLE NOTE CONTROL

The "Repositionable note" control can be created by the application's developer or by the end user.

The Note control lets you display instructions, information, or actions to perform: instructions, recommendations for a substitute during holidays, ...



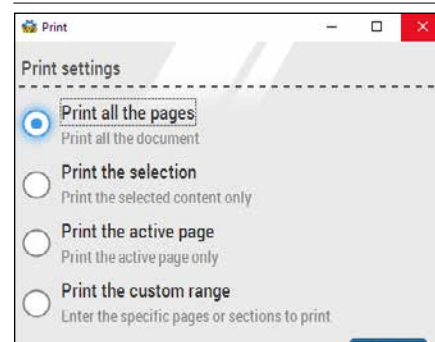
TREEMAP CONTROL



The TreeMap control is used to dynamically represent data, possibly in tree structure, in a balanced way.

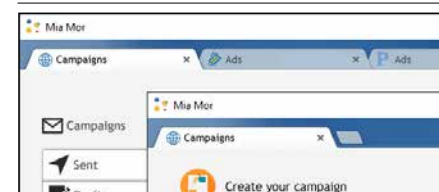
This is useful for allowing an intuitive representation of data volumes. The areas are clickable: this allows you to display a piece of detail.

RADIO BUTTON CONTROL



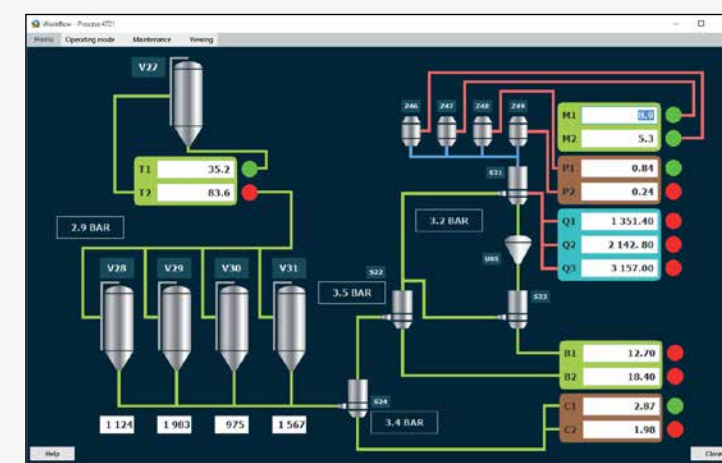
In addition to the traditional radio button controls, WINDEV offers radio buttons with free images and text.

"BROWSER" TAB CONTROL



This tab management mode lets you display several windows within the same same window. Going from a window to another one is done via tabs, according to an operating mode close to the one of Internet browsers.

The tabs can be "pulled out" from the main window, to process more data simultaneously for instance.



WIRE CONTROL: CREATE WORKFLOWS

The "Wire" control is used to visually link 2 controls.

This control allows you to easily create workflows.

Links are automatically managed, and automatically keep track of the modifications on the linked controls: moving, resizing, visibility...

A wire control is created like any control, in the window editor. All you have to do is select the control in the ribbon, then link the 2 controls...

A wire control can also be created by programming using the usual `ControlCreate` or `ControlClone` function.



"7 TABS" TECHNOLOGY : POWERFUL CONTROLS IN JUST A FEW CLICKS

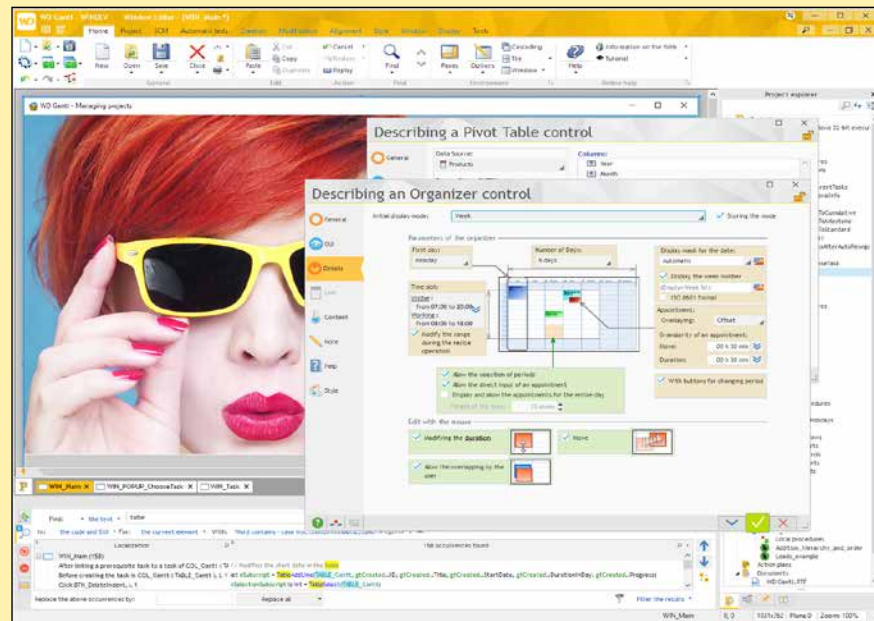
With WINDEV, the characteristics of each control are easily defined via a **exclusive dialog mode** both simple and powerful: the **"7 tabs"**.

Each tab is used to define, using simple language, the different **characteristics** of a control, a window, a report...

The content of the tabs varies according to the type of control. Here we present only a few of the tabs (see next pages as well).

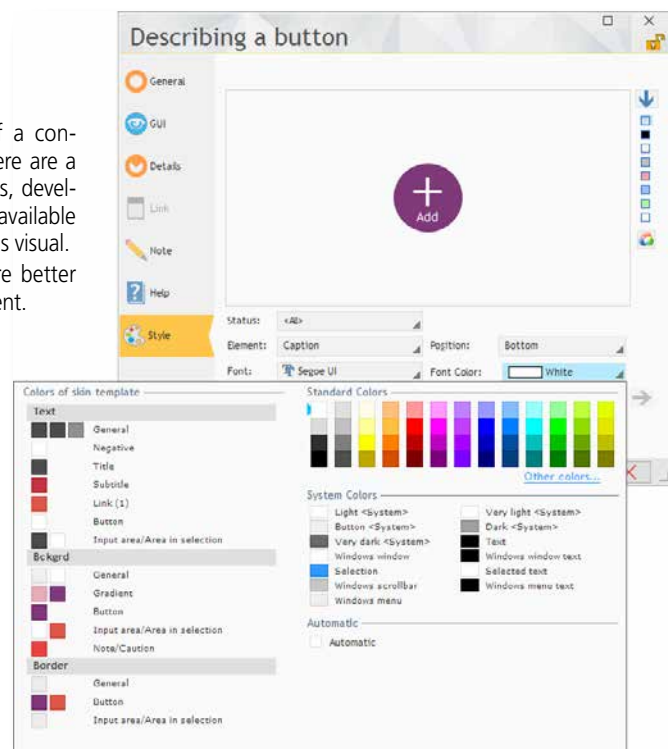
You can also create and modify controls via the traditional "modifier" method or by programming.

THE "7-TAB" CONCEPT ELIMINATES 95% OF THE CODE NEEDED FOR THE UI



Example: the Organizer control in edit mode. Each modified parameter can be viewed instantly on the control. With WINDEV, creating controls is intuitive and visual.

Here: customization of a control's style (button). There are a large number of options, developers instantly see the available parameters, everything is visual. The created controls are better looking and more efficient.



MANAGER

No knowledge of Windows API or OOP is required to create extraordinarily original interfaces, that are powerful, efficient and secure

AAF TECHNOLOGY

Various evolutions on the "7 tabs"

MAIN POINTS

A few clicks replace thousands code lines
Fewer risks of bugs
Create good looking interfaces without graphic designers

Technology
for boosting efficiency

QUICK AND EASY

You save thousands of lines of code thanks to the "7 tabs".
Great time savings!
So much power, security and efficiency for your interfaces!

VISUAL CREATION

Thanks to the 7 tabs technology, you can define the equivalent of hundreds of lines of code in other environments with a few clicks. All the options are presented visually: alignment, captions, anchors...

You can instantly see the available options for each control: did you know that you can have a millisecond granularity for a timeline control? The "7-tab" window does not block you, and lets you instantly visualize each choice made.

STYLES

Each control, by default, takes the style of the skin template (from the style book) chosen for the application.

You can modify all the style's attributes: background color, text color, border color, border type, font, positioning, background image ... (see page 46)

THE "7 TABS"

The "7 tabs" or a control are actually 8:

- general aspect
- GUI, UX
- details
- data links
- automatic fill
- notes
- associated help
- style.

MODIFIER

A control's characteristics can also be modified using the "Modifier", which offers all the characteristics in the form of a list.

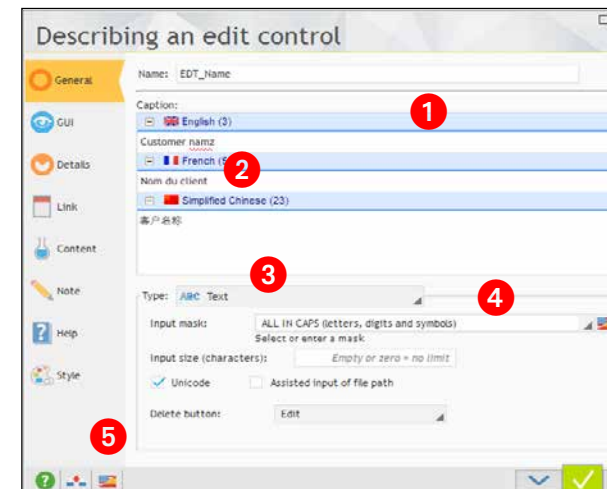
PROGRAMMING

Everything defined in the "7-tab" can be modified by programming.

You can clone controls, and also create controls from scratch by programming.

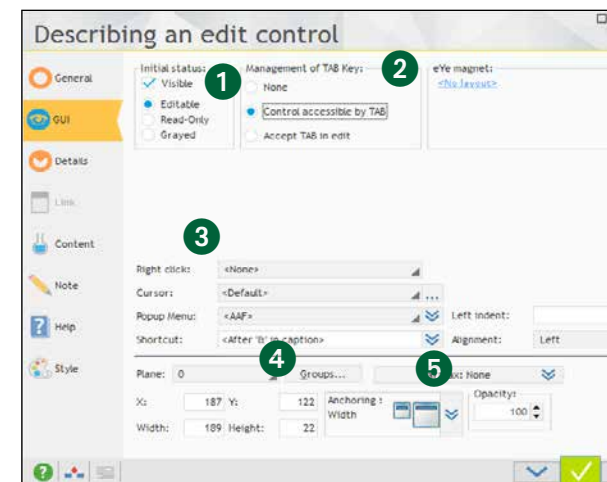
The "7-tab" concept revolutionizes interface creation. You create much better performing applications, and you do it faster and more easily...

Here the first tab: "General". Define the main information of the control: type, input mask,...



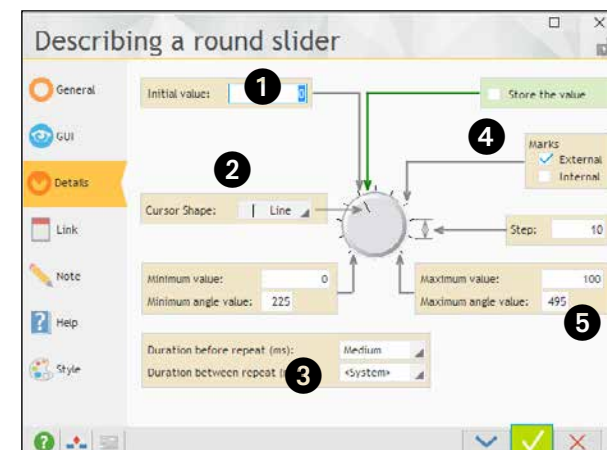
- 1 Caption in all the languages of the project
- 2 Spelling checker
- 3 Type of control
- 4 Input/display mask
- 5 Automatic translation request

Here, the 2nd tab: "GUI". The interface elements of the control are defined. Remember that any choice can be modified later in your program.



- 1 Initial status of control
- 2 Behavior of the TAB key
- 3 Various information: alignment, popup menu to open, shortcut letter...
- 4 Management of planes and groups of controls
- 5 Automatic anchors on window resize

Here: "Details" of a Slider control. The presentation elements of the control are defined



- 1 Initial value
- 2 Shape of the cursor
- 3 Durations
- 4 Marks
- 5 Bounds...

Etc...





"7 TABS" TECHNOLOGY : EXAMPLES

Easily create sophisticated interfaces (UI)

The "7 tabs" are used to easily configure all the parameters available for the controls by proposing visual choices. Let's see some examples of the "7-tab" windows. You save yourself millions of code lines.

"Button" control

"Edit control" control

"Automatic link with table column" control

"Scheduler" control

"Bar code" control

"List box" control

"Slider" control

"Static" control

"Image" control

"Treeview" control

"Check box" control

MODIFYING THE PROPERTIES BY PROGRAMMING

there are always special cases when programming! The properties defined in the "7-tabs" can be modified by programming. But what is the name of the property to use? The name of the property is intuitive and the "7 tab" tooltip indicates the name of the WLanguage property.

AAF : AUTOMATIC FEATURES FOR YOUR END USERS

You applications developed with WINDEV automatically benefit from all these AAFs

Regardless of the skills of the development team, the user will always want to do something that has not been planned, or to modify the behavior of a window!

The UMC (User Macro Code) allows the user to create macros.

The reporting tool "Reports and Queries" is used to create reports and queries. It can be freely distributed with your applications (see p 48 and 52).

And the AAFs (Automatic Application Features), included by default in all the applications developed with WINDEV, allow each user to optimize the applications via rich features without your teams having to write a single line of code!

MANAGER

The AAF offered to end users are exclusive to applications developed with WINDEV. The users are more efficient.

AAF TECHNOLOGY

See the list in these 4 pages

MAIN POINTS

Make the users more efficient and happy
Systematize functional richness
Free the development teams from a lot of development work

AAF : 3 MAGIC LETTERS

The AAFs (Automatic Application Features) are a set of features that are made available to the end users of applications developed with WINDEV, WEBDEV or WINDEV Mobile.

Your end users appreciate being able to export to Word, Excel, sending emails, setting up timers on buttons...

Without any programming, AAFs instantly add a set of rich features to your applications and make users more efficient.

AAF: CHANGE THE LIVES OF THE USERS

Imagine: a user must perform a last-minute inventory that wasn't planned for in the application? How to get the product list, simulate unit costs? With WINDEV, it's automatic.

Each table displayed can automatically be ex-

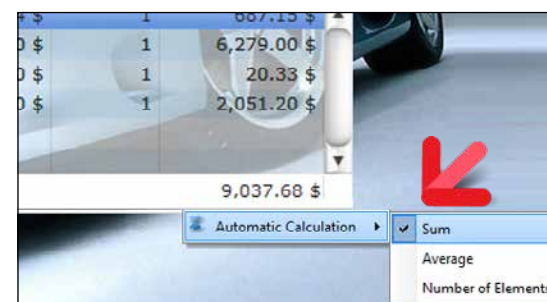
ported to Excel (and Open OfficeCalc) one click, the export is done... (No code is required)

A MAGIC RIGHT CLICK!

The AAFs are accessible in each application via a right click in the relevant control or window.

Users can enable the storage of a value in a control, or the input history, add a total or an average into a table column, create display filters.

Users can also enlarge the displayed combo boxes (you may have noticed: they're often too small!). Thanks to the AAFs, users have more possibilities, without adding more tasks to your development team.

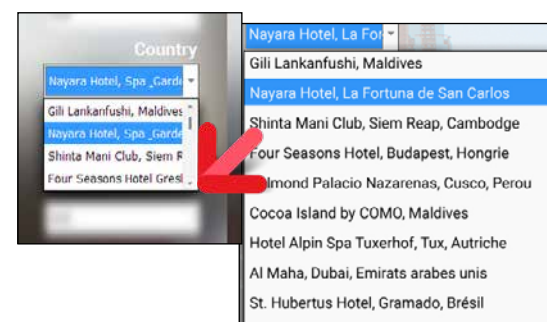


ADDING A TOTAL, AVERAGE...

Forgetting a column total is unfortunately a common oversight in an application.

With the AAFs, no worries for the end user!

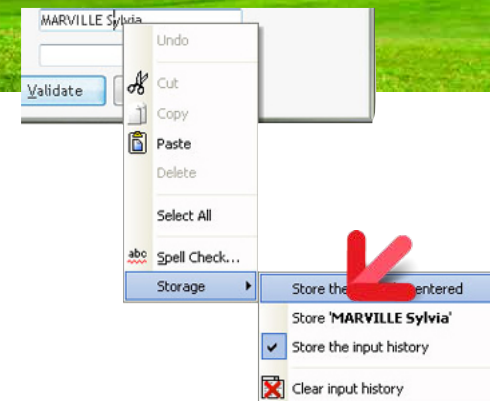
Users can add a total via a simple click, wherever they want (total, average, counter).



ENLARGING A COMBO BOX

Each combo box can be resized by the user ("grip" at the bottom right).

Useful because the developer doesn't necessarily know the number of elements that will be offered in a combo box displaying data, or their length...



PERSISTENCE OF CONTROLS

To avoid having to re-enter a common value, users can enable control persistence: store a fixed value, or recall the last entered value.

Very useful for date ranges, for example!

By combining a persistence of controls and a button with automatic validation, you have the ability to easily start recurring processes.

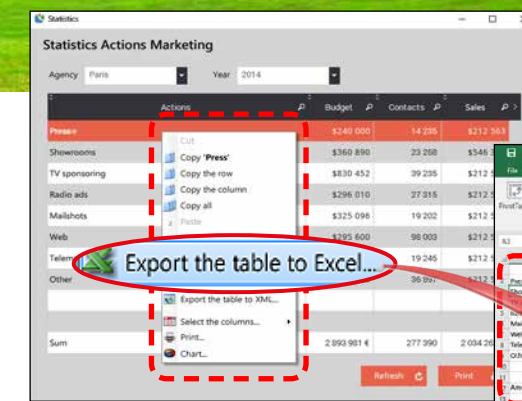
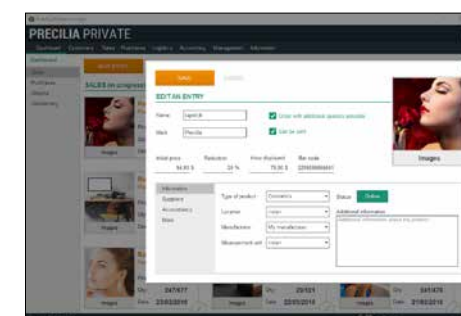
HISTORY

The history of values entered in a control is proposed to the end user.

An old value can be clicked instead of re-typed.

DIM DISABLED WINDOWS (DDW)

The inaccessible windows (in which no click can be done) are grayed. Convenient!



AUTOMATIC EXPORT TO EXCEL

AUTOMATIC EXPORT TO WORD, EXCEL AND OPEN OFFICE

Linking your applications to Office applications (Word and Excel) is easy: a popup menu is automatically present in your applications (accessed by the user via a right click) and it is used to export data from the tables without programming. If needed, a password can be requested.

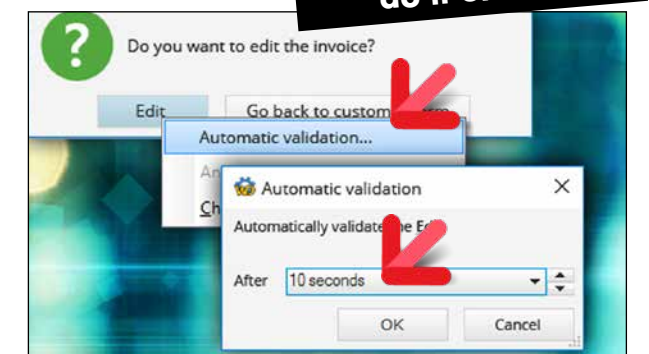
Your applications developed with WINDEV are automatically rich in useful features. Note that each AAF can be disabled by programming.

TIMER BUTTON: A BATCH PROCESS WILL NEVER BE BLOCKED!

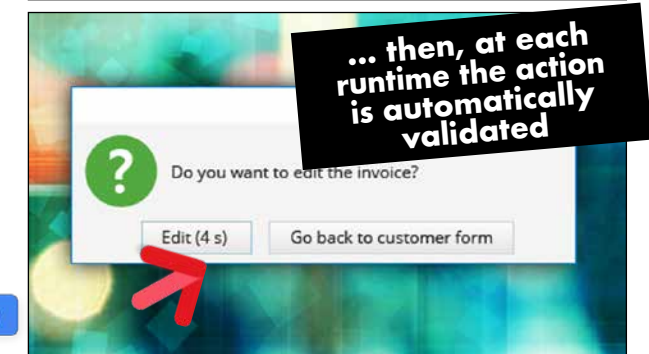
The Timer button displays a countdown in seconds and automatically validates the button at the end of the countdown if no action has been executed by the user.

Very useful to prevent from locking a batch process for example!

End users can add this timer themselves on any button thanks to the AAFs: a simple right click is all it takes, end users specify the automatic validation timeout.



End users do it once...



... then, at each runtime the action is automatically validated

DEFINE YOUR OWN FUNCTION KEYS



The end user can associate a function key of his choice to a window button.

This allows the end user to improve the speed and customize the application he's using, by allowing him to automate repetitive actions.

Let's take the example of a retail store cash register application, which was designed to be used with a mouse.

Some retailers may not have enough room for a mouse, and may want to work without it... Thanks to WINDEV, they can do it themselves and, for example, set the F10 key to validate the window.



"REPORTS AND QUERIES"

The "Reports and Queries" program can be freely distributed with your applications: It allows end users to create their own reports, queries, in PDF format, send emails, and print bar codes (see p.48).

ANNOTATIONS ON REPORTS

End users can add "annotations" to a report before printing it.

This is very useful for highlighting a specific data or for drawing attention to a specific point!

SEARCH IN THE WINDOW

Users can search for specific text among the controls of the window (Ctrl F).

CREATING A CHART

Users can create a chart themselves (see charts on page 30), automatically on a data range.

SPELLING CHECKER

Users may request spelling correction in Edit controls: this can be essential to prevent spelling mistakes!

GOOGLE SEARCH (POPUP MENU)

The popup menu of AAFs proposes a choice for "Search in Google".

This allows you to start a Google search in one click on the term(s) selected in the window.

TREEVIEW AND TREEVIEW TABLE: EXPAND ALL THE TREEVIEW BRANCHES

In a treeview or a tree-like table, branches are expanded one by one. In some cases, end users want to see the entire tree: a right click is all they need...

TABLE CONTROL : COPY

In a visualization table, users can copy a cell, a row, or the entire table.

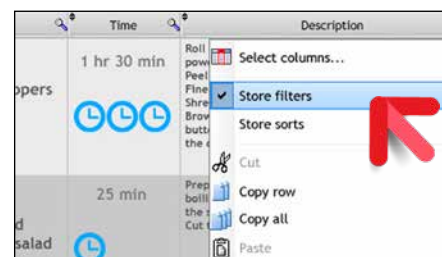
They can also copy columns only.

TABLE CONTROL : STORE FILTERS

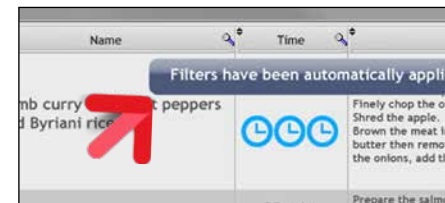
An end user can "implement" a filter on a table to limit the amount of information displayed.

The value of a filter entered by the end user can be stored by the table.

By default, the filter will be re-applied whenever the table is opened.



Each time the table is opened from now on, a furtive message (toast: non-intrusive message, that lets you keep on working and closes by itself after a few seconds) will notify the user that a filter has been applied.



The user keeps the filters he's created.

TABLE CONTROL: STORING THE SORT OF COLUMNS

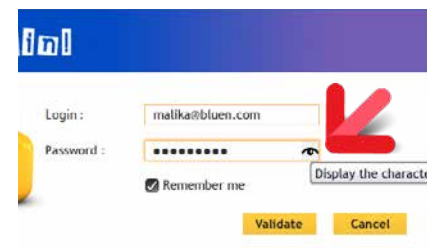
When the user has performed one or more sort operation on table columns, these sorts can be stored in order for them to be applied by default. From now on, each time the table is opened, a furtive message will display information about activating the sorts.

TABLE CONTROL : SEARCH IN THE DATABASE

In a table control, the end user can perform a search in the database via the entire table.

PASSWORD ENTRY, IN CLEAR

Usually when entering a password, the characters entered are masked.



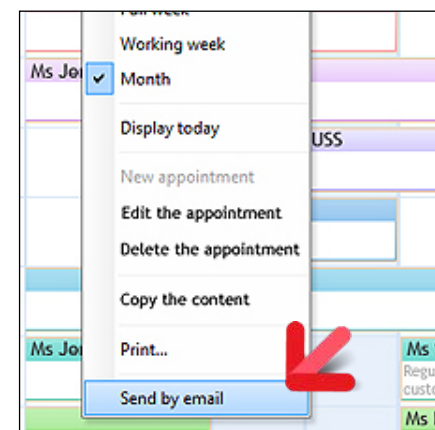
The user may want to see the password during the input.

AAF ON SCHEDULER

On a Scheduler control, the user automatically benefits from the following AAF :

- adding an appointment
- editing an appointment's title
- moving an appointment from one time slot to another
- moving an appointment from a resource to another one
- modifying the duration of an appointment
- deleting an appointment
- moving inside the calendar...

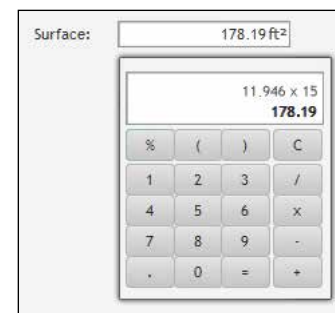
The end user can print a schedule, or send it via email, for a set of chosen dates. The schedule will be attached to the email as a PDF document.



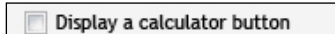
CALCULATOR ON NUMERIC CONTROL

Each numeric control can offer a mini calculator button.

A click on this button displays a calculator that is used to perform basic operations.



To add the mini-button to the numeric control, all a developer has to do is check the corresponding box in the "7-tab" window.

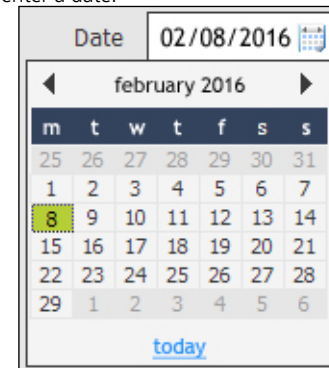


If the option was not activated, the end user can open the calculator thanks to the control's popup menu.

CALENDAR WHEN ENTERING A DATE

Each date control offers to display a mini calendar button.

Clicking this button displays a calendar that lets you enter a date.



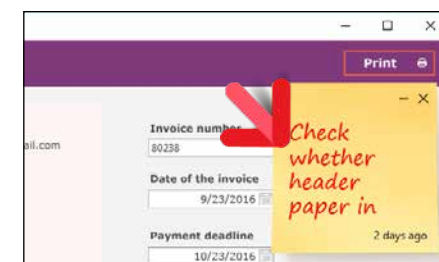
ADDING A REPOSITIONABLE NOTE IN THE WINDOW

The end user can add one or more repositionable notes in a window.

The note will be automatically saved and it will reappear the next time the window is opened.

Example of notes :

- Caution, this process takes 3 min at the end of the year
 - Do not bill Argentina
 - Jeremy's number during his vacation: 06 06 06 06 06 • ...
- With this AAF the end user is more efficient.



AAF ON GANTT CHART

When a Gantt chart is displayed, the end user can move a task. All the related tasks are automatically updated.

The end user can also :

- change the duration of a task
- change the completion status of a task
- change the order of the tasks
- delete and create a task and its dependencies
- print the Gantt chart

AAF ON PIVOT TABLE

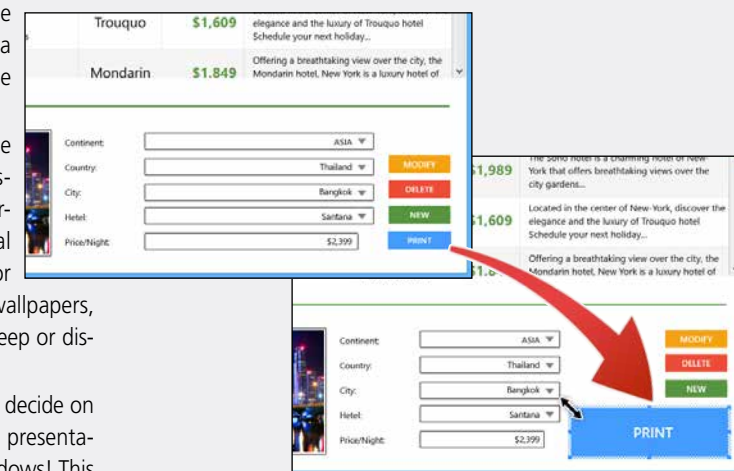
Pivot table users benefit from a large number of AAF, among which: pivot the table, invert the dimensions, expand and collapse levels, hide one or more columns, expand all sub-levels from a given level, color a cell, print, compare 2 periods...

END USERS CAN MOVE AND MODIFY THE CONTROLS ON THE SCREEN

End users can reorganize the control layout in a window and modify some of the control properties.

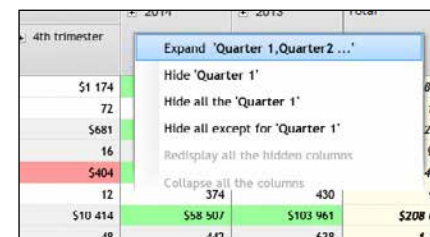
Today, end users choose several parameters associated with their personal and professional life: on smartphones, for example, they choose wallpapers, ringtones, elements to keep or discard...

With WINDEV, end users decide on certain elements of the presentation and use of their windows! This



YOU COMPETITIVE ADVANTAGE

Each user benefits from these features without the developer having to code anything. (The developer can disable one or more AAFs).



USERS ALSO BENEFIT FROM...

The list of AAF is very long. Using AAF, your applications' users can :

- resize a window
- store the size and position of the window
- modify the width of a table column
- modify the height of a table row
- change the order of table columns
- visualize a report in print preview mode, with zoom capabilities, export bar, search,...
- copy/paste customizations from one computer to another...

Users of applications developed with WINDEV automatically benefit from features that allow them to better use their applications, and to be more efficient at work.

will allow them to better use your software.

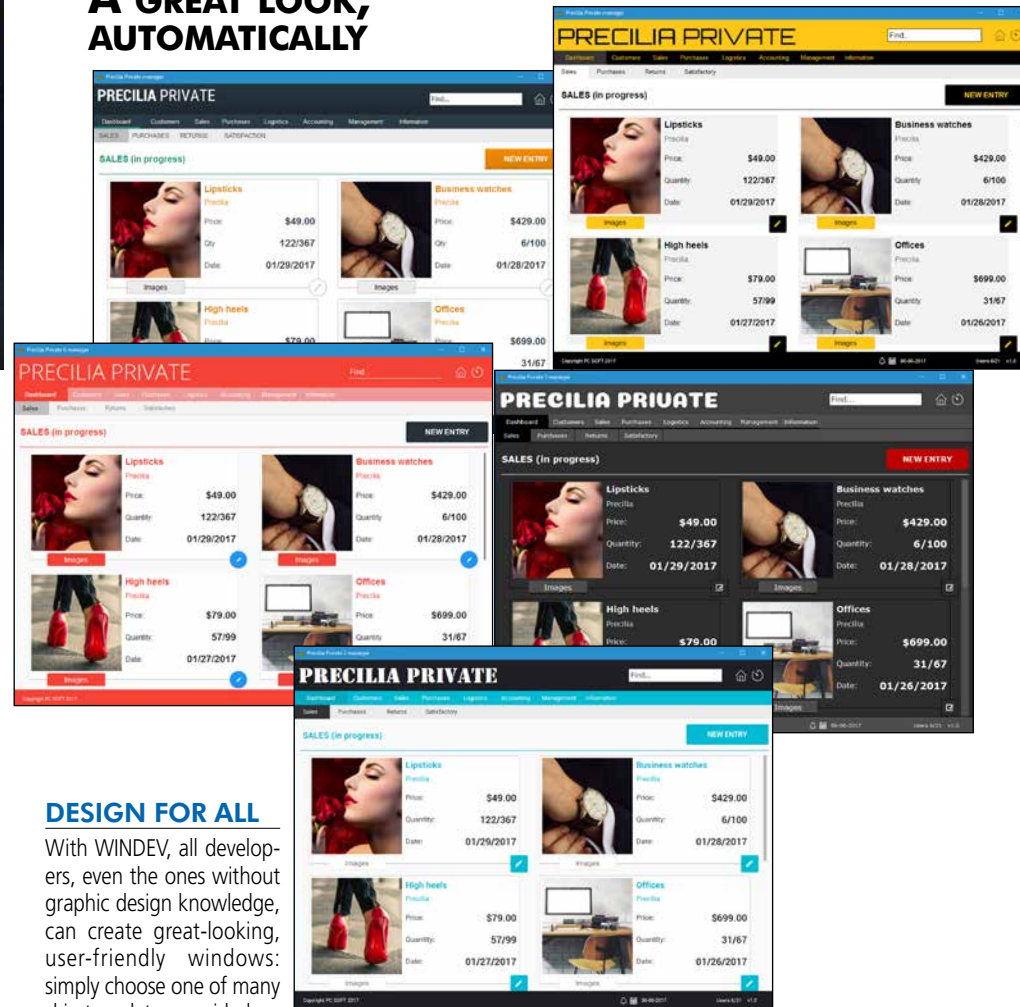
Like any AAF this feature can be turned off by the developer.





APPLY A STYLE BOOK IN 1 CLICK

A GREAT LOOK, AUTOMATICALLY



Choose the skin template for your application, or create it. And your entire application will benefit from the style book, regardless of the Windows version: 8, 10, 11... on Mac and Linux.

DESIGN FOR ALL

With WINDEV, all developers, even the ones without graphic design knowledge, can create great-looking, user-friendly windows: simply choose one of many skin templates provided.

There's nothing to code. You have the ability to create your own skin templates. When a control is added to the window, it automatically has the right skin template.

WINDOW SKIN TEMPLATES: AN AUTOMATIC STYLE BOOK

A skin template is a global concept, which defines the general look of a window (the application's style guide): background, style sheets, locations of the controls, buttons, ...

WINDEV is supplied with a lot

of ready-to-use templates, and you can create your own.

Change skin template, and the entire window or application changes style!

You can offer end users the ability to choose skin template.

THE STYLES

A style defines the different attributes of a control: color, type of border, font and size of caption, font of editable area, ...

All the elements of a style can be modified.

Styles can be defined for all types of controls.

Benefit: when a style is mod-

ified, all the controls that refer to it are immediately and automatically updated, in all project windows.

Styles can be overridden.

IMAGES ADAPT THEMSELVES

When an image is used in the layout (button, icon, pictogram, frame, background, etc.) it can be resized according to an intelligent algorithm: it won't be just deformed. Margins and areas to stretch or repeat can be defined.



3 different styles for the same edit control

MANAGER

The style book of an application is paramount. Thanks to WINDEV, even a development team without user-experience or graphical expertise can create great-looking applications.

AAF TECHNOLOGY

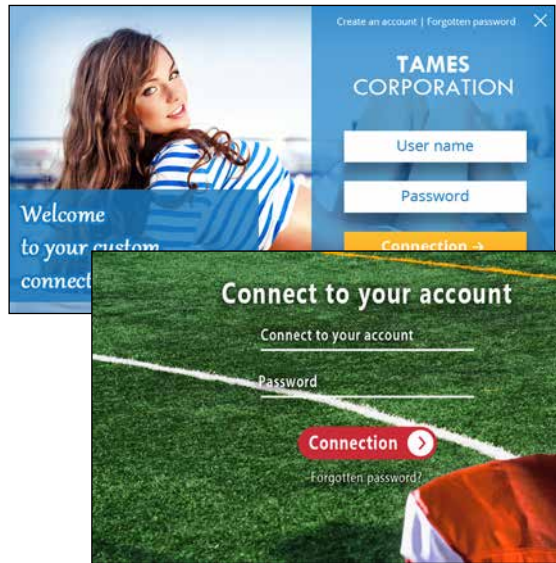
All the AAF are available in the applications created

MAIN POINTS

Automatic style book
Infused user friendliness



Control access to the processes of your applications: it's easy with WINDEV. Simply activate the "Groupware" in your application. A Supervisor mode will be distributed with your application and can define access: by window, by control, by menu choice or by report. No programming is required to secure the access to your applications.



MANAGER

Security is a major concern for companies: it is standard in WINDEV.

AAF TECHNOLOGY

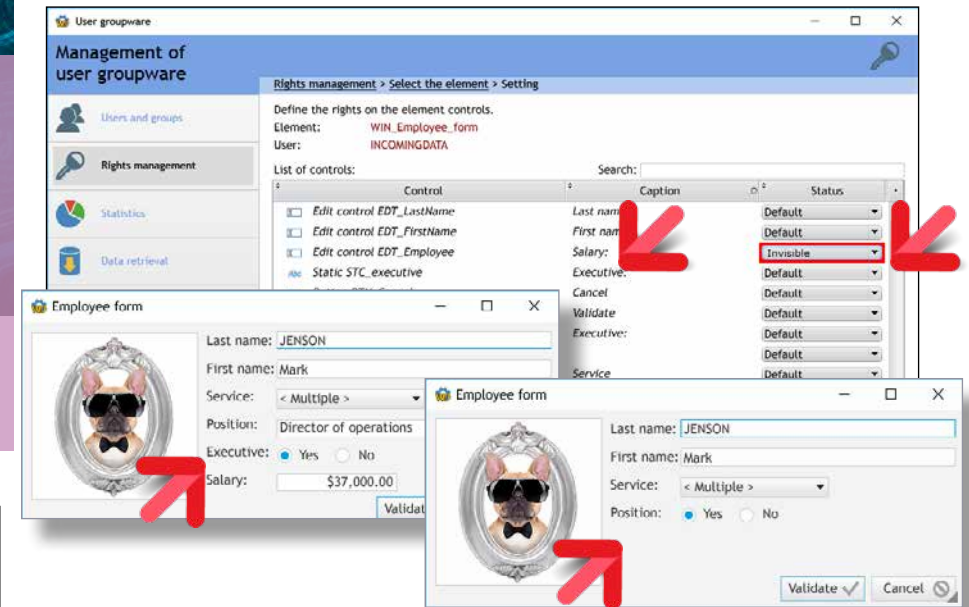
Password visible or hidden during input

MAIN POINTS

No programming
Support for standards: LDAP, Active Directory
Configurable access to each control

SECURITY: PASSWORD IN YOUR APPLICATIONS (GROUPWARE)

HIGH-PRECISION, GRANULAR ACCESS CONTROL



Administrator Software : control access to your applications with precision. Decide who can see what, who can use what, control by control... Here, the "salary" control is not visible to some users.

CONTROL ACCESS TO PROCESSES OF YOUR APPLICATIONS

Easily limit access to sensitive application data: personal data, salary, revenue...

User and group rights are managed by the User Groupware.

The password input windows are automatically generated, using your project's skin template.

GDPR

User Groupware is very useful to comply with the GDPR (see p 81), to restrict access to sensitive data.

SUPERVISOR MODE

The application manager defines user rights thanks to the Administrator software provided.

Note that user and user group rights can also be created or modified via programming.

PRECISE SECURE CONTROL

Access control enables you to filter the access to several elements: menu choices, buttons, controls, groups of controls, windows, reports, ...

The protected elements are inactive and either grayed out or hidden based on your choice.

LDAP

If you want to use an existing LDAP login database, the groupware will use it. The Groupware connects to LDAP.

ACTIVE DIRECTORY

If you want to use the Active Directory, the groupware will use it.

SSO : SINGLE INPUT OF IDENTIFIERS

SSO, acronym for Single Sign On enables you to enter your password only once per session, regardless of the number of applications run.

When the Groupware SSO option is activated, the end user enters his identifiers once, and can connect to other applications without re-entering it.

Automatically secure your applications, without coding!

A POWERFUL REPORT GENERATOR (PDF, BAR CODE, ...)



Easy reports

Creating reports with WINDEV is easy, by programming or by using the Report Generator that comes as standard.

The PDF format is supported as well as the page backgrounds, the bar codes, the labels and everything you need!

And you can even distribute the report generator for free with your applications.



10 employees and more
COLLECTION FOR 2014

Please fill

Details

NAME: []
ADDRESS: []
CITY: []
COUNTRY: []

Additional information

Member company: []
[]
[]

ecom Invoice

472 Hidden Me. Williston, Phone 701-770-3331, info@ecom.com

Invoicing address: William P. Christian, 1251 Swick Hill Street, Charlotte

Delivery address: 1251 Swick Hill Street, Charlotte

Reference	Description	Qty	UP BT	VAT	Total BT
0000000	Level 90	50	34.90 €	18.00 %	1 745.00 €
0000000	Value 900	30	44.90 €	18.00 %	1 346.70 €
0000000	Merch. Douglas 900	90	49.00 €	18.00 %	4 098.00 €
0000000	Merch 75	80	49.00 €	18.00 %	4 098.00 €
0000000	Merch 200	111	34.90 €	18.00 %	4 790.40 €
0000000	Merch 1.5	132	39.40 €	18.00 %	3 075.00 €
0000000	Merch 1.5	100	49.00 €	18.00 %	2 960.00 €
0000000	Merch 1.5	132	39.40 €	18.00 %	4 291.40 €
0000000	Merch 1.5	100	49.00 €	18.00 %	3 943.00 €
0000000	Merch 75	137	39.40 €	18.00 %	4 684.30 €
0000000	Merch 75	90	49.00 €	18.00 %	3 810.00 €

Total BT: 30 940.80 €
Total VAT: 11 476.94 €
Total IOT: 70 044.94 €

MENS WATCH \$219

MENS WATCH \$219

MENS WATCH \$467

MENS WATCH \$200

MENS WATCH \$193

MENS WATCH \$636

MENS WATCH \$310

MENS WATCH \$552

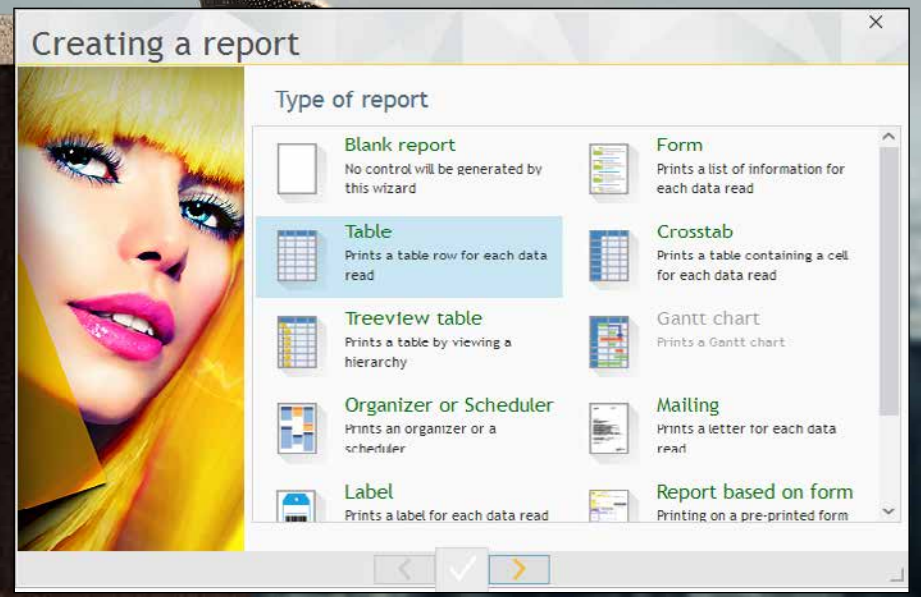
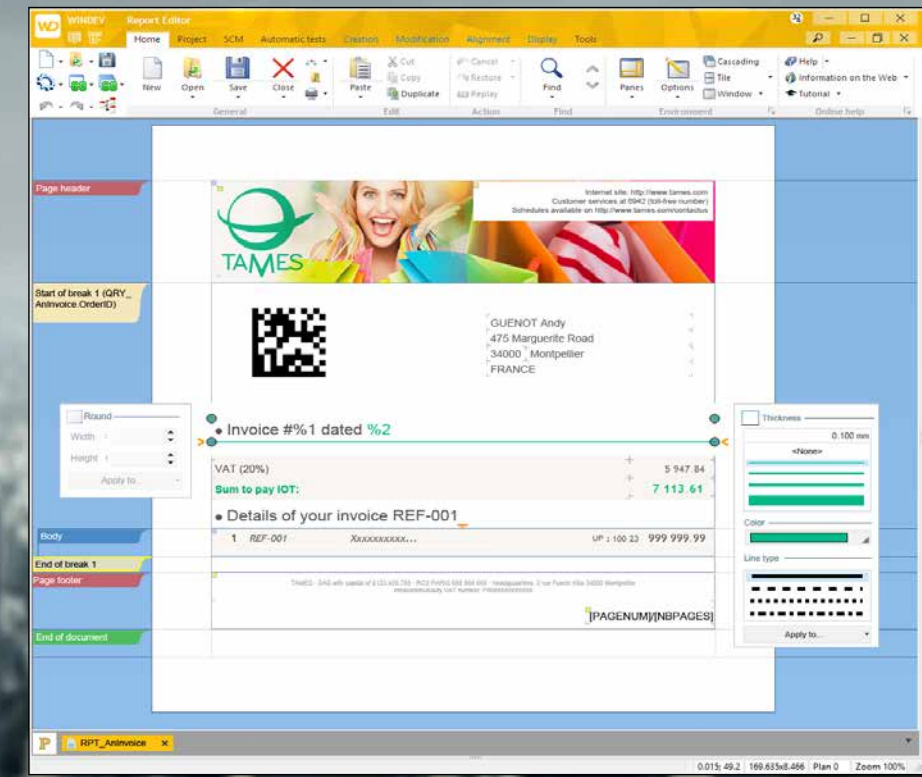
MENS WATCH \$285

MENS WATCH \$552

DISTRIBUTE FOR FREE THE REPORT GENERATOR WITH YOUR APPLICATIONS



Easily create sophisticated reports thanks to the report editor of WINDEV. The creation uses visuals.



MANAGER
Drawing your reports instead of coding them saves a lot of time. Integrated PDF printing is also an appreciated touch. The distribution of the report editor is free.

AAF TECHNOLOGY
Print preview
Export Word, Excel, PDF, fax, email

MAIN POINTS
Create reports using drag and drop
Automatic bar codes
Source code can be added to the report
Free distribution

CREATE A REPORT: EASY
A wizard helps you create reports; You can also create reports "by programming", using only WLanguage commands.

SOURCE CODE WHEREVER YOU WANT IN THE REPORT
WINDEV allows you to include source code anywhere in a report created in the visual editor: this enables you to create your most custom reports without ever getting stuck.

ALL THE DATA SOURCES
The data used for a report can come from any source: HFSQL, SQL Server, Oracle, MySQL, Access... but also from a query, a text file, a memory zone, a table, a program variable...

CLICKABLE CONTROLS
In print preview mode, report controls can be clickable, and therefore start processes, or even be Internet links.

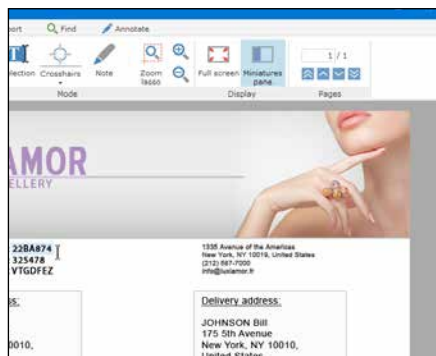
PRINTING LABELS
WINDEV allows you to print labels, page by page or on continuous form.

PDF PAGE BACKGROUNDS AND FORMS
The report editor supports PDF page backgrounds (form image printed on a blank paper) and pre-printed forms, and allows display and input in these forms.

THE IMAGES: AUTOMATIC
Including images - TIFF, PCX, GIF, JPEG, PNG, SVG, BMP and so on - in a report is extremely simple. The image can be an image copied into the report, or it can come from a process (image loaded from the Internet) or from a file (stored in a database). Transparency is supported.

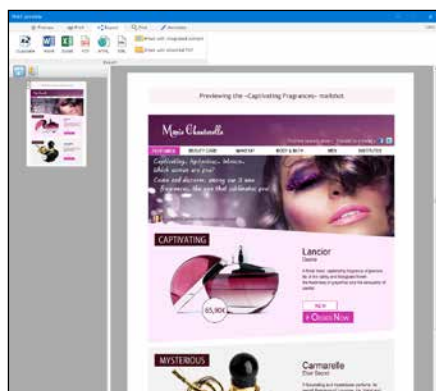
PREVIEW : PRINT PREVIEW
The editor's print preview window is very powerful. It offers all the features end users expect: view (of course), zoom, print... but also annotations, email sharing, watermarks, signed PDF generation, crosshairs...

WINDEV



Text selection in the preview: here the order number can be copied then pasted

PRINTING THE HTML CONTENT



Today a lot of content is stored or handled in HTML format.

The report editor supports the HTML control natively.

Via this control, printing HTML content (with tags, images, etc.) is done directly without any programming.

The HTML content can be static, and directly copied into the report editor when creating the report, or it can be dynamic (found in a .HTM file, in a HFSQL data file memo, etc.) and read when printing.

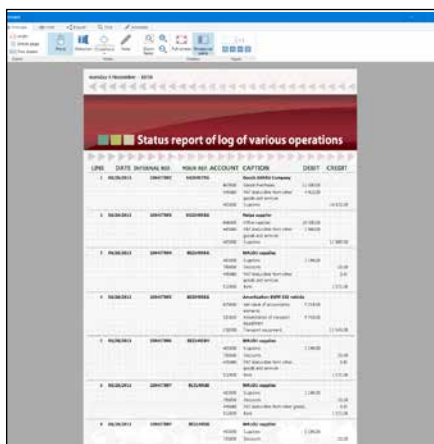
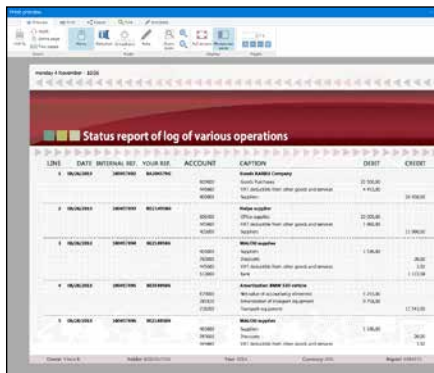
ANCHORING IN THE REPORTS

The concept of anchors is available in the report editor.

The anchors in the reports allow you to change the paper format or the page orientation while keeping a proper layout, without having to create several versions of the report.

Thus, a report can go from "portrait" to "landscape" without being rewritten!

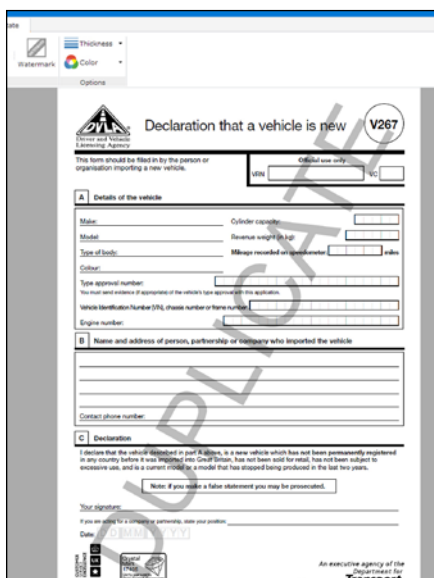
The report automatically adapts to the paper size thanks to anchors.



The same report, printed in "portrait" and "landscape", thanks to the anchoring of anchors

WATERMARK TEXT

A report (and a duplicate copy) can include additional text as a watermark, such as "Confidential" or "Duplicate" printed across the report!



The watermark can be added in the editor, in the print preview, or by programming.

The text can be configured: the text itself, font, size, color, text angle, position (on the current page or on all the pages), background or foreground printing.

The **Watermark** function lets you manage watermarks by programming.

TYPES OF REPORTS AVAILABLE IN THE REPORT EDITOR:

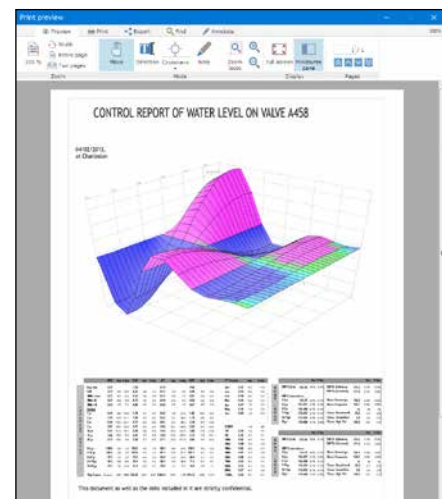
- Blank
- Table
- Organizer
- Mailing
- Composite
- TreeView Table
- Gantt chart
- Form
- Crosstab
- Schedule
- Label

TYPES OF CONTROLS OFFERED BY THE REPORT EDITOR:

- Static
- HTML
- Preset
- Check Box
- Shape
- Chart
- Saisie
- Spreadsheet...
- RTF
- Item
- Calculation
- Image
- Bar code
- Gantt chart
- Link

CHART PRINTING

Charts are printed directly inside the reports.



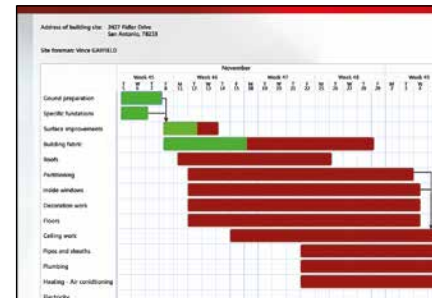
A "Surface" chart in a report.

The developer doesn't need to program anything.

GANTT IN REPORT CONTROLS

The Gantt control automatically prints in this type of report.

If the report is too wide to fit on a single sheet of paper, it can be printed on several pages that can be assembled later (like for a spreadsheet).

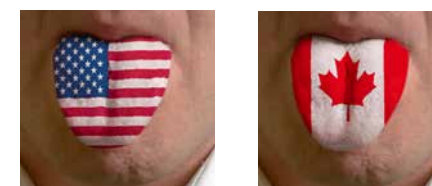


PREVIEW : ZOOM AREA AND POSITIONING

In the print preview window, you can display, on the left, thumbnails corresponding to the pages. The part of the report viewed is materialized in the thumbnail.

The zoom and positioning area can be resized and moved in the thumbnail, the zoom factor can be modified...

MULTILINGUAL



It is possible to use multiple languages in the reports, just like in the application interface: a report can be printed in the language of your choice, regardless of the language of the application.

SOPHISTICATED BORDERS

Many settings are available for borders. You can define a different thickness for each border as well as a different color and style.



Defining a rounded corner in the editor

IMPERIAL OR METRIC SYSTEM



Reports can be edited in imperial or metric units: inches, feet, ...

GENERATE "HIGH-QUALITY" PDF

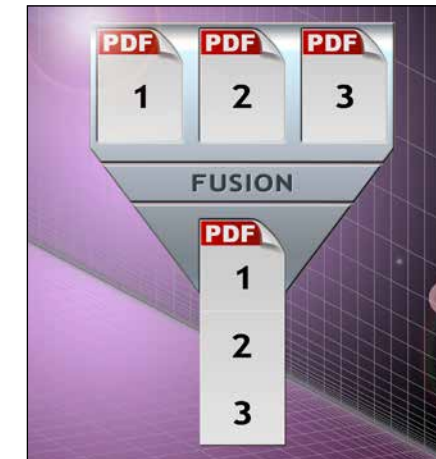
You can specify the quality of the generated PDF: either reduced size PDFs, or PDFs that restore the original quality of the illustrations.

MERGING PDF AT RUNTIME

WINDEV lets you concatenate several PDF files. For example, if 3 invoices must be sent via email to the same recipient, you can concatenate them in a single PDF document.

This function can also be used on PDFs that were not created with WINDEV.

The WLanguage function is simply named `PDFMerge`.



ARCHIVING/DUPLICATING

A report can be generated in a "closed" file format. This file format allows the report to be reprinted later, without having to read the files. The duplicate can be digitally signed (PKCS7 standard).

PDF/A : PDF FOR ARCHIVING

PDF/A is a PDF format standardized by ISO. This type of PDF includes in the .pdf file all the elements required to display it or to print it: for example, all the fonts are systematically included.

This format allows you to keep an exact copy of a report, for example an invoice.

This format allows long term archiving, and for legal reasons.

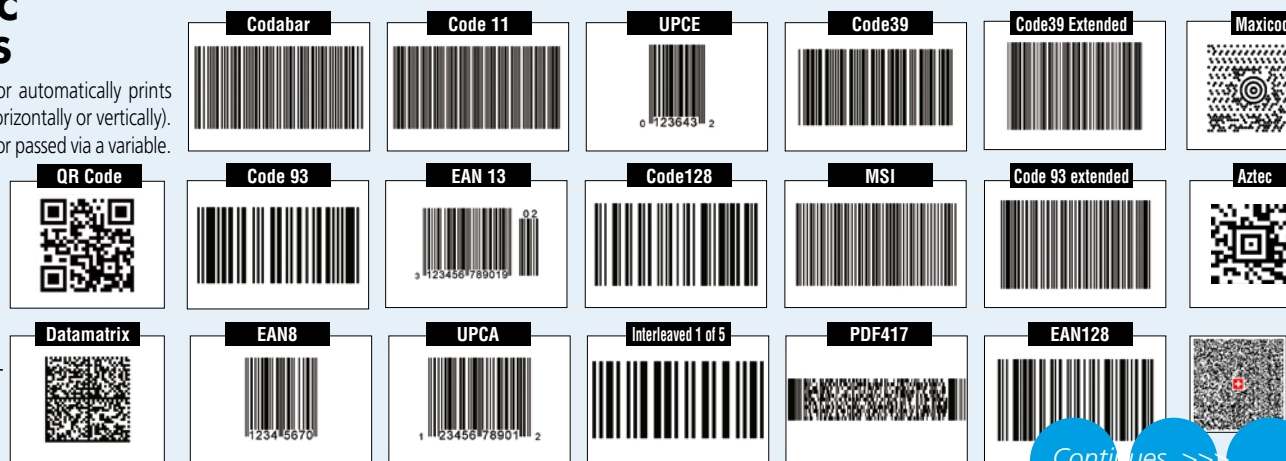
The PDF/A file keeps the annotations, as well as the values entered in the report's edit controls.

The PDF/A is also supported by programmed reports (used with the `iPrint` family of functions).

AUTOMATIC BAR CODES

The WINDEV report editor automatically prints and displays bar codes (horizontally or vertically). The bar code value is set, or passed via a variable.

The supported formats are: QR, UPCA, UPCE, EAN13, EAN8, EAN128, CODE128, CODE39, CODE93, CODE11, CODE128, Intervalled 2 of 5, CODABAR, CB_MSI, Datamatrix, PDF417, Maxicode, Aztec, ...



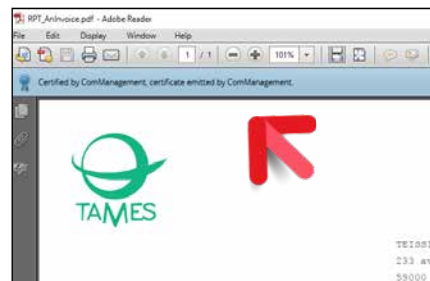
PDF: SIGNATURE

Two types of signature are available for the PDF reports: signatures for "approval" and signature for "certification".

WINDEV supports both types of signatures. A signature control allows approvals. It allows you to include a digital signature in the report, for the PDF export.

You can define the image or the text to display in this signature control, which will appear in the PDF report.

This allows you to generate signed PDF and PDF/A.



The blue band indicates that the PDF is certified

WRITING DIRECTION

The writing direction is supported in reports. Support for the `TextDirection` property, which works the same way as in windows, avoids having to maintain 2 separate reports to support languages written from left to right and right to left.

JOIN REPORTS

by joining reports, you can combine several reports in the same printout.

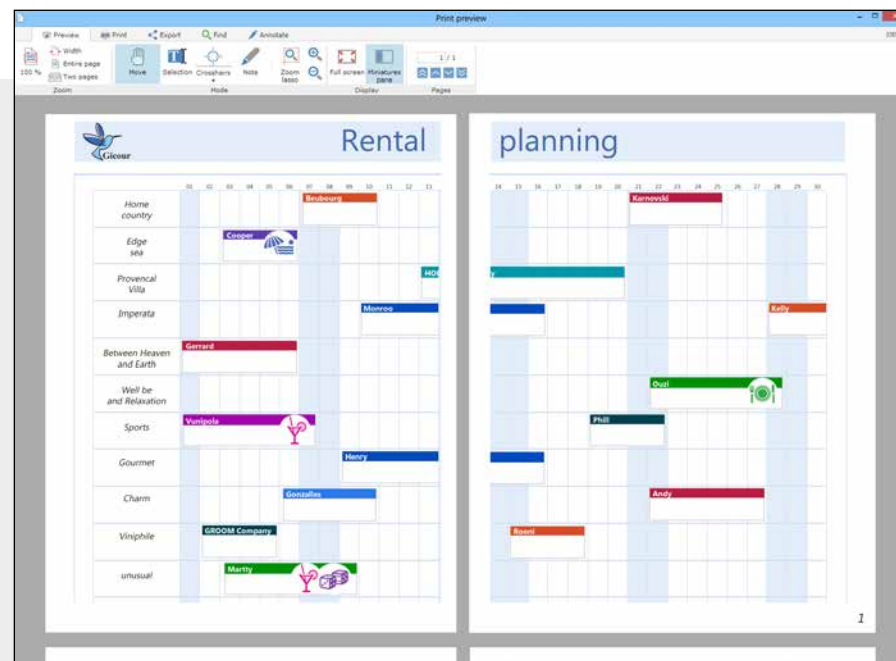
REPORT : PRINTING IN LANDSCAPE OVER SEVERAL PAGES

A table report (for example) can be very big, bigger than a sheet of paper.

You can specify that a report will be printed over several pages.

The end user will only have to assemble the pages.

The print preview follows the WYSIWYG principle.



REPORTS : TRANSPARENCY OF IMAGES AND CHARTS

The report editor supports transparency in image controls.

Simply use an image format that manages transparency: PNG, SVG...

When a `chart` control doesn't have a background, transparency is also active.

Overlaying a clipped image coming from a database over a background is also possible.

CROSSHAIR

The print preview offers a crosshair feature. This crosshair simplifies the reading of tables containing a lot of data.

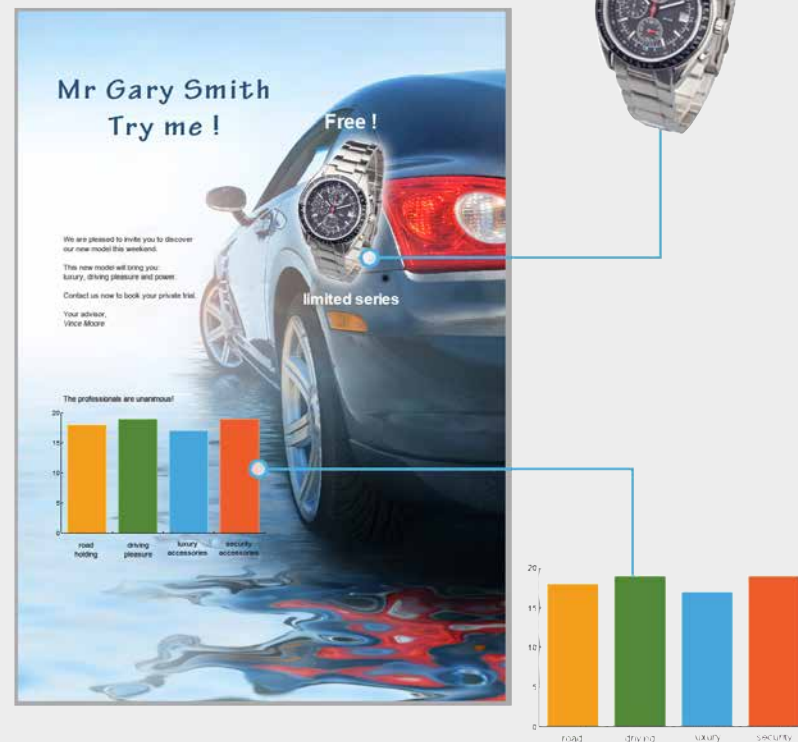
DISTRIBUTE THE REPORT EDITOR TO YOUR CLIENTS FOR FREE

You can provide a report generator to your end users for free!

End users can create their own reports (and their own queries), or modify the reports you have created, if you authorize them.

By providing the free "Reports & Queries" program, you offer a lot of autonomy to end users, while reducing the amount of work for the development team.

Reports become easy with WINDEV!

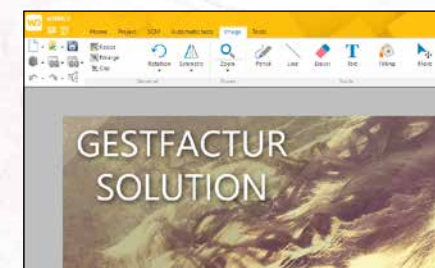


We all have had to retouch an image, an icon... Of course, there are third-party tools, but we have to install them on the computer.

And as far as "Paint" is concerned, it comes with Windows and it can be useful but it does not support transparency, nor layers...

WINDEV integrates the image editor into the environment.

Without exiting from the project, developers have the ability to edit their images and icons.



The WINDEV image editor is very useful to the developer

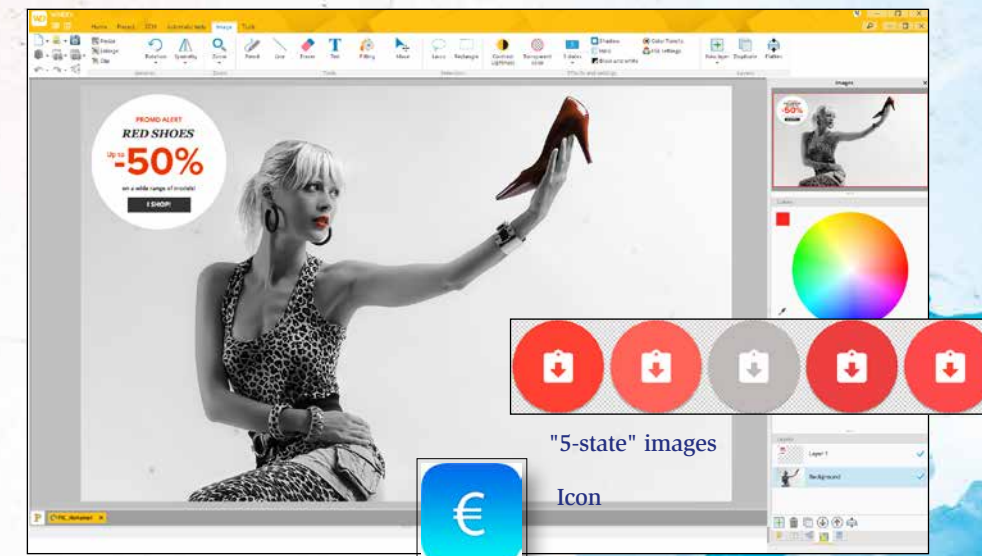
MANAGER

Developers always need to edit and modify images.

MAIN POINTS

- Integrated the environment
- Developer oriented
- Support transparency
- Manage the layers
- Simple and powerful

INTEGRATED "DEVELOPER" IMAGE EDITOR



The image editor is available without leaving the environment

PRODUCTIVE COMFORT

An image to modify? Right-click the image in the window editor, the image editor is opened, you perform the modifications, you save and here you are, the image is updated in the project. Multiple images can be edited simultaneously.

A DEVELOPER-ORIENTED EDITOR: ICONS, TRANSPARENCY...

The image editor is "developer-oriented", that is, it focuses on functionalities useful for programming.

For example, the management of transparency allows you to stack different images.

The support for the ICO format allows you to create icons for your applications!

The layers allow you to easily stack images or texts.

FEATURE-RICH

- Pen, Eraser
- Selection in rectangle or with lasso
- Magic wand
- Eyedropper
- Text, RTF text
- Fill
- Transparency (alpha layer)
- Copy/Cut/Paste
- Generation of a 5-state image
- Contrast, lightness
- Transforming a color into transparent
- Conversion to black and white
- Saturation, hue
- Drop shadow, halo
- Original image format (png, jpg, etc.) or .wdpic format
- Management of layers: Displacement, flattening, merging,...
- "Right click... edit" directly from an Image control in a window ...

LINK WITH THE SCM

The image editor is linked to the SCM (Source Code Manager): the different versions of the edited images are saved and shared automatically.

The image editor has numerous features:

- Resizing
- Centering
- Rotation
- Symmetry
- Zoom

Easily editing and enriching images offers significant productivity gains.

WLANGUAGE: 5TH GENERATION



90% less code

I LOVE WLANGUAGE

WLanguage, WINDEV's integrated language, is outstandingly powerful, intuitive and easy to use. It's a 5th generation language (5GL), which means that its commands are highly sophisticated. A WLanguage command can replace dozens or even hundreds of 4GL commands, making programming easier and more reliable.

No more unnecessary complexity, no more incomprehensible APIs, no more unproductive programming!

```
SMTPSession is EmailSMTPSession
Emailing is Email

// Read the customer database
FOR EACH Customer ON Company
// Check the email address
IF EmailCheckAddress(Customer.Email) = emailAddressValid THEN
// Send the mailing
Emailing.Recipient[1] = Customer.Email
Emailing.Subject = "Exclusive discount in this message!!"
EmailSendMessage(SMTPSession, Emailing)
END
END
```

WLanguage code is so clear that you feel like you are reading comments! WLanguage is also available in Chinese.

```
定义SMTP会议为电子邮件SMTP会话型
定义发送邮件为电子邮件型

//浏览客户数据库
对于每个客户根据公司
//检查电子邮件地址
如果电子邮件检查地址(客户.Email) = 电子邮件地址.确认那么
//群发邮件
发送邮件.收件人【1】 = 客户.Email
发送邮件.主题 = "此邮件提供一个专属的优惠!"
发送邮件.正文 = 文件加载文本("discount_20.htm")
电子邮件发送邮件(SMTP会议, 发送邮件)

结束
```

DATA BINDING

Data binding allows you to link variables in memory with controls (in a window or a report).

These variables in memory can be: simple variables, a class, a structured element of the language (Google Calendar, XLS worksheet, RSS feed, etc.).

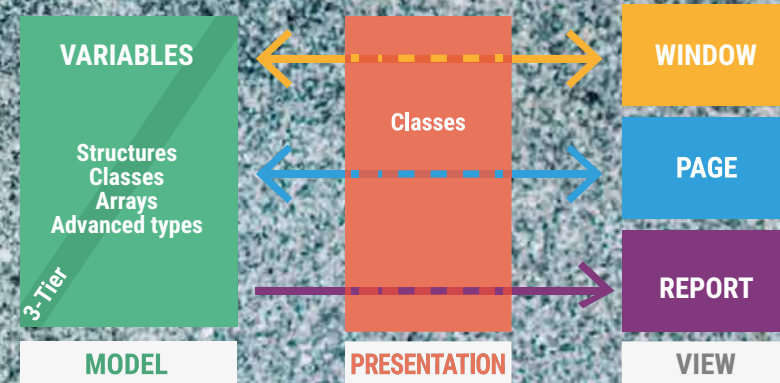
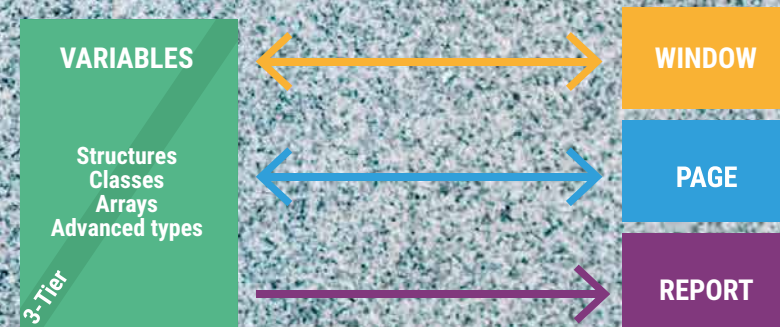
The content of a table control can be automatically filled by an array of these elements.

SourceToScreen and ScreenToSource

two very easy commands, respectively allow you to trigger the display of data in controls or to send information from the UX to the data source.

Data sources can be data files (tables) or application variables.

The MVP method is supported.



WLANGUAGE : 5TH GENERATION LANGUAGE

The integrated WINDEV language, WLanguage, is powerful, simple and intuitive. It's a fifth generation language (5GL), which means that its commands are highly sophisticated.

A WLanguage command can replace dozens or even hundreds of 4GL commands.

EASE AND POWER: A NATURAL LANGUAGE

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

The code is quick to write and easy to proof-read.

Coding and maintenance are therefore much easier to do.

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

Do you understand this code?

Yes, because WLanguage is so readable.

WLanguage is available in English, French and Chinese.

VARIABLES AND TYPES

Declaring variables is easy and intuitive.

```
Message is Email
CustomerArray is array of Customers
```

Variable declaration is simple and on the spot. WLanguage offers the standard simple types, including integer, boolean, currency, numeric with up to 38 significant digits, real number or character string.

Over 20 simple types are available.

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 UNICODE string
Msg = "Hello! 你好! привет!"
```

Text in any language thanks to UNICODE.

MANAGER

A 5th generation language means up to 90% less code: which means faster coding, less chances for bugs, easier maintenance. And the code is cross platform.

AAF TECHNOLOGY

User Macro-Code (UMC)
Automatic Language Security

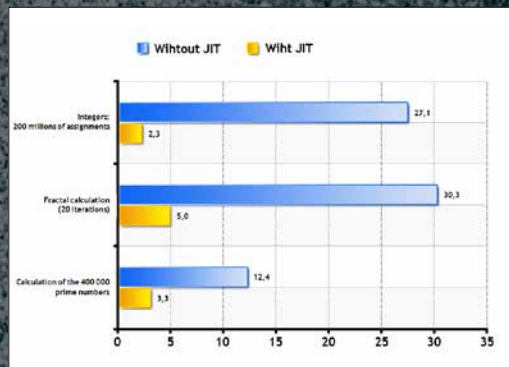
MAIN POINTS

Fast learning : it's a 5GL
Easy to use, powerful, fast and reliable
Easy maintenance

JUST IN TIME (JIT) COMPILATION

The principle behind "Just in Time Compilation" -JIT- is as follows : the 5GL code of WINDEV is converted on the runtime computer into "native assembly" code during its execution.

The execution speed is faster for all instructions, and especially for integer calculations and real number calculations.





STRINGS : POWERFUL OPERATORS

Business applications use a lot of processes in strings.

With WINDEV, the code that handles strings is clear and concise thanks to operators.

- The operators + and += are used to concatenate two strings.
- The operator [] is used to access a section of a string easily.

Strings can be compared among themselves thanks to standard arithmetic operators but also thanks to specialized operators.

- Equality : =, ~=, ~~
- Difference, greater than, less than : <>, <, >=, ...
- Starts with : [=, [~, [~~
- Contains : [=], [~], [~~]
- Ends with : [=], [~], [~~]

STRINGS : POWERFUL FUNCTIONS

In addition to the operators, a large number of high-level functions are available: • check regular expressions • searches • replace • switch to uppercase • extraction of pieces of strings separately or into array elements • automatic extraction of a directory name or a file name from a complete path • conversion from and to numeric types, dates or times •••

EXAMPLE OF AN ADVANCED FEATURE : OPTIONAL CONCATENATION

Optional concatenation allows you to write concise code.

It allows you to add a separator when building a string, only if the separator is not already present where you want to add it. The separator is not repeated. No need to test whether the separator is already present in string you want to concatenate.

Simply put the separator between square brackets [].

```
sFile=sPath+"["+sName
```

Here, no need to test whether the file path ends with a «\» or not. Convenient!

ENUMERATIONS AND COMBINATIONS

You can create enumerations and combinations to improve the design and maintenance of your code.

The values of the enumerations and the combination options are not mere integer combined among themselves, but true programming elements endowed with extremely efficient functionalities that improve productivity and limit errors: assisted input in the code, errors at compile time in case of mix up, compatibility of external components,...

```
PaymentMethod is Enumeration
Cash
Net_30
Split_3_ways
```

Enumeration: Declaration

```
Order.Payment =
Cash
Delayed_30_days
Paid_in_3_installments
```

Enumeration: assistance in the code editor: no chance of an input error

ARRAYS AND OTHER CONTAINER TYPES

The WLanguage arrays are advanced elements that allow for easy management of sets of elements with the adding, deleting, sorting and searching functions.

The memory needed for the array elements is managed automatically. The security mechanism prevent the use of outbound elements.

Several container types are available: associative array, queue, stack, list.

THE ADVANCED TYPES

WLanguage comes with a large number of ad-



vanced types that let you easily manage complex notions : emails, RSS streams and signatures, XML documents, resources for schedulers and calendars, ...

POWERFUL STRUCTURED PROGRAMMING

The essential standard iterative and conditional programming structures are available (FOR i, LOOP, WHILE, IF, SWITCH, etc.) but each one of them has been simplified for efficient and quick code writing.

For example, the variable declaration of the "FOR i" loops is implicit, the SWITCH statements can use the entire range of WLanguage comparisons, ...

```
SWITCH BookReference
CASE "A" <= * <"H" : Floor = 1
CASE "H" <= * <"P" : Floor = 2
CASE >= "P" : Floor = 3
END
```

You can use complex intervals to define the cases.

"FOR EACH"

The "FOR EACH" loops go through all the elements of a set, for example all the records in a data file, all the elements of an array, all the selected fields of a list, all the sub-strings of a string, ...

```
FOR EACH email NOT READ OF MailServerConnection
END
FOR EACH SELECTED ROW OF OptionList
END
FOR EACH Customer WHERE Country ="Canada"
END
```

3 examples, only 1 way to code!

PROCEDURES

WLanguage's procedural programming is extremely powerful.

Procedures let you organize your code logically. A WLanguage procedure can have several parameters and several return values.

The parameters can be optional and their number can vary.

Procedures are recursive.

Their type can be strict or flexible.

PROCEDURES

Automation (repetition, timer, thread)
Multiple syntaxes (dynamic dispatch)
Internal procedures (closures)
Named parameters
Weak or strong typing

ADVANCED PROCEDURE FEATURES

The procedures include integrated features. Runtime automation allows for scheduled execution: in 1 minute, in 1 hour, after inits,...

The execution of a procedure can also be repeated.

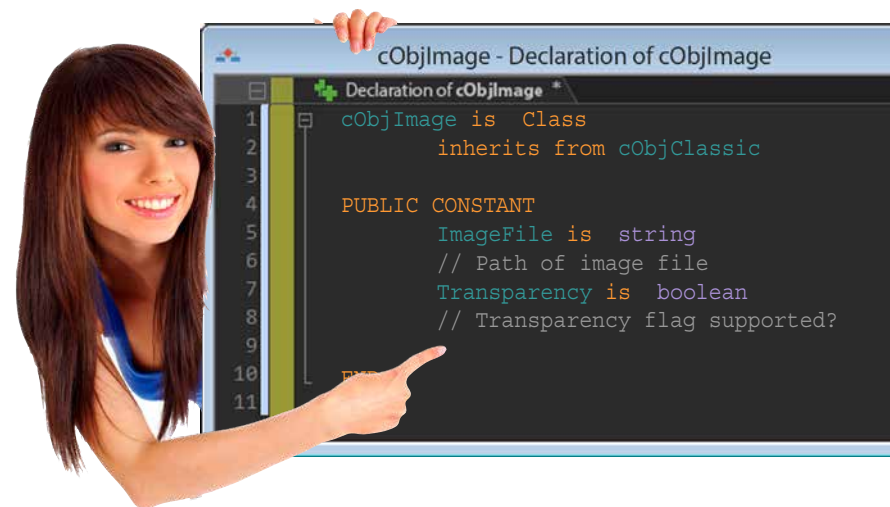
A procedure can be located in a Timer or a Thread.

INTERNAL PROCEDURES

"Internal procedures" let you write a sub-procedure inside of a procedure, this lets you see the code in one glance, without juggling between several procedures.

The procedure's local variables can be used directly in the sub-procedure ("closure").

The internal procedures can be used in all functions that require a "Callback", including for asynchronous functions.



OBJECT-ORIENTED PROGRAMMING (OOP)

You can use object oriented programming with WINDEV.

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

Base class methods can be redefined visually from the project explorer; virtual methods are managed automatically.

Management of the instances' memory is completely automated in most cases, when allocating as well as when freeing memory.

OOP (OPTIONAL)

Classes
Abstract classes
Interfaces (duck typing)
Inheritance, multiple inheritance
Reflection
Override (dynamic dispatch)
Abstract and virtual methods (polymorphism)
Properties (get and set)
Constructor
Destructor
Data encapsulation: public, private, protected
Easy programming in 5GL
Automatic freeing
"is one" operator and downcast
Low reference

EMBEDDED DATABASE ACCESS

WLanguage includes all aspects of database management.

The structure of the database is automatically recognized by the compiler, which allows you to easily handle the different items of the current

record of a file (table row).. Programming is done in SQL or WLanguage. Cursor programming is very powerful.

```
HReadSeek (Customer, Name, CustomerName)
tapiDial (Customer.PhoneNumber)
In 2 lines: search for a customer in the database and phone call.
```

XML DOCUMENTS

XML documents can easily be handled thanks to WLanguage.

The structure of the XML document is automatically imported in WLanguage (with XML or XSD model).

The WINDEV editor offers assisted input on the names of the document elements, syntax highlighting, automatic case correction, ...

The structure of the WLanguage code highlights the structure of the XML document: by typing

WLANGUAGE CODE

```
WITH Fleet
WITH .Vehicle[1]
.Make = "Ferrari"
.Model = "488 GTB"
END
WITH .Vehicle[2]
.Make = "Mercedes"
.Model = "AMG GT"
END
AVEC .Vehicle[3]
.Make = "Maserati"
.Model = "Ghibli"
END
END
```

JSON DOCUMENT

JASON is an often used data exchange format. For this format, the WLanguage syntax allows for simple read and write that follow the JSON standard.

The principle is the same :

```
WITH JSON.Fleet
WITH .Vehicle[1]
```

HANDLING DATA

Operations on data require that this data be copied from the database to some variables, modified, saved or reloaded into another format.

All these common operations are very easily accomplished thanks to the WLanguage syntax.

The WITH syntax allows you, for example, to quickly access the sub-elements of a base element.

The homonymic copy lets you copy in a single operation the sub-elements with the same name between two heterogeneous elements.

The serialization and deserialization functions let you save and reload the content of complex elements.

the code, you immediately imagine the result!

The example below presents the building of an XML file.

Access in read mode works in the same way; the code :

```
Fleet.Vehicle[1].Make
returns "Ferrari".
```

GENERATED XML CODE

```
<Fleet>
  <Vehicle>
    <Make>Ferrari</Make>
    <Model>488 GTB</Model>
  </Vehicle>
  <Vehicle>
    <Make>Mercedes</Make>
    <Model>AMG GT</Model>
  </Vehicle>
  <Vehicle>
    <Make>Maserati</Make>
    <Model>Ghibli</Model>
  </Vehicle>
</Fleet>
```

```
.Make = "Ferrari"
.Model = "458 Speciale"
END
WITH .Vehicle[2]
.Make = "Mercedes"
.Model = "SLK 350 Roadster"
```





WLANGUAGE FUNCTION FAMILIES

SOAP AND REST WEBSERVICES

Handling Webservices is child's play in WLanguage.

The data handled by the Webservices appear as simple structures and the operations appear as simple procedures (see page 65).

HANDLING GUIs BY PROGRAMMING

UI controls are natively very powerful from the moment they are defined in the window editor. You can modify their state and behavior by programming thanks to the `Control` type: the 270 display properties (position, width, etc.), as well as the code to execute based on the user's actions, can be modified according to your needs. The `CreateControl` and `CloneControl` functions allow you respectively to create a new control or to duplicate an existing control.

DYNAMIC COMPILATION

WLanguage is not a static language, it is a dynamic language.

The dynamic compilation lets you execute code built on the fly.

DEFENSIVE PROGRAMMING

Defensive programming consists of testing the inputs and outputs of each procedure in the code itself; any errors detected will only be displayed in "debugging" mode.

WLanguage offers powerful debugging

GENERIC CODE!

Dynamic compilation
Flexible typecast
Indirections
Reflection
Procedure type
Lambda
Static and dynamic inference

functions `dbgAssert`, `dbgCheckEqual`, `dbgCheckDifferent`, `dbgCheckTrue`, `dbgCheckFalse`, ...

The creation of unit tests (see page 16 "Software factory" and page 90 "Automated tests") allows you to test an application at any time.

MULTI-THREAD / PARALLEL TASKS

To take advantage of the power of multi-core computers and improve the speed of your applications, the WLanguage offers advanced thread management.

Parallel tasks are used to split a long process into several shorter processes that will be run in parallel, taking advantage of modern processors.

Variables are automatically protected. Synchronization techniques are available: critical sections, mutex, semaphores, signals, ...

MULTI-PLATFORM

Code written in WLanguage is multi-platform: 32 or 64 bits, Windows, Linux, Android, iOS, Java, Javascript, PHP, ...

Components can be shared among several platforms.

EXECUTION SECURITY

The WLanguage security mechanism prevents any data corruption.

WLanguage manages errors (non fatal) and exceptions (fatal).

Error and exception management can be accomplished automatically or via programming.

SECURE MEMORY ZONE

Access to memory zones is controlled, which limits the risks of buffer overflow.

THIRD-PARTY LANGUAGES

You call code written in third-party language from WINDEV, or to call WINDEV code from a third-party language: Java, C++, C#, Fortran, VB, ...

OPENNESS

You have access to all the features and all the standards: API, DLL calls, COM, ActiveX, .NET, J2EE, events...

For example, you can easily call a C or C++ DLL from a WINDEV application.

In addition to the traditional commands of a programming language (For, If Then Else, While, etc.) WLanguage proposes 5th generation functions.

These families enable you to program using clear, intuitive language, without having to "reinvent the wheel" every time.

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

These are the "Function families":

- Window management
- Management of controls in a window
- Mathematical functions
- View table management
- Character string management
- Popup menus, drop-down menus, ribbons
- Dates and times
- Calendar functions
- Organization Chart functions
- Scheduler functions
- Organizer functions
- Office functions
- PDF functions
- TreeView
- Pivot Table functions
- Dynamic OLAP
- Timeline functions
- Multiline Zone functions
- Internal Window functions
- Check Box and Radio control management
- Wifi functions
- Toolbars
- Message and dialog box management functions
- Drag and Drop
- Draw functions

- Business chart (line, column, pie, etc.)
- .Net functions (.NET)
- J2EE, SOAP functions



- HTTP functions
- Domotics functions
- Emails
- Telephony (TAPI)
- General exception mechanism
- Software management
- Fax
- User groupware
- "ODBC" specific functions
- Database management (HFSQL and others)

- SQL
- Assign
- Read, modification commands
- Useful commands
- Remote access
- Describe a connection (not described in the analysis) on a third-party database
- Temporary table description
- Error management
- View management (temporarily load part of the table in memory)
- Filter management (temporarily store part of the table on disk)
- Trigger management
- Logs
- Replication
- Transactions
- Other functions

- Big Data functions
- HBase functions
- Hdfs functions
- MongoDB functions
- Memcached functions

- Print functions
- Font management
- Java functions
- Third-party languages: Java, C++, C#, VB, Cobol, Fortran, etc.

- List Box and Combo Box control management
- Binary value management functions
- Financial functions
- Matrix management
- Statistical functions
- Image animations
- Camera functions

- Multimedia functions (video, audio, etc.)
- TWAIN management: scanners, cameras, ...
- MDI functions
- Memory zone management functions
- Multi-language functions
- FTP functions, secure FTP
- RPC

- Control application via OLE AUTOMATION
- ActiveX
- DDE management functions
- Various Windows & Linux functions (API call, DLL)
- Windows certificates
- Windows events
- Various WINDEV functions
- XML native functions
- JSON native functions
- Excel native functions
- Serial and parallel ports
- Clipboard and recycle bin
- Project management

- Action plans (Continuous Integration)
- Registry
- Socket functions (SSL, etc.)
- Mouse
- System functions
- Threads
- OPC

- MQTT
- Disks, files and directories
- Network management
- File archiving and compressing (ZIP, 7Z, etc.)

- USB
- CD and DVD burning
- EXIF (digital images)
- 3-tier
- LDAP functions
- SAP functions
- Bluetooth functions
- SNMP functions
- Lotus Notes functions
- Google functions
- RSS functions
- OBEX functions
- Service functions
- Task scheduler
- Live Update functions
- Debugging functions
- Array functions
- Macro user functions
- Automatic tests
- Lock functions
- DNS functions
- Xaml functions
- Spreadsheet functions
- Doc functions
- Map functions
- Functions allowing the end user to handle the GUI
- Facebook functions
- Telemetry functions
- ...

List of functions on help.windev.com

ASYMMETRIC ENCRYPTION

In addition to all standard functions, WLanguage offers the necessary functionalities to implement asymmetric encryption via the function families `EncryptAsymmetric` and `DecryptAsymmetric`.

- The management of :
- public keys
 - private keys
- makes it easy to implement :
- authenticated communication
 - secure communication.

32 and 64 bits : the source code is 32-bit and 64-bit compatible, you choose during the compilation.



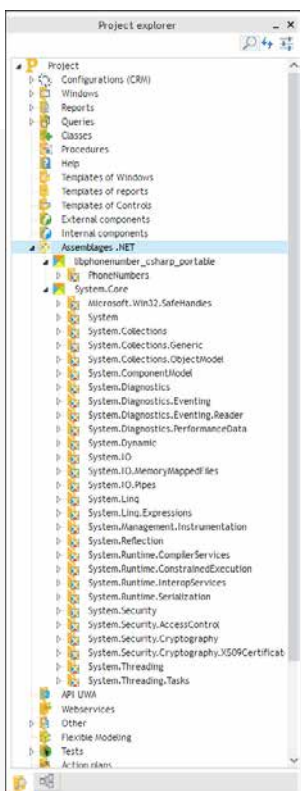
.NET CREATE OR USE ASSEMBLIES

Need to use a .NET assembly?

WINDEV knows how to use .NET assemblies, classes and controls in the assemblies.

WINDEV also allows you to create .NET assemblies.

View of .Net assemblies in WINDEV



USE .NET ASSEMBLY

It is very easy to use a .Net assembly in a WINDEV application.

Simply integrate the assembly into the WINDEV project.

All classes of the assembly can be used as WLanguage classes, with the same syntax: Instantiation, method call, ...

It is easy to use "generics", to pass "WLanguage delegates" ,...

CREATE .NET ASSEMBLIES

It is very easy to create a .Net assembly with WINDEV.

Simply implement the classes that define the interface of the assembly in WLanguage and indicate the name of the "Namespace" to generate

The .Net assembly generated by WINDEV can be used with all languages.

USING .NET CONTROLS

The "WinForm" and "WPF" controls can be directly inserted in WINDEV windows.

The third-party visual components can be quickly integrated in your applications.

Interactions with these components are easy to program thanks to calls to methods and delegates.

ACCESS .NET API

WINDEV allows access to .Net APIs.

EASY PROGRAMMING

Access to .NET classes and structures is similar to the access to WLanguage classes and structures, the method calls have the same syntax.

No need to learn a new language to integrate third-party .NET assemblies: take advantage of WLanguage's ease of use.

The code editor makes development easier

CODE EDITOR THE DEVELOPER'S ALLY

The code editor is fully integrated to the environment.

It is intuitive to use for both novice users and experienced developers.

Constant assistance is proposed at each step (can be configured or turned off).

Powerful formatting and highlighting features make it easy to write and read code.

Source code can be managed in teams (SCM, integrated versioning tool, see p. 78).

A REVOLUTIONARY CODE EDITOR

- Control initialization
- Entry in the control
- Exit from the control
- Whenever modified

```

1  Entry in EDT_ZipCode
2  // Display a button used to select zip code
3  BTN_ViewZC.Visible = True
4
5  Exit from EDT_ZipCode
6  // Makes the button used to select a zip code invisible
7  BTN_ViewZC.Visible = False
8
9  Whenever modifying EDT_ZipCode
10 // Check the validity of zip code
11 IF ZipCodeIsValid(MySelf) = False THEN
12 // Colors the text in red
13 MySelf.Color = RGB(255, 0, 0)
14 ELSE
15 // Colors the text in black
16 MySelf.Color = Black
17 FIN
  
```



Dozens of wizards help generate code (see p 89), here the FTP connection code generator

The FTP connection wizard...

```

// Start of code generated by wizard
// ConnectionID is Int
// ConnectionID = FTPC
IF -ConnectionID <>
// Insert your process here
// Disconnection
FTPDisconnect(-ConnectionID)
ELSE
Error()
END
// End of code generated by wizard
  
```

... and the generated code

MULTILINGUAL PROJECTS

When the cursor hovers over a multilingual string in the code, a tooltip shows the value of that string in all the languages of the project.



MANAGER

WINDEV's code editor makes the code writing process easier. It is fully integrated with the environment, which improves its performance.

AAF TECHNOLOGY

User Macro-Code (UMC)

MAIN POINTS

- Complete integration
- Constant assistance
- Extreme user friendliness

CODE ENTRY IS INTUITIVE

Simply enter the process to run in the corresponding event (of an Edit control, in the example above): when initializing the control, during the entry in the control, during the input in the control, during the exit from the control.

A link at the bottom of the window lets you add events: rollover for instance, etc.

ASSISTED INPUT

The assisted input proposes an help for each parameter as well as the possible values according to the project data (variables, global variables, data structures).

SOPHISTICATED ASSISTED INPUT

The code autocomplete feature is powerful for entering commands, variable or control names.

Whenever required, a wizard proposes to generate the code for you (150 wizards).

CONDITIONAL TARGET CODE

For a given process, you can enter a different code according to the target platform. The correct code will be automatically compiled according to the target.

AUTOMATIC GENERATION OF CLASS DIAGRAM

Starting from existing classes (project reuse), WINDEV automatically builds a UML class diagram with its relationships (inheritance, aggregation). This provides a global view of the architecture.

UML CLASS DIAGRAM : AUTOMATIC SYNCHRONIZATION

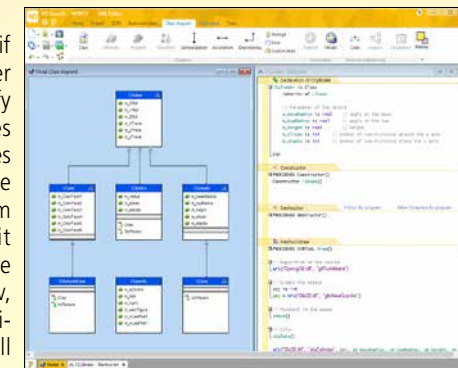
When you modify the code of a class or structure (add a new member for example), your

UML diagram is automatically updated to reflect your modifications.

No more out-of-sync UML diagrams!

Conversely, if you'd rather like to modify your classes or structures from the UML diagram to benefit from a more global view, your modifications will

be automatically applied to the source code of classes and structures.



ENTERING CODE

The code is directly entered in the appropriate "event".

It's simple and intuitive.

Auto-complete and constant help, as well as a large number of very sophisticated features make the programmer's job easier.

SQL code can also be entered in the code editor.

CODE STYLE

The code editor allows you to use a code style (prefix the variables), and it even allows you to define your own prefixes. These prefixes are colored and they can be made invisible.

The editor adds the prefixes while you're typing if you've activated this option.

Variables are prefixed according to their type: local, global, according to the control's type, ...

INTELLIGENT RENAMING

When a variable is renamed, WINDEV proposes to rename it wherever it is used.

SEARCH

The editor's search features are very advanced. For example you can include or not the comments or the text strings.

EASY TEAM WORK

The versioning tool (SCM) is fully integrated to the environment; it simplifies teamwork as well as the comparison of versions, and backups (see p 78).

Each version of your application is automatically backed up.

COMPARE CODE, WINDOWS, UI...

A window that used to work three weeks ago has been modified by an intern, and it does not work anymore. How to find the differences? Simply use the "element comparison" feature : the two elements are analyzed, and their differences (code, UI, etc.) are displayed on the screen.

OPENNESS TO OTHER LANGUAGES

The code editor also lets you enter SQL code, Java code, PHP code (in a PHP WEBDEV project), ...

A developer spends a lot of time in the code editor. Therefore it is important that this editor be the most efficient possible.

A POWERFUL DEBUGGER

Bug tracking is made easier

This user-friendly debugger offers advanced functionalities:

- breakpoints
- step-by-step execution
- variable visualization
- "edit & continue": modification of code during execution
- real-time call stack
- thread and component debugging
- formatted display of HTML data, image, RTF...
- "set next statement"...

A USER-FRIENDLY DEBUGGER

```

Click BTN_Validate * - Debugging... If Error: by
1 // Read the information entered
2 ScreenToFile()
3
4 // Modifies the input information
5 Product.EnteredBy = UserNetwork()
6 Product.EnteredBy = Today()
7
8 // New record or modification?
9 IF Product.NewRecord = True THEN
10 // Add into the database
11 HAdd(Product)
12 ELSE
13 // Modification in the database
14 HModify(Product)
15 END
    
```

Breakpoints

- IW_FindCustomers.IW_FindCustomers.BTN_Find, line 1
- IW_Pane_LOOP_ProductVariation.IW_Pane_LOOP_Prod
- TPLC_Filter.PROCEDURE.DefineCharacteristic, line 25
- TPLC_Filter.PROCEDURE.DefineCharacteristic, line 33
- IW_Pane_LOOPProductVariation.IW_Pane_LOOP_Prod
- IW_Indicators.PROCEDURE.OrdersToFollow, line 13
- IW_Filter.Procedure.AddCharacteristicValues, line 25

You can see the list of all the breakpoints that have been set. You can delete some of them, or all of them, in a single operation

MANAGER

Applications must always be optimized: an efficient debugger is essential for your teams..

MAIN POINTS

- Debugging in test mode in the editor or on a running application
- Local and remote debugging
- Scheduled debugging

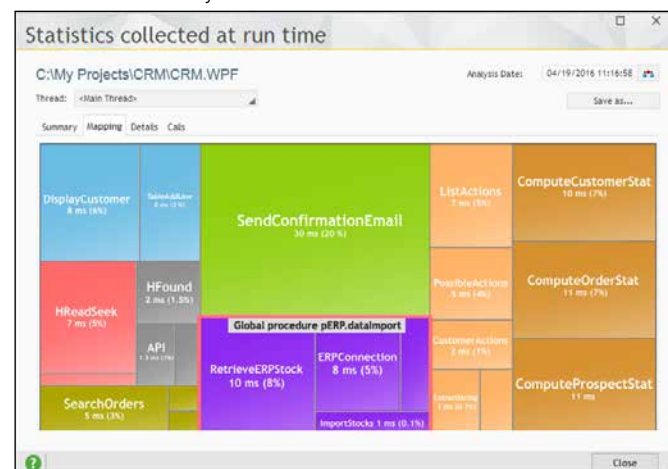
PROFILER : ANALYZE AND IMPROVE THE PERFORMANCE OF YOUR CODE

The profiler is a tool provided with the product, allowing you to measure in a detailed way the amount of time your code takes to execute.

The analysis of the time spent in each statement is very detailed: for example, property assignments are detailed. The visual representation of the execution times is presented in a hierarchical way. This makes analyzing nested processes duration easier since the

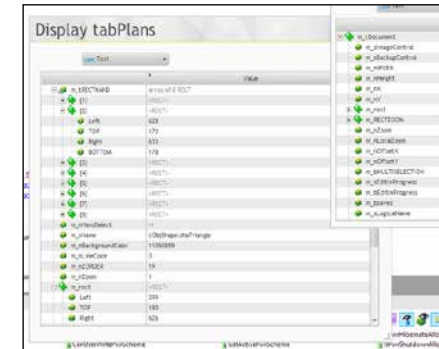
chart is more readable. Note that the profiler can be started at any

time on a user computer with the "Win + Shift + F10" key combination.



MAIN FEATURES

1. Managing breakpoints
2. Executing code step by step :
 - line by line,
 - by block of lines,
 - by ignoring the breakpoints,
 - by directly modifying the code to execute ("Edit and continue"),
 - by indicating the code line to run (Backspace).
3. Variable visualization. Ability to display a Watch window.
4. Display the process hierarchy (call stack)
5. Evaluation of expressions and set up of auto-stop expressions (enable you to start the debugger as soon as a condition is verified or as soon as a variable's value is modified).
6. Display the content of the data file items
7. Display the query content
8. Display the system elements
9. Display the information of the debugging dump
10. Display the values of the classes, members and advanced types
11. Display the HFSQL return code
12. Display the WLanguage return code



EDITING WINDOW FOR WATCH

A "watch" window allows you to view the content of a structured variable: array, multiline RTF string, structured type of language, class,...

This edit window is a non-modal window. Several watch windows (on different variables) can be opened at the same time. All the open watch windows are updated each time an instruction is executed. The window allows you to save the variable's content on the drive.



IMPLEMENTATION AND REMOTE DEBUGGING

You can debug an application that is running on another machine, connected through the network or Internet.

You debug without having to go anywhere, directly on the customer's configuration.

The traditional trace

window can also be displayed on the debugging machine.

DUMP FOR REMOTE DEBUGGING

It can happen that an application has a problem on a customer machine that is physically far away.

If you don't want or cannot perform a remote debugging (a standard WINDEV

feature), or if you're not available at the time the failure happens, you can ask the application to create a dump file that will allow you to analyze the problem later on your own machine. This dump file allows you to go to:

- the line of code that triggered the problem
- with the content of the variables

with the stack of calls. This provides indications that may be very precious to remove the problem.

The dump file can be associated with a bug report in the Project Monitoring Center.

It is available at later times, without bothering the end user, which allows for a later analysis of the problem on a remote machine.

WLANGUAGE DEBUGGING FUNCTIONS

In addition to the usual operations available in the debugger, some WLanguage functions are used only during the debugging phase and they have no effect on the deployed application.

These functions only have an effect in test mode.

In "Automated test" mode, these functions produce a detailed error in the test's status report.

In "Manual test" mode, these functions trigger an Assert.

For example, the functions `dbgCheckEqual` and `dbgCheckDifferent`, checks that 2 variables are equal or different, and `dbgCheckNull` and `dbgCheckNotNull` indicate that a variable is or is not Null.

CUSTOMIZING AN ERROR PROCESS IN THE DEBUGGING STEP

`dbgOnError` allows you to customize the error process to perform when an error is triggered in the debug code (`dbgAssert`, `dbgOnError`, `dbgCheck`). Thus, you can improve your defensive programming techniques!

NON-FATAL ERRORS

An application can generate "non-fatal" errors. These are errors generated by functions, and whose status report is not tested in the application.

For example, the return code from a query's execution, failing to open a parameter file, ... This type of functions can return errors that are never processed.

These errors can appear for example only on some computers and not on others (because of configuration) and make the behavior of the application hard to understand and its debugging difficult.

AUDITS

Audits are very useful for debugging applications. See page 66 and 67.

FORMATTED DISPLAY OF HTML DATA

The HTML content of a variable can be displayed as is or formatted.

This feature is also available for the RTF format.

DISPLAY OF IMAGES

The watch window allows the direct display of an image contained in a variable or memo control (blob).

LOCAL VIEW IN HEXADECIMAL MODE

The hexadecimal viewing mode can be limited to a watch window.



CREATE COMPONENTS : SHARE YOUR CODE!

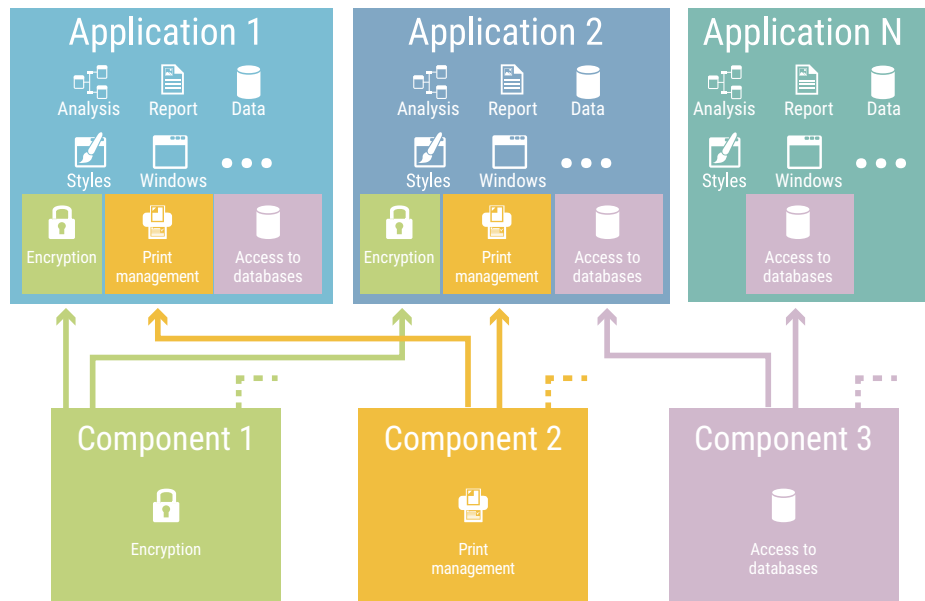
Development teams have always sought to reuse their existing code, so that they don't have to "reinvent the wheel" again and again.

WINDEV innovates by proposing the concept of "automatic component".

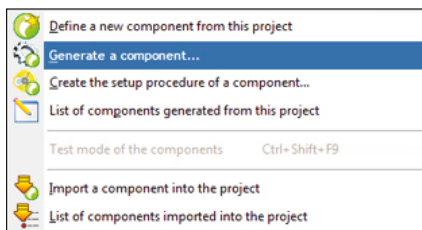
A **component** is simply an encapsulated, secure, piece of code (with or without windows, files, etc.) that several applications (written with WINDEV, WEBDEV or WINDEV Mobile) can share.

Professional development just became easier.

DON'T KEEP REINVENTING THE WHEEL



Components offer a modular approach to development.



Create a component with one single click

MANAGER

A component is a building block that can be reused. A WINDEV component prevents you from reinventing an existing routine.

A WINDEV component is as easy to create as an application.

AAF TECHNOLOGY

Automatically adapt to the skin template of the host application

MAIN POINTS

- Easy creation
- Hot update
- Protected source code
- Shared with WEBDEV and WINDEV Mobile

MAKE REUSE EASIER

A component is a black box, created by a developer who can then reuse it; a component is also available to other developers. Only the entry points and the type of information returned are made public.

SECURE YOUR DEVELOPMENTS

Once a component has been tested, each program that uses it benefits from its reliability. Without any additional work, the quality of your applications automatically improves.

A COMPONENT : A REUSABLE PROGRAM

A component may be simple or

sophisticated.

A component can include some code of course, but also an analysis, data files, windows, source code, classes, queries, procedures, reports, ... A component can itself use other components, or external data: database, Internet access, ...

SIMULTANEOUS USE OF A COMPONENT

A component can be used simultaneously by several applications.

THE CODE IS HIDDEN

The components that you create are obfuscated, that is that nobody can see inside them or copy the source code, ...

SECURE TEAMWORK

The purpose of components in group work is to increase the team's productivity:

- no unauthorized user can modify the source or the analysis.
- the access to the database can be totally encapsulated into a component. This way you can secure access to the database.

Create components for each building-block of your applications. You'll make your applications more robust, and you'll save some time.



WINDEV allows you to consume, create, deploy and host Webservises with ease.

A native syntax is proposed.

WINDEV facilitates the implementation of SOA (Service Oriented Architecture) in your projects.

WEBSERVICES SOAP & REST

EASY WEBSERVICES



Creating and using Webservises is easy with WINDEV

CONSUME SOAP AND REST WEBSERVICES

It is very easy to use a SOAP or REST Webservice from WINDEV.

The structures of the WSDL file automatically become native types of WLanguage.

For the REST Webservises, all you have to do is use the `HttpRequest` function.

EASILY CREATE WEBSERVICES

SOAP Webservises are easy to create: simply define the set of procedures that make up the Webservice interface.

The complex types (structures, XML content, ...) are supported.

The WDSL description file is automatically generated.

MANAGER

The Webservises are often used in the current applications. You must be able to consume them and to produce them.

MAIN POINTS

- Easy creation of Webservises
- Easy hosting of the created Webservises
- Easy use of Webservises

EASY WEBSERVICE DEPLOYMENT

Webservises are hosted on a computer that includes a WEBDEV application server..

The Webservice setup procedure is automatically generated.

EASILY HOST WEBSERVICES

The hosting technology is based on the robust WEBDEV standard application server.

This technology ensures the availability of the Webservice, as well as its speed.

Requests are executed simultaneously, in separate processes, which ensures security.

Webservises can be consumed by all types of applications, created with WINDEV, WEBDEV or any third-party language.

The PCSCloud.net cloud allows you to easily host Webservises.

EVERYTHING IS MANAGED

The management of Webservises in WINDEV is very powerful; here is a list of some of the features managed:

- JSON, natively
- Array results (SoapArray)
- Data binding Webservises
- Inclusion of Webservises
- Attributes in wsdl
- Multiple responses
- Multiple headers
- Message signature
- WS-Addressing
- Circular references in schemas
- SPNEGO authentications
- MTOM/XOP
- ...

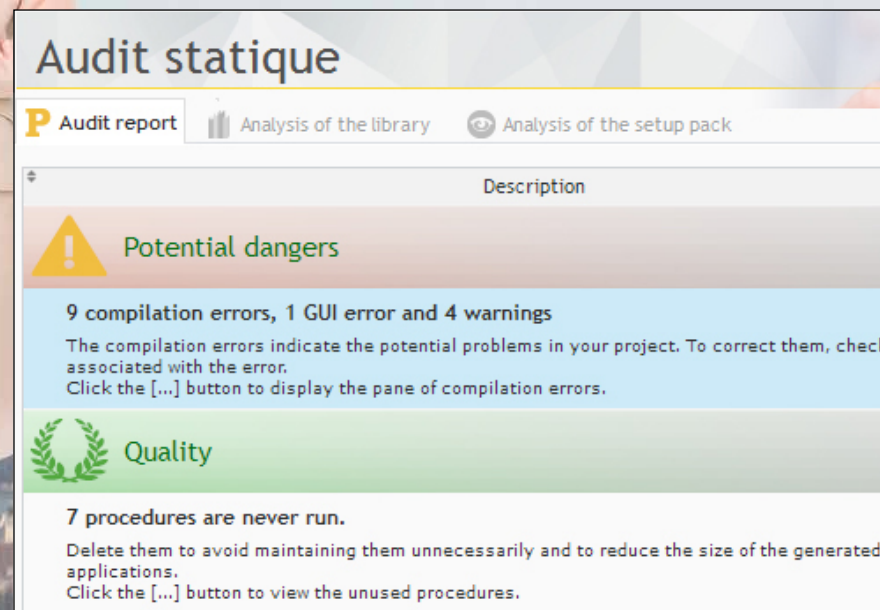
STATIC AUDIT: SECURE THE CODE OF YOUR APPLICATIONS

AUDIT YOUR CODE IN 1 CLICK

The static audit analyzes the source project and its elements. You can audit your applications as often as you like.

The detailed report that is created indicates: content of the setup, code metrics, potential dangers for the project, unused elements, optimization tips...

You can improve your application's quality this way, reduce their size, increase security...



An example of a static audit report: here, the "potential trouble" areas of the project, to correct quickly!

MAKE YOUR APPLICATIONS FASTER AND MORE ROBUST

Installing the static audit is very easy. From the WINDEV environment, it analyses the source project and its components.

SOURCE PROJECT STATIC AUDIT

The static audit produces a report on the status of this project, as well as recommendations for optimizing and improving performances.

PROJECT CLEANUP

The following elements are detected during cleanup:

- Dead code
- Unused windows

- Unused variables
- Unused multilingual messages
- Simultaneous backup of a window's history in the editor (.wdw file) and in SCM
- Unused styles
- Unused control groups.

After cleanup, your projects are smaller and faster.

VIEWING THE OCCUPANCY

The content and the size of the .EXE files, libraries (.WDL) and install files can be viewed in one click.

This allows you to reduce their size by removing the unnecessary files.

CODE METRICS

This feature combines the code metrics features:

- Comment rate
- Assets use

- Number of rows per process (detect excesses)
- ...

POTENTIAL DANGERS TO THE PROJECT'S QUALITY

The static audit generate a list of potential dangers to the project. Among the noted subjects, you'll find:

- SCM: project elements checked-out for a long time and never checked in
- Template (control, window, page, report templates...) not up to date
- Skin template used by the project not found on the computer
- Native access to a third-party database used by the project but not present
- Project configuration containing several generations
- ...

DYNAMIC AUDIT: BOOST THE PERFORMANCE OF YOUR APPLICATIONS

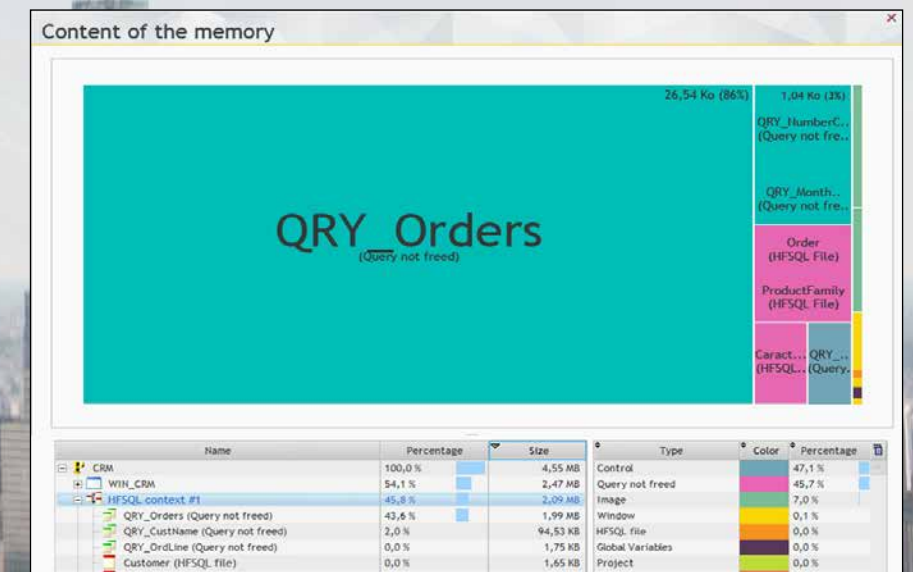
ANALYZE YOUR RUNNING APPLICATIONS

The dynamic audit is done on a running application. The execution is performed on a deployment computer or on a test computer.

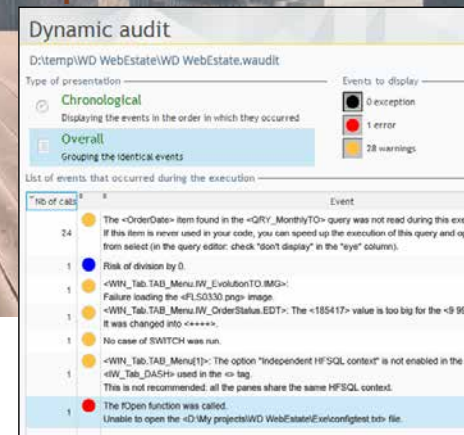
The dynamic audit allows you to follow the execution of an application on a computer, as well as track its memory usage.

The audit generates a report containing execution warnings, asserts, memory dump, ...

Coupled with the profiler, the dynamic audit allows you to increase the speed of your applications.



Here we see the memory used by a non-freed query. The dynamic audit shows each module loaded in memory, it also flags the runtime warnings, the non-fatal errors and the asserts (assertive programming)



Above: details of a status report from a dynamic audit

Left: the widget on the dashboard

AUDIT THE REAL EXECUTION

DYNAMIC AUDIT (APPLICATION IN EXECUTION)

A dynamic audit is performed on a running application, on a production computer or on a test computer.

You don't need to be physically present at the deployment site where the audit is performed.

The audit generates a report listing the dangers and the potential optimizations, ...

The generation of the status report can be requested by programming or by the user ([Ctrl] [Alt] [A] key combination).

This file can be monitored remotely.

MEMORY FOOTPRINT

A computer's memory footprint can easily be analyzed at runtime, locally or remotely.

RUNTIME WARNINGS

Here's a (non-exhaustive) list of elements that are analyzed and reported by a dynamic audit:

- Images not found
- File whose access path doesn't exist anymore (timeout)
- Nonexistent case in a SWITCH statement
- Operation overflow
- Values truncated when displayed (display with "++++")
- Multitask in threads and timers (this function is not allowed in a thread or a timer)

NON-FATAL ERRORS

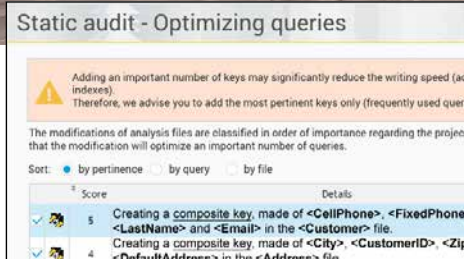
An application can generate "non-fatal" errors. These are errors generated by functions, and whose status report is not tested in the application.

This type of errors is often forgotten: the dynamic audit detects and lists these "hidden" errors.

AUDIT FROM THE TEST IN THE ENVIRONMENT

Each time the test mode is started, a dynamic audit is automatically performed. The result is displayed in the dashboard.

SOFTWARE SECURITY



Optimization suggestion example

MANAGER

The static audit analyzes the quality of the source code and offers changes

MAIN POINTS

- Source code audit
- Project cleanup offered if necessary

MANAGER

The dynamic audit analyzes the performance of your applications at runtime

MAIN POINTS

- Lets you optimize your applications' speed



HERITANCE AND OVERRIDE IN INTERFACES (WINDOWS, CONTROLS), REPORTS AND CODE

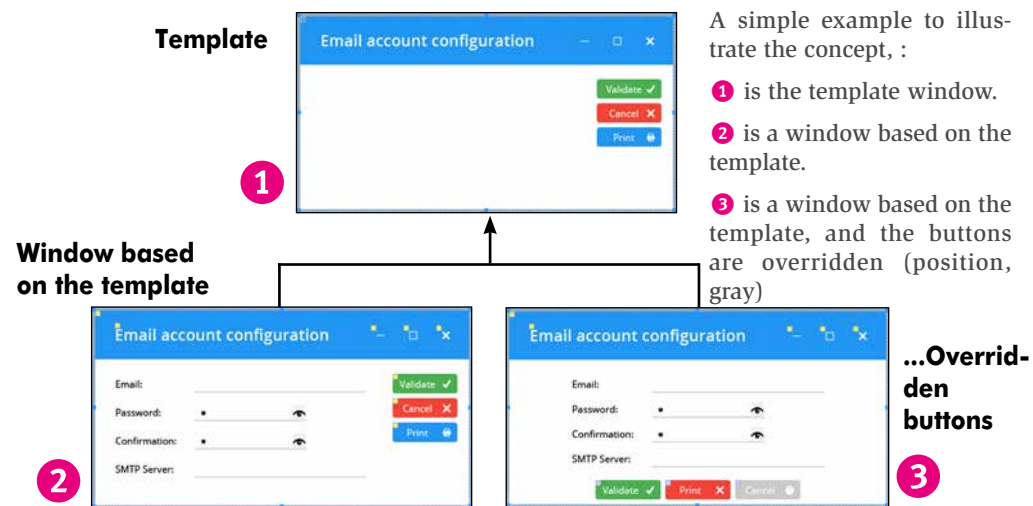
Your projects can reach a considerable size.

Your main projects can have thousands of windows.

The **inheritance** and **override** allow you to make "overall" changes to certain properties and code of some controls in a set of windows: WINDEV offers templates, inheritance and override.

It's easier to manage your modifications.

Automatically propagate UI modifications



WINDOW TEMPLATE

A window template is a sample window that you define.

You define its contents (background, controls, code, local procedures, etc.) and the position of these elements.

Then, whenever a new window is created, it can be based on one or more templates.

Window creation becomes standardized.

You can also apply a template to an existing window.

INHERITANCE

When a template is modified, WINDEV proposes to update all the windows that use this template.

If some windows based on a template should not evolve with this template any more, you can dissociate them from the template.

You can define several level of inheritance by basing templates on other templates.

OVERRIDE

You can easily use inheritance and override, for the code, but also and mainly for the other control properties (position, etc.).

In your windows, you can override properties: for example positioning a control at a very specific location, hide a control, modify the size of the input area,...

These new concepts allow for an optimized and easily modified UI architecture.

CONTROL TEMPLATE

Inheritance and override can also be applied to "controls".

You can define a control template that will be reusable in several windows or several

times inside the same window. Likewise, the UI properties (position, state, etc.) of these template controls can be overridden, as well as their code.

REVERSE MODELING

On an existing project, upon request WINDEV generates an inheritance diagram for the windows and templates.

This provides a general overview of the inheritance links.

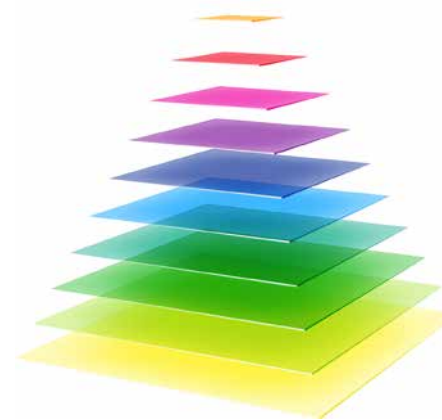
Large-scale projects are easy with WINDEV.

WINDEV manages all the types of architectures.

Front End - Back End, 3-Tier, SOA, Microservices, MVP...

WINDEV facilitates communication between layers, stacks, services... using the functionalities of the WLanguage framework.

BE FULL-STACK



MANAGER

WINDEV allows you to implement any type of architecture.

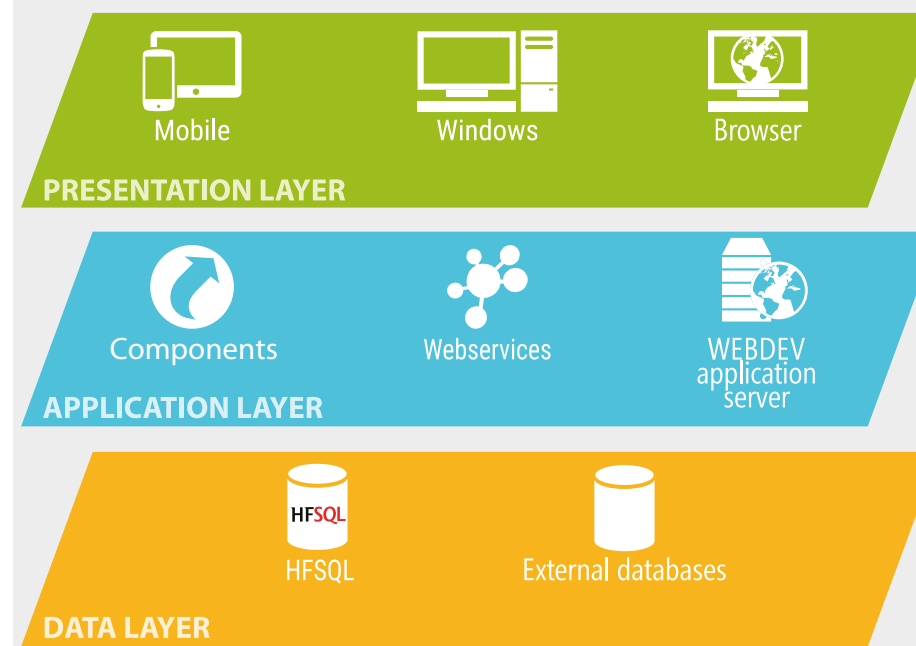
AAF TECHNOLOGY

The UI/UX benefit from the AAF

MAIN POINTS

Automatic serialization/deserialization WLanguage functions

MANAGE STACKS



«EASY FULL STACK

This architecture is divided into 2 main parts, the "stacks": Front End and Back End.

WINDEV offers the necessary features to implement these stacks.

For the database side, the HFSQL engine is integrated.

Creating Webservices (SOAP and REST) in the cloud or on-premises is easy.

WINDEV features user-friendly editors to create UI/UX.

Everything is provided, only one language is needed, WLanguage.

EASY 3-TIER PROGRAMMING

The purpose of "3-tier" programming is to separate the 3 usual "layers" of an applica-

tion: Processes, Data and Interfaces (GUI, UI, UX).

An application is made of 3 separate tiers:

- presentation layer,
- application layer,
- data layer,

that communicate with each other.

The Relational Object Mapping (ROM) is automatic.

For the communication between layers, the classes can be serialized in XML, JSON or in a binary format using the WLanguage serialization functions, **Serialize** and **Deserialize**.

PRESENTATION LAYER : MVP

Within the "presentation" layer of the 3-tier or in the Front-End stack, the interface

(UI, UX) can be structured using the MVP (Model-View-Presenter) model, MVC, or any other architecture.

BUSINESS / GUI CODE SPLITTING

Assisted code splitting.

The code is identified in the code editor: Business logic, GUI code or Mixed code.

MOBILE AND WEB APPLICATIONS

The interoperability between WINDEV, WEBDEV and WINDEV Mobile lets you easily develop UI/UX for mobile and browser.

WINDEV is open to all architectures

HFSQL : PORTABLE, FREE UNLIMITED SQL DATABASE

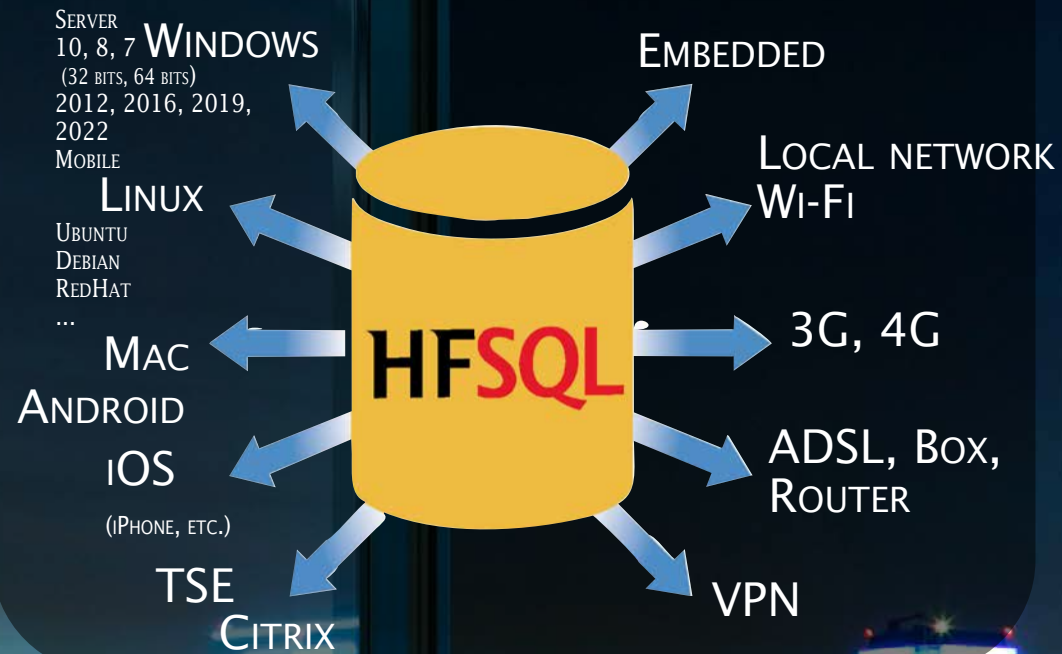
WINDEV comes with HFSQL, a powerful, fast and robust database.

HFSQL is used on several millions of computers around the globe.

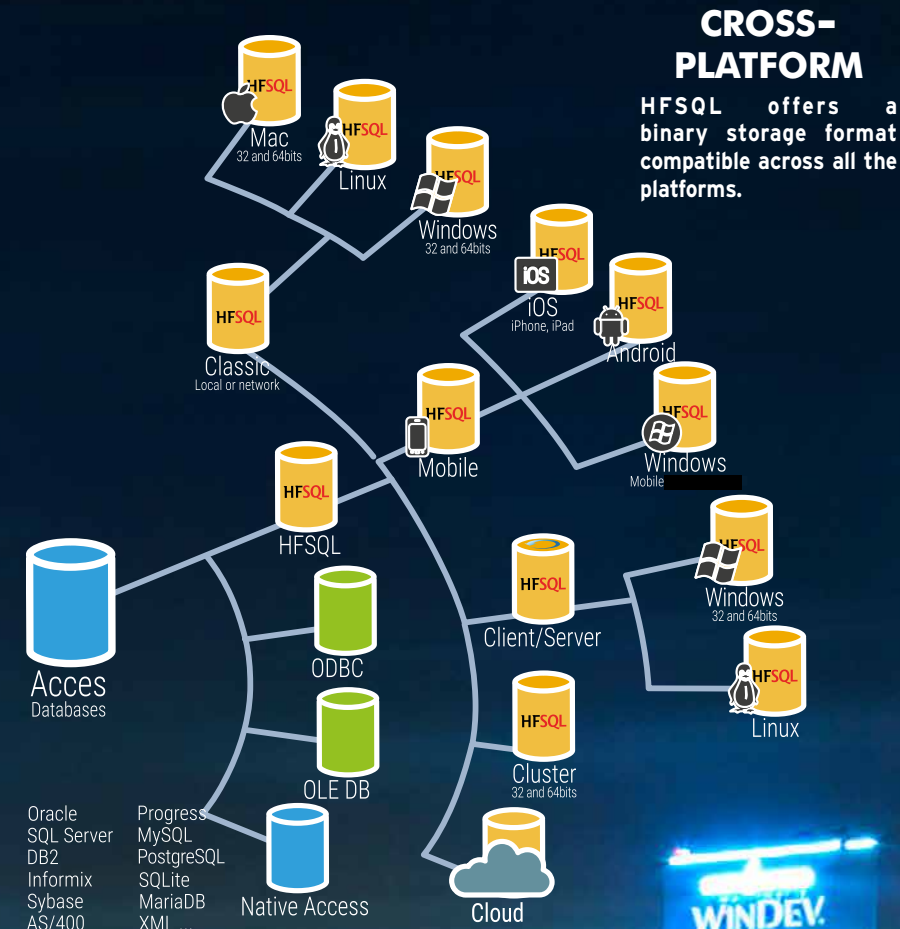
HFSQL is available in client/Server, Network, Local, Embedded, Mobile and Cloud mode.

HFSQL works on Windows and Linux, on mobile devices (iOS, Android, Windows), on networks of any size, across the cloud.

HFSQL can be freely distributed with your WINDEV applications.



Client/Server, Network, Local,
Embedded, Mobile, Cloud



UNALTERABLE TABLES

HFSQL offers an "unalterable" mode: Once a record (row) is added, it cannot be modified or deleted. This mode is useful for complying with some standards (INF525, ...).

CLUSTER (SERVER FARM)

Thanks to the cluster feature, a set of physical servers appears as a single server.

The potential failure of a physical server does not prevent access to the database (high availability, fault tolerance).

The read load

charge is distributed on all the servers (load balancing for reading).

When a user is connected to a server that fails, the application won't be disconnected but automatically reconnected to a valid server (automatic fail over).



MANAGER

HFSQL is a major benefit of WINDEV. Its reliability, its capacity, its speed and its free deployment make it indispensable

AAF TECHNOLOGY

Automatic management of concurrent access
Automatic reindex after hardware failure
History of modifications viewable
Secure access

MAIN POINTS

Truly free deployment
Speed and reliability
Compatibility with Windows, Linux, iOS, Android
C/S compatibility, Network, Local, Mobile, Cloud
Automatic administration
Automatic structure change management

100% Windows

100% Linux

100% iOS

100% Android

100% Cloud

HFSQL®

A PROVEN ENGINE COMES WITH THE PRODUCT: HFSQL

The HFSQL relational database engine comes with WINDEV.

The HFSQL engine is a reliable, robust engine, already used on millions of computers, servers and terminals throughout the world.

CROSS-PLATFORM COMPATIBILITY

HFSQL is the only database whose data and indexes are binary-compatible between Windows, Linux, iOS and Android.

Cross-platform development is made easier.

CLOUD

HFSQL databases can be deployed in the cloud, on PCSCloud.net for instance.

HIGH SPEED

HFSQL is extremely fast.

329 329 QUADRILLION ROWS (RECORDS)...

HFSQL allows you to manage large volumes of data easily and securely: up to 329 quadrillion rows.

You can plan for your data growth with peace of mind.

SQL PROGRAMMING

HFSQL includes an SQL engine.

SQL programming is standard:

```
SELECT * from CLIENT where NOM= 'DUPONT'
```

A visual SQL report editor is provided.

WLANGUAGE PROGRAMMING

You can also program the accesses to the database in WLanguage. The power and the simplicity with which WLanguage manages databases is amazing.

For example, a row (a record), can be found with one simple, powerful line of code:

```
HReadSeek (CUSTOMER, NAME, "DOE")
```

Simple commands enable you to move to the next or previous rows ("cursor" concept).

Programming in English, French or Chinese.

AND THE CODE CAN BE GENERATED!

The data manipulation code can be generated on demand by the RAD or the many wizards when creating windows and reports!

TOTAL INTEGRATION

The description of a data schema is done via the data model editor.

The data dictionary is accessible at any time in all editors.

The interaction between the user interface and the database allows for easier and faster programming.

WINDEV®

Contiues >>>



HFSQL CONTROL CENTER

The Control Center allows you to monitor all the servers and all the databases installed on the network of your company or installed remotely via Internet. This center also allows you to:

- visualize and print data
- directly execute queries
- manage the user accounts (groups), rights, list of current connections

- edit precise server use statistics: computers, queries, logs, parameters...
- user disconnection
- transaction management: view, cancel, ...
- backup management (hot backup)
- view the record locks
- scheduled tasks
- server replication
- display the number of rows processed
- cluster management
- ...

SPEED OF YOUR APPLICATIONS

The multithread HFSQL Client/Server engine performs automatic load balancing in order to optimize the response times. This allows for fast execution of the queries. The engine also analyzes the actual data on each server to optimize the speed of the queries (choice of the best keys).

OPENNESS TO OTHER APPLICATIONS

ODBC and OLE DB drivers, freely distributable with your WINDEV applications, allow you to read and write HFSQL data from third-party applications.

MANAGEMENT OF RIGHTS

User account management is automatic and very rich: password, IP restriction, groups, read write access rights, to a database or some tables, right to start a backup, ...

DETAILED STATISTICS

The HFSQL Control Center allows you to see accurate server access statistics: computer, SQL query's content, execution time. Studying this data enables you to better organize your applications.

USEFUL TOOLS

A set of useful tools is provided as standard: import data, check database, view data, performance optimizer, and more...

AUTOMATIC SETUP, "ZERO ADMINISTRATION"

HFSQL installs instantly and is easy to maintain, without any prerequisites. For example, if the database must be reindexed due to a physical problem, it is automatically done. The management of databases is automatic.

ALL THE TYPES OF DATA ARE SUPPORTED

HFSQL manages all types of data in the tables:

- character strings (phonetic find is available) and binary string
- numeric (integer, real, currency, etc.)
- dates, times, durations
- text and binary memo (BLOB, LOB, image, sound, video etc.)
- the "NULL" value is also supported

All types of keys are supported: automatic identifier, text, numeric, date, time, composite key.

INDEX AND KEYS: FAST

HFSQL manages keys and indexes for any type of column.

In order to insure optimum performance, the server uses an optimization mechanism based on the data distribution, that get automatically activated during idle times.

The HFSQL engine also increases the speed of queries by analyzing queries executed on each server, based on the actual data.

The following types of indexes can be created: simple index, composite index (multi-column), partial index, full text index.

HFSQL ensures data integrity by managing: unique constraint, cardinality constraint, automatic identifier, primary and foreign keys.

FULL TEXT SEARCH

Full text search allows very fast string searches in the data.

The index supports rich text (RTF, HTML), ignoring their tags during the indexing process.

Results are offered according to a relevance order ("ranking").

MAXIMUM CAPACITY

Rows per table	329 quadrillions
Table size	4 million TB
Row size	2 Go
Columns per table	65 535
Column size	65 535 bytes
Index per table	65 535

UNICODE AND INDEX SORTING BY LANGUAGE

HFSQL supports Unicode type text and memo columns. The indexes can be sorted according to the alphabetical order of each language (Russian from Russia or Ukraine, Chinese from Singapore, Taiwan, Hong Kong, ...).

IMPORT/EXPORT DATA

WDCONVER, a module provided with WINDEV, allows you to import data in various formats: Access, dBase, Text, Oracle...

CLIENT/SERVER

The engine for the Client/Server version is available for Windows and for Linux.

The compatibility with HFSQL Classic, embedded, cloud and Mobile is complete.



For an easy installation in Linux, a Docker image of the HFSQL server is provided.

The HFSQL engines can be distributed freely with your applications.

FAST REMOTE ACCESS

The communication layer is integrated with the engine, which provides access through IP addresses, and very good response times.

FEATURES

- 128-bit encryption
- Referential integrity
- Logs
- Multi-server replication
- Transactions
- Triggers
- Import Export
- Cluster
- Stored procedures

TECHNOLOGIES

- Automatic maintenance (DSS)
- Concurrent access management
- No management
- Resume automatically after incident
- Automatic deployment

MULTI-DATABASE, MULTI-SERVER

The same machine can host several HFSQL servers, and each server can contain several databases.

FRAME COMPRESSION (DSL, 3G, 4G, EDGE, VPN, ETC...)

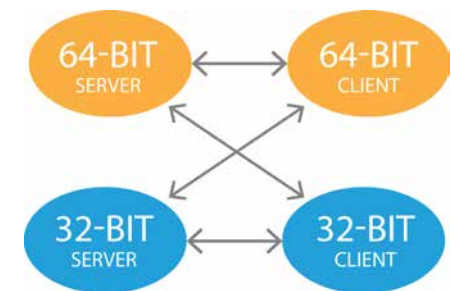
The frame compression allows you to reduce (up to 95%) the size of the packets traveling over the network.

The speed for remote connection is improved. The volume of data traveling over the transmission media is reduced.

SECURITY: "SQL INJECTION" IMPOSSIBLE

You can create configurable queries, which prevents server attacks through "sql injection".

32 BITS, 64 BITS



HFSQL operates both in 32 bits and in 64 bits. Servers and clients can be mixed.

Among the supported Windows servers:

- Windows Server 2022
- Windows Server 2019
- Windows Server 2016
- Windows Server 2012
- Windows 8, 10, 11

A 32-bit application can access a 64-bit server, and vice-versa.

STORED PROCEDURES

The stored procedures and triggers are available. Programming is done simply in WLanguage.

ISOLATION OF HFSQL TRANSACTIONS

HFSQL Client/Server offers 4 transaction isolation modes. Non-validated data (READ UNCOMMITTED), Validated data (READ COMMITTED), Instant photo transaction (REPEATABLE READ), Serializable transaction (SERIALIZABLE).

HOT BACKUP

You can trigger a database backup while the database is being used.

The backup can be triggered by programming (at a certain time for instance) or through an action of the DBA.

You can also perform incremental backups.

AUTOMATIC DATA MODIFICATION

HFSQL manages the evolution of the data schema transparently thanks to the DSS (Data Schema Synchronization) technology.

Each data schema modification is automatically applied to the structure of the implemented database, and this regardless of the age of the database. There are no scripts to write (no Alter table ...).

REPLICATION

HFSQL allows database replication and server replication, mono and bi-directional, periodic or continuous.

Replication with mobile devices is also supported.

HFSQL, delivered as standard with WINDEV, is a major asset. Reliable, fast, secure, free...

AUTOMATIC CONNECTION RECOVERY

This automatic feature manages "lost" connections.

Usually, this problem occurs with hardware that is not permanently connected to the server: mobile devices (Wi-Fi, 3G, 4G) notably...

In a Wi-Fi connection for example, the link between a remote device and the server can be interrupted briefly.

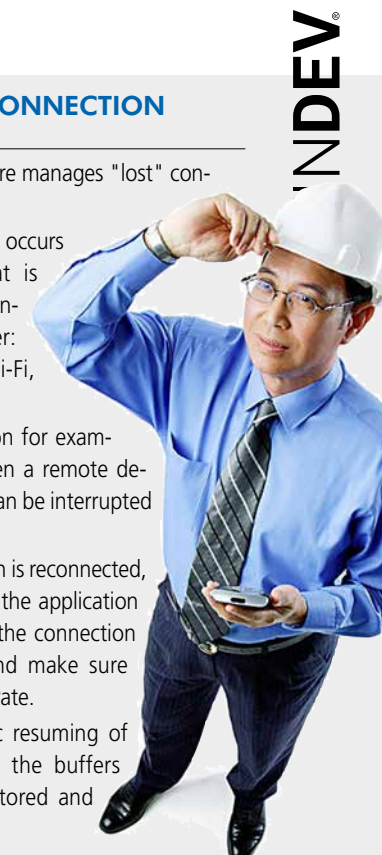
When the application is reconnected, we need to resume the application at the point where the connection was interrupted, and make sure the buffers are accurate.

With the automatic resuming of the connection, all the buffers and positions are stored and reassigned.

The application can continue to run without error, as if the connection was never interrupted.

Automatically, your applications are more reliable, faster and you have less to code.

You can also manage the connection interruptions by programming.



DETAILED HFSQL DOCUMENTATION
Discover HFSQL in detail with this 24-page brochure available on windev.com

"CONCURRENT ACCESSES": AUTOMATIC

HFSQL automatically manages concurrent accesses to a row from different workstations, without any coding (also manages integrity and duplicates). In case of access conflicts, a customizable window is automatically displayed.

This automated process ensures the security and reliability of your applications.

You can also manage concurrent accesses by programming.



Here, 2 users are trying to modify the same table row at the same time. A window opens automatically and asks which value to take, here: "Alabama" or "Florida"? No programming is required.

SQL QUERIES AND NATURAL LANGUAGE

Display all LastName, FirstName, LandLine, CellPhone, eMail, ZipCode, City, OrderNumber, OrderDate, InvoiceNumber and InvoiceDate **such as** LastName is equal to LastNameParam **AND** FirstName is equal to FirstNameParam **AND** ZipCode is equal to ZipCodeParam **OU** OrderNumber is equal to OrderNumberParam **AND** OrderDate is equal to OrderDateParam **OR** InvoiceNumber is equal to InvoiceNumberParam **AND** InvoiceDate is equal to InvoiceDateParam .

Everyday language

A few clicks in the editor are all it takes to create an SQL query and check it.

The screenshot shows the WinDev query editor interface. On the left, there's a graphical query builder with a tree view of database tables and fields. On the right, the generated SQL code is displayed. Below the SQL code, there's a 'Chart' diagram showing the relationships between tables and fields. Red arrows point from the graphical interface to the SQL code and the chart.

The query editor allows you to easily generate SQL queries that will be used in the programs.

The editor also allows end users to create their own queries.

The SQL query is also generated in natural language.

It is also generated graphically. There is therefore no risk of error.

MANAGER
The WINDEV query editor lets you "draw" your queries for any database. You can distribute it for free.

AAF TECHNOLOGY
Free distribution. "Reports and Queries" lets end users create their own queries

MAIN POINTS
No SQL knowledge is required
Free distribution with your applications

NO NEED TO KNOW SQL TO CREATE POWERFUL SQL QUERIES

Choose the columns to include, specify the selection conditions using the wizard, and the query is built (in optimized SQL code). The editor automatically creates queries on any database, even the most complex queries.

You can, of course, modify the code generated by the query editor.

VISUAL QUERIES

The query is simultaneously generated in SQL, in natural language and graphically as you make your choices in the editor.

OPTIMUM SPEED

WINDEV detects missing keys for optimal speed.

QUERIES BASED ON QUERIES

The result of a query can be a visualization table, a printed report, or even a HFSQL table. A query can use the result of another query as its source.

REVERSE ENGINEER EXISTING QUERIES

Do you already have an SQL query? WINDEV presents it graphically!

If you have Access queries, these are automatically imported.

QUERIES ON ALL DATABASES...

The data source can be a HFSQL database or a third-party database: Oracle, MySQL, SQL Server, DB2, AS/400, Access...

DISTRIBUTE THE QUERY EDITOR FOR FREE

End users will be able to create their own queries.

For security reasons, the end user cannot delete or modify data (see pages 48 and 52).

CONVERT YOUR EXISTING APPLICATIONS INTO WEBSITES



Transforming WINDEV applications into interactive Web sites is a highly anticipated feature. Thanks to WINDEV (and WEBDEV) this transformation is seamless.

A "magic" wizard indicates the changes to make.

The screenshot shows the WinDev WebDev conversion wizard. It features a 'Convertir en page' button, which is highlighted with a red circle and a mouse cursor. The wizard is shown in a 'WINDEV window' and a 'WEBDEV page' view, illustrating the transformation process.

One click is all it takes to transform a WINDEV window into a WEBDEV page, directly from the WINDEV editor. Then simply launch the conversion wizard to adapt the code. It is also possible to convert the entire application with a single click

WEBIFY YOUR APPLICATIONS WITH EASE

Creating a Website from a WINDEV application is easy. Your keep your code, with a few exceptions because not everything you can do on a Windows application is allowed on the Web: manage the mouse, write to the disk, write to the registry, send to printer, ...

The windows of your applications are transformed into pages. Data access is kept.

WINDEV TO WEBDEV TRANSFORMATION WIZARD

To help migrate existing WINDEV applications to

WEBDEV sites, a wizard analyzes your WINDEV application and generates a precise report with the modifications to make in the code .

For example, if the application writes directly to the PC disk, the report indicates that a browser is not allowed to write to the disk of the Web user's computer.

Simply click on each line to correct the problem.

WEBDEV IN WINDEV

Opening WEBDEV in WINDEV brings great comfort to webify your applications, and also to maintain the Windows application and Web application in parallel.

The common elements between application and site are managed in the same project,

which allows you to save lots of time.

Webifying your applications is easy.

The screenshot shows the 'Webification audit' report. It lists various file access issues, such as 'fSelect', 'Registry', and 'Windows Metafile (WMF)'. Each issue is accompanied by a red warning icon and a brief description of the problem. The report is sorted by type of issue and per page.

UML MODELING ENTITY-RELATION, WORKFLOW

With WINDEV, it's very easy to **model** a database!

You can create an analysis or a "UML" model without knowing UML!

WINDEV's technology is revolutionary: it graphically represents the organization of the data and processes.

Thanks to WINDEV, any developer can automatically create a UML analysis. Impossible to make cardinality errors (1-n, 0-1, and so on)!

Of course, WINDEV also supports all the other data analysis and modeling methods.

MODELING IN 4 QUESTIONS

Answer **4** easy questions to create the relationships and integrity constraints.

Each "order" contains at least one "product"
Each "product" belongs to at least one "order":
Each "order" may contain several "products"...

Describing the link

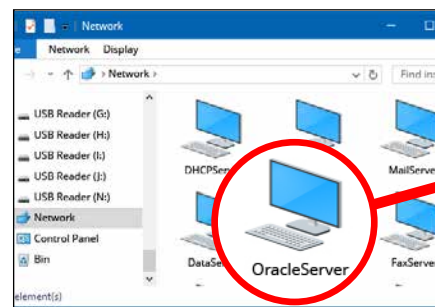
RE-USE EXISTING CODE (ORACLE, XML, AND SO ON) : AUTOMATIC

HOW TO RETRIEVE AND USE EXISTING INFORMATION

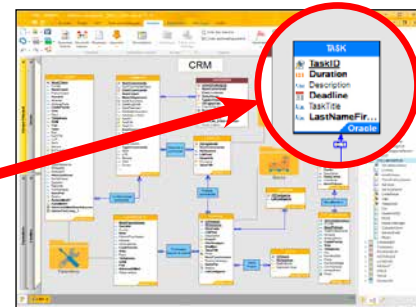
The link with database or third-party file management systems (XML, Oracle, SQL Server, MySQL, Access, DB2, Informix,

etc.) is easier. To retrieve the description of a database, simply drag the description from the server to the WINDEV data model editor and specify the selected tables: can't be any easier than that!

If the structure of the imported database evolves, WINDEV detects it and offers to modify the application's analysis!

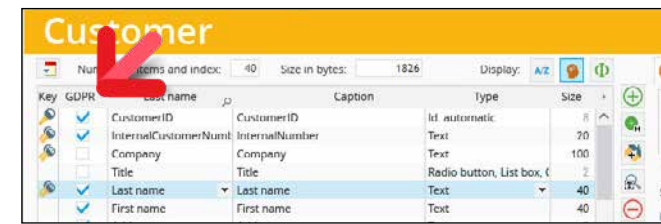


Here on a server: an Oracle database. Simply drag the server name to the WINDEV data model editor...

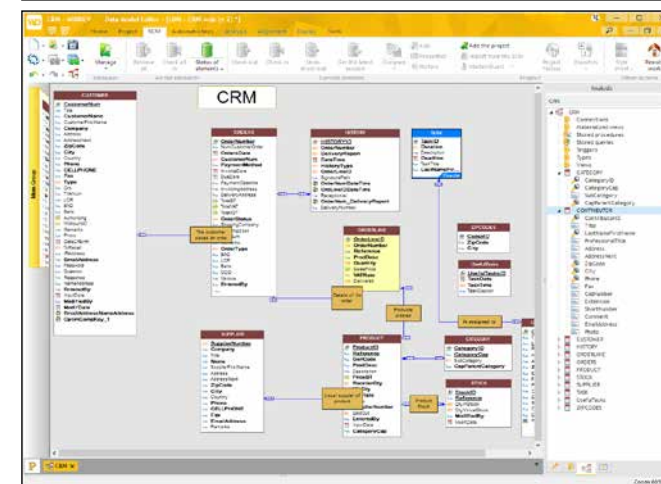


...to transfer the description to the WINDEV editor. Here, the database itself stays in Oracle format (blue header).

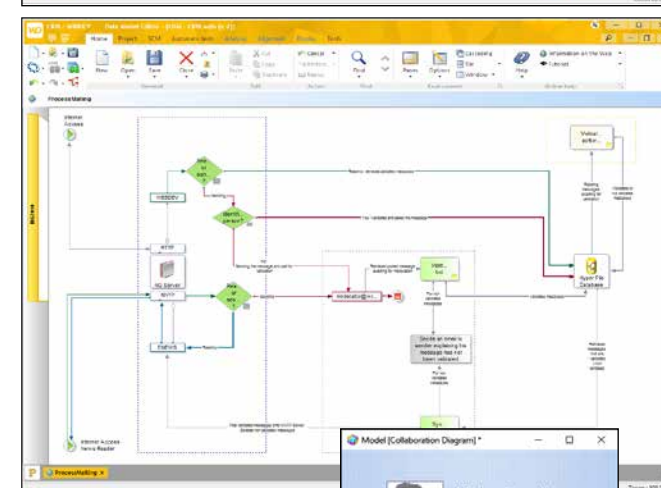
Define your data structures easily



Defining the content of each table is easy, by direct input or by borrowing from the data dictionary. Note the "GDPR" column



Modeling a data schema is very easy thanks to the editor integrated in the environment.



The workflow editor lets you define in a realistic fashion processes, organizations, workflows, ... without any format constraints.

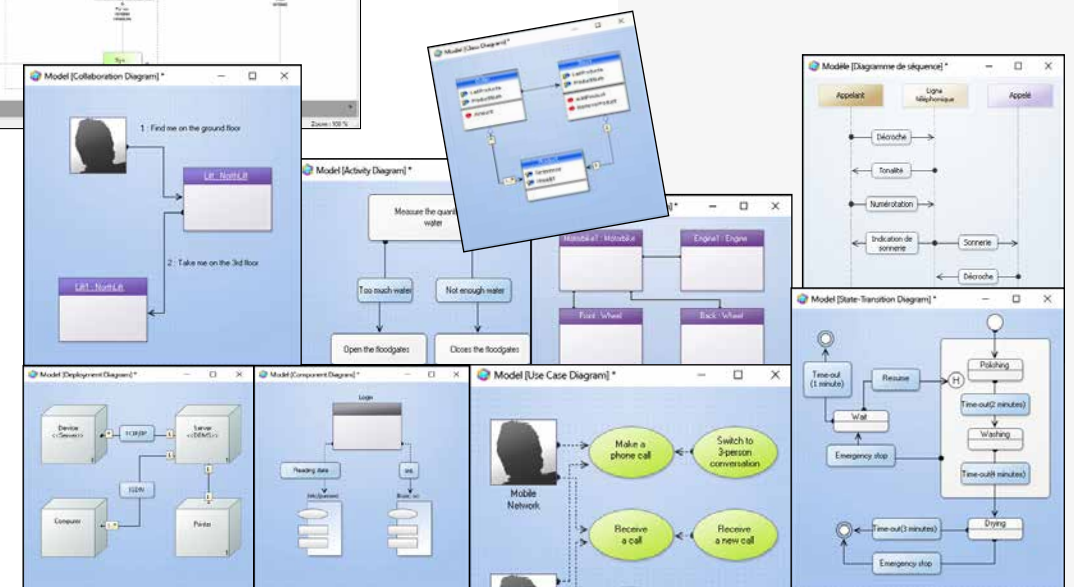
UML

WINDEV supports the 9 UML models.

These models are, of course, edited and documented in the "Program documentation" (see page 92).

UML GENERATION AND REVERSE-ANALYSIS

WINDEV automatically generates the source code from the class diagrams, and reciprocally, offer reverse-analysis of existing classes.



HOW TO CREATE AN ANALYSIS?

Let's look at a simple but representative example of data schema creation.

1. Define the structure of the tables (files) that make up the analysis; the columns (items) are defined, or retrieved from the data dictionary. We specify the type of columns, the type of key...
Any new column is stored in the data dictionary.
2. Then, define the relations between the tables.
To link tables, simply draw a link with the mouse.
3. WINDEV then asks some simple questions, in natural language to automatically determine the type of relationship between the two tables (see opposite page). WINDEV checks for referential integrity (can be turned off).
4. If the relationship type requires it, WINDEV then asks if it must generate a relationship table or use an existing table: the relationship is defined.
5. WINDEV asks for the relationship names.

That's it, the tables are linked, the creation is done.

To create the application, all there is to do now, is generate the windows, menus, reports and source code using the RAD tool or code the old fashion way...

It's that simple.

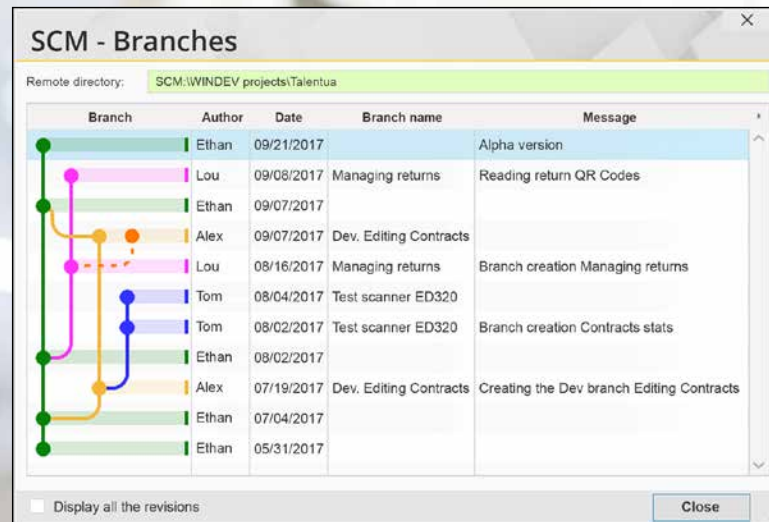
Note that the different modeling methodologies can be used at the same time in a single project.

WINDEV is a professional IDE, therefore it comes with a very powerful design module.

TEAMWORK: INTEGRATED VERSIONING TOOL (SCM)

Totally integrated into the environment, the versioning tool (SCM: Source Code Manager) manages development in teams, the history of modifications and versions, the management of several versions of the same application (branches), and the automated backup of all the resources (codes, windows, reports, etc.) of the members of the development team.

The versioning tool brings security to your developments.



MANAGE THE DIFFERENT VERSIONS OF YOUR APPLICATION

KEEP THE HISTORY OF EVERYTHING

INDICATORS TO MONITOR EVERYTHING!

SCM keeps all the versions of all the project elements, for each developer: code, class, project, window, query, data model, image...

Each modification is identified by its author and date. A commentary can be entered by the developer.

You can retrieve an older version.

SCM - History of a directory

Version	Action	who!	Date	Comment/L
55	Generation version	Emily	04/13/2016 14:25:19	Update
54	Modification	John	04/11/2016 12:11:12	
53	Modification	Isaac	04/01/2016 10:33:36	
52	Modification	Isaac	02/10/2016 10:04:10	
51	Modification	Lindsay	02/10/2016 10:04:59	
50	Modification	Jacob	02/08/2016 15:02:21	
49	Modification	Ethan	02/04/2016 17:39:08	
48	Modification	Ashley	02/04/2016 16:50:54	
47	Modification	Emily	01/26/2016 15:25:03	Stabilization
46	Modification	Emily	01/22/2016 17:58:13	
45	Modification	Ethan	01/08/2016 19:06:28	
44	Modification	John	01/08/2016 18:49:56	
43	Modification	Samuel	11/20/2015 18:25:19	
42	Modification	Ashley	11/20/2015 18:14:49	
41	Modification	Jacob	11/18/2015 17:00:16	
40	Modification	Ethan	11/16/2015 10:02:12	

MANAGER

The versioning tool allows for secure team work, the sharing of elements, the management of different versions of a same application and insures that automatic backups are performed.

MAIN POINTS

- Local and remote access
- Automated backups
- Share elements among a team
- Free source code repository
- Automatic change history



Work in team,
locally or remotely,
share securely

SCM IN THE CLOUD: SCM DRIVE

WINDEV allows you to easily host the SCM directly in the cloud.

All the developers in the team have constant access to projects then, regardless where they're physically located.

You simply need an Internet connection to read and write in the SCM.

With SCM in the cloud, distributed teams can remain up to date easily.

The integrated "SCM Drive" solution allows easy cloud hosting, with a very low subscription cost.

MANAGING THE RIGHTS IN THE SCM

SCM offer access management for the project elements.

Access to each element (window, code, ...) can be restricted based on the developer's rights (his/her "connection" account).

A developer can only access the elements that were authorized by the project manager.

The following rights can be defined: read only, write/check out, reversible deletion, permanent deletion, renaming...

BRANCHES

SEVERAL CONCURRENT VERSIONS OF THE SAME PROGRAM

Branch management is used to manage several versions of the same application in parallel.

The most common case is as follows: you have deployed a version of your application and

you are working on the next version of this application. Meanwhile, you would like to apply the corrections implemented in the current version to the deployed version and therefore create and deploy intermediate versions.

This feature allows you easily deploy intermediate versions of your application: no need to code the same things twice.

The number of branches is unlimited, and you can have "branches of branches".

MERGER AND TRANSFER OF BRANCHES

Merge and branch transfer are visually managed.

SPOT THE 7 DIFFERENCES

FIND THE DIFFERENCES BETWEEN 2 VERSIONS OF AN ELEMENT

The SCM allows you see the differences between two versions of a project element: code, class, project, window, query, data model, image.

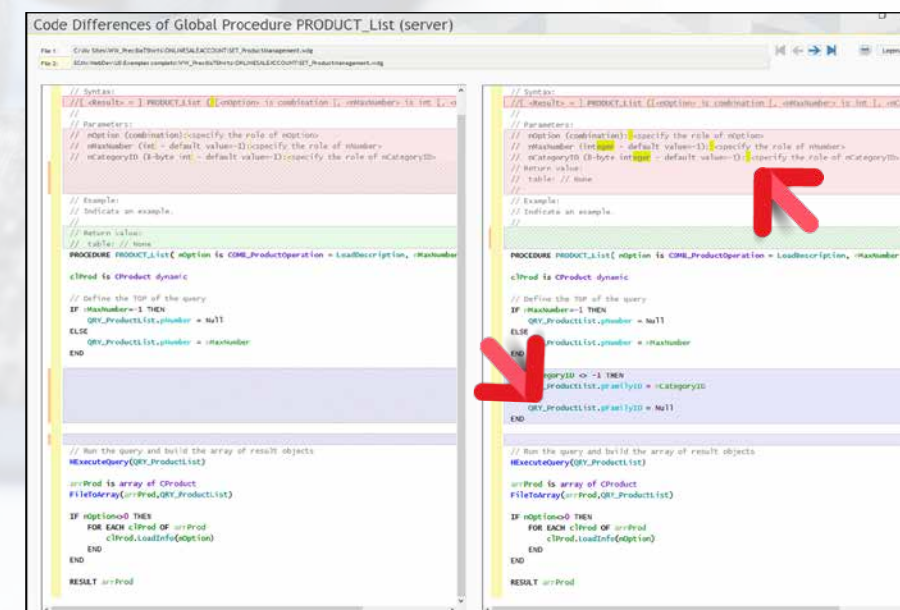
But not just the code!

The SCM detects differences in a control's properties, like the "Automatic input" property

enabled or disabled...

DIFF AND MERGE

You can easily carry over the modifications from one version to the other.



THE REPOSITORY

With SCM (Source Code Manager), the project elements are grouped in a database. Before being used an element is checked out, once it has been modified it is checked back in. Therefore team members use up-to-date elements.

SCM stores all the project's elements: procedures, sets, classes, pages, reports, components, queries, analyses, dependencies (images, ...), Etc.

The database is installed either on a dedicated server, or on a network computer in a shared directory, or in the cloud.

POWERFUL FEATURES

- SCM is totally integrated in the development environment; for instance, SCM offers to check out an element when you try to modify it.
- The database supports several projects; an element can be shared.
- A history of all elements, since their creation, is stored in the repository (a purge can be performed).
- The project is found on each development computer; therefore, you have the ability to develop with the offline computer.
- Branches are supported: you manage several different versions of the same application at the same time.

1 TO 1,000 DEVELOPERS

SCM is meant to accommodate teams of 1 to 1,000 developers.

Even if you develop on your own SCM is useful because it keeps track of your applications' history, and allows resources and branches to be shared among projects.

CONNECTED AND REMOTE

SCM accepts remote connections through the Internet. This way you can work on a project from a customer site, without fear of losing your modifications.

The SCM can also be used in offline mode (in a train, on a plane, ...).

DIFFERENCES BETWEEN 2 VERSIONS

Thanks to the SCM, you can check the differences between two versions of a project element: see opposite.

INTERACTION WITH THE TASK LIST

When checking an element back into the SCM, the SCM offers to associate the checked-in version with the task or bug correction coming from the task list on which the developer is working.

The development history is commented without any extra effort.

SCM is inescapable.

ELECTRONIC INVOICING CHORUS PRO

AUTOMATE THE SUBMISSION OF ELECTRONIC INVOICES

WINDEV allows you to create electronic invoices and automatically submit these invoices to the portals.



WINDEV facilitates the preparation and automatic submission of electronic invoices.

WINDEV ALLOWS TO AUTOMATE THE SUBMISSION

WINDEV makes it easier to automate the submission of electronic invoices: all the features for electronic invoice submission are available in WINDEV.

- Easy PDF creation
- Managing the certificates
- REST Webservices
- Native JSON
- ...

The development of an automatic invoice submission functionality (single or batch) is easy.

EXAMPLE: FACTUR-X

Factur-X is a hybrid invoice standard: an invoice that is readable both by humans (PDF) and EDI (XML).

An invoice in the Factur-X standard contains a PDF archive (A-3 standard) of the invoice, and the standard XML file (5 standards are defined in Europe, depending on the level of detail) that includes the invoice details.

WINDEV has all the necessary XML functions to generate and sign XML files.

WINDEV makes it possible to create PDF files according to the A-3 archive standard.

EXAMPLE: CHORUS

WINDEV supports all Chorus APIs, and makes it possible to automate all processes.

With WINDEV, electronic invoicing is automatic.



MANAGER

Electronic invoicing is becoming widespread. WINDEV allows you to create and submit electronic invoices to the portals

MAIN POINTS

Automatic submission with one click

PERSONAL DATA PROTECTION (GDPR)

Items and indexes of "Customer"

KeyGDPR	Name	Caption
<input checked="" type="checkbox"/>	CustomerUUID	CustomerUUID
<input checked="" type="checkbox"/>	eMail	Email
<input type="checkbox"/>	Password	Password
<input type="checkbox"/>	Title	Title
<input checked="" type="checkbox"/>	LastName	Last name
<input checked="" type="checkbox"/>	FirstName	First name
<input checked="" type="checkbox"/>	HomePhone	Phone

3-2 - "Customer" data file

This data file is not encrypted!
You must enable the file encryption in the data model editor and use HPass to specify the file password.

This table presents the list of items in the data file with the personal data management mode for each one

Note:
 ->Yes<- indicates that the item contains personal data.
 ->No<- indicates that the item does not contain personal data.
 ->R&Q<- means that the item can be managed in Reports & Queries even though it contains personal data.

List of items		
CustomerUUID	Yes	
eMail	Yes	R&Q
Password	No	
Title	No	

The European law on the protection of personal data (GDPR) is binding.

The amount of the fines imposed (20 million or 4% of worldwide turnover) is not insignificant.

WINDEV offers you a large number of features to help you comply with this law.

GDPR

GDPR defines a set of restrictions regarding the collection, storage, treatment and manipulation of personal data, such as first names, last names, addresses, etc...

Whenever personal data is used, it is necessary to ensure that storage and processing comply with regulations.

PERSONAL DATA

The concept of personal data is very broad in the GDPR.

It takes into account all the data that allow the direct or indirect identification of a physical person, individual or professional.

In software programs, a large amount of data is affected:

- first name and last name
- nickname
- physical address
- email address

- IP address
- identifier inside databases
- geolocation information
- cookies
- etc ...

WINDEV contains the necessary techniques to meet the RGPD

MAP OF PERSONAL DATA

The integrated aspect of WINDEV makes it easier to conform to GDPR.

For every item of a data file (column in a table), it is possible to indicate if the data used is personal data affected by the GDPR.

GDPR audit: The GDPR Audit window offers a general and detailed view of the use of personal data in all the tables and elements of the project. A documentation can be edited.

A PRECIOUS HELP

WINDEV contains a lot of features that make it easier to implement GDPR :

The Groupware enables your application to manage access to each feature of your software via login and password (see page 47).

The ability to use export AAF (Word, Excel, PDF) can be restricted, deactivated or protected by password, the document can be encrypted. (see page 43)

Data encryption : WINDEV includes standard encryption functions.

HFSQL : the HFSQL database (either embedded, local, Client/Server, SaaS or in the Cloud) gives you the ability to encrypt the data files and/or their indexes (see page 70).

GDPR: WINDEV stands by you!

MANAGER

WINDEV is your ally when it comes to implementing GDPR

MAIN POINTS

Integrated with the environment

OPEN YOUR APPLICATIONS TO ALL STANDARDS

Openness is essential for development: a developer should never be stuck!
 WINDEV is open to all the standards in the market: this adds simplicity to any action...

With WINDEV, you can easily connect to all standards!
 Connect and drive any device. And all this is done in the easiest and most natural way, because WINDEV is open to the standards.



STANDARDS LINKED TO INTERNET

INTERNET
 Thanks to WINDEV's compatibility with WEBDEV, you can very easily transform your Windows applications into websites or web applications.

All the project elements (analysis, windows, queries, reports, code classes, etc.) are compatible.

HTTP
 Get and Post type HTTP requests can be programmed to retrieve data on an Internet server: submit a form, retrieve a site's page to automatically analyze its content in your program, ...

WEBSERVICES
 SOAP and REST webservices are supported. You can read them, create them, host them.

SOCKETS
 Using sockets (including SSL and UDP) in your programs offers a lot of freedom in many areas: communication, ...

It is easy to create a multithreaded socket server for instance.

FTP AND SECURE FTP
 A family of functions is used to access an FTP server, enumerate the files, send or receive a file...

RSS STREAMS
 Your applications can read or write RSS streams natively.

SMTP, POP AND IMAP
 These standards for sending and receiving emails are managed natively by WINDEV.

OAUTH
 The oAuth protocol is supported.

BLOCKCHAIN: BITCOIN...
 WINDEV lets you interact with blockchains, for example query a bitcoin or ethereum node, to find out its balance or view a transaction.

GENERAL STANDARDS

TSE & CITRIX

The applications developed with WINDEV work in the TSE and CITRIX distributed environments.

SOFTWARE AUTOMATION

It is easy to control Word, Excel. It's easy to control tools that have an "OLE" mechanism as well, such as Outlook, MS Project, Notes, ...

OPC

OPC is a communication standard for automation, machine tools, ... that is used a lot in industrial settings. WINDEV offers OPC support.

XML

XML is supported natively.

LDAP

WINDEV allows access and searches in LDAP directories.

ActiveDirectory and OpenLdap are accessible.

PDF

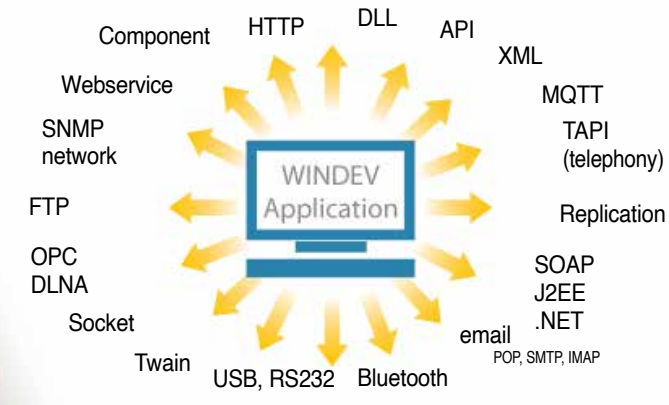
PDF is supported natively, in read, display and document creation mode (see pages 26 and 51).

BAR CODES

Barcodes can be read and written (see page 51).



Open



Yes to standard

DEVICES

TOTAL OPENNESS

WINDEV is open to all technologies. You'll never be stuck.

TABLET, SMARTPHONE, MOBILE, INDUSTRIAL DEVICE

With WINDEV Mobile, immediately move your WINDEV application on to tablet, Smartphones and mobile devices.

Immediately convert a Windows application into a mobile application (Android, iOS, UWP...): same code, same windows, same databases, ...

IOT

WINDEV supports Sigfox, LoRa, Windows IoT, Arduino, Beacon standards...

USB PORT

WINDEV manages USB ports. An application can enumerate the devices, display the tree structure of a hub, be called when a device is connected or disconnected, get information about a device (manufacturer, ID, ...).

DATA ACQUISITION THROUGH SERIAL LINK (RS 232) AND USB

There are plenty of uses: badge reader, electronic scale connection, robot control, etc, ...

BLUETOOTH

WINDEV allows you to manage and enumerate Bluetooth devices, to establish connections and to communicate with the devices.

TWAIN: SCANNERS,...

Most scanners, digital cameras, etc... can be controlled using the Twain standard. WINDEV supports this standard with... WLanguage Twain commands!

DOMOTICS

Domotics is supported: X10, CM 11, CM15, DLNA (see page 87).

SNMP

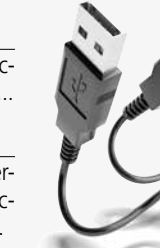
The SNMP standard is used by a large number of network devices: switch, router, PC, network card, network printer... A family of native functions allows you to communicate with these devices.

TAPI

TAPI is a standard for communicating with phone devices (PBX, ...). The family of TAPI functions allows you to manage these devices.

WINDEV is open to all standards.

WINDEV



dlna



- MANAGER**
WINDEV is open to all the market standards. You'll never be stuck, you'll benefit from all technologies.
- AAF TECHNOLOGY**
Export to Word, Excel, PDF, XML...
- MAIN POINTS**
Total openness





NATIVE CONNECTORS: GOOGLE, OUTLOOK, LOTUS NOTES, SAP, EXCEL, ...

*Communicate
between applications!*

COMMUNICATE WITH GOOGLE APPLICATIONS

Google provides a lot of applications, accessible through the Internet, that may be useful. The features proposed by WINDEV allow you to create rich clients, automate actions, ...

LINK WITH GOOGLE MAPS

The Google Maps service is an Internet mapping software proposed by Google. It lets you display a map or itinerary, with a lot of viewing options.

Examples of processes that can be implemented natively in WLanguage:

- you can get a map and display it in a window control or a report control, send it by e-mail.
- request the drawing of a route on a map.
- position custom markers on a map.

The "Google Map" control enables easy processing.

LINK WITH GOOGLE CONTACTS

Google Contacts lets you manage contacts over the Internet.

The WLanguage functions let you retrieve your contact list, groups of contacts, as well as the details of each contact: name, notes, instant messaging address, phone, street address, email, ...

LINK WITH GOOGLE CALENDAR

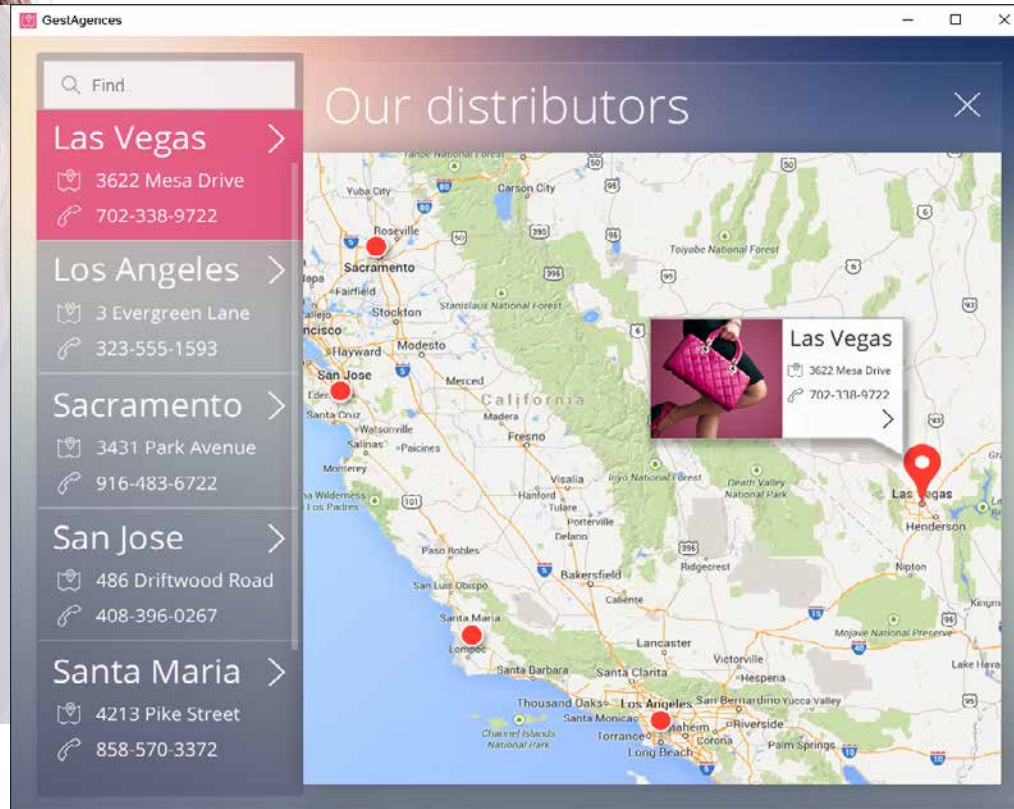
The Google Calendar service is an Internet application provided by Google that is used to manage a calendar on the Internet.

WINDEV's native functions allow, for example, to create a planning synchronization application with an existing application: using a meeting room, a vehicle...

These functions also allow you to build specific interfaces (for specific business needs, more user friendly, ...) and add specific processes (print...).

Numerous companies use **standard software** such as Lotus Notes, SAP, Outlook, Excel, Google, etc. Google also provides a large number of applications (Contacts, Maps, Calendar, ...) that you may want to control from or include in your applications. It is easy to establish a link between applications developed in WINDEV and these programs via the native access functions provided with WINDEV.

CONTROL AND COMMUNICATE WITH STANDARD APPLICATIONS



NATIVE SAP SUPPORT

SAP ACCESS VIA NATIVE BAPI CALL

SAP is a widely used ERP. Many SAP users implement add-on applications in addition to their software. Native SAP support by WINDEV allows you to do so with our famous ease of use.

A "BAPI" (Business API) is a function that allows you to interact with an SAP system. Some BAPIs are supplied along with SAP while others are written by other developers and editors.

A family of functions enables you to establish a connection (with authentication) and call BAPIs and pass them parameters.

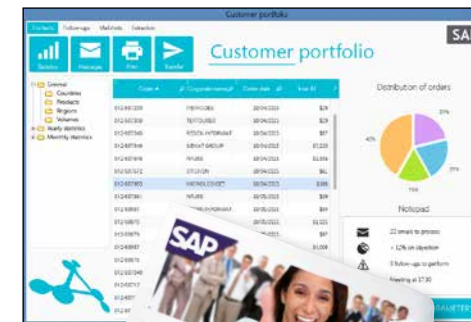
A wizard helps import automatically the structures used. There is no need to install the SAP GUI module.

This access through BAPI allows the database security to be respected (no need to create an account with database modification rights).

Access to the database is managed directly by SAP, respecting the priority management.

"WINDEV style" UI in SAP!

"Report and Queries" type reports in SAP!



NATIVE IBM NOTES SUPPORT (LOTUS NOTES)

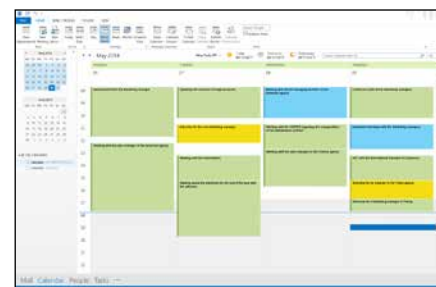
Accessing e-mails found on the Lotus Notes mail server, in incoming and outgoing modes, is standard in native mode.

Programming is child's play: these are functions you already know from WINDEV!

All you need is to add a line of code to connect to the Notes server: `EmailStartNotesSession`.

The usual security of Lotus Notes is respected via the Lotus certificate.

Access to contacts, appointments, tasks and documents found on the server is easy. It can be done in read and write mode through a set of specific WLanguage functions (Notes family).



NATIVE OUTLOOK SUPPORT

Access to Outlook mails, in incoming and outgoing modes, is standard.

Access to contacts, meetings and tasks as well as participants is easy, in read and write mode.

Exchange is supported.

MANAGER

WINDEV is open to all the standard software on the market. Your applications can interact easily (read, write) natively.

AAF TECHNOLOGY

Exports Word, Excel, OpenOffice, PDF, XML...

MAIN POINTS

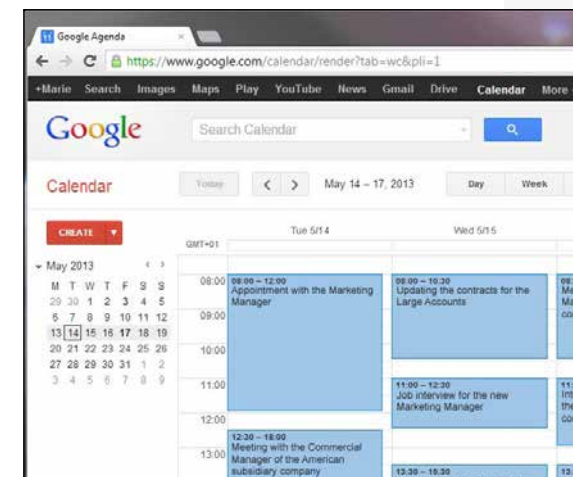
Native links with other common industry programs



NATIVE SALESFORCE SUPPORT

Salesforce is a very popular CRM software worldwide.

Thanks to WINDEV's native functions, your applications can interface with Salesforce.



Read and write data in Google Calendar from your applications!



IMAGES, AUDIO, VIDEO: AUTOMATIC



DOMOTICS

WINDEV manages images, audio and video with unparalleled power and ease of use.

Support for all formats is standard without the need to code anything.

- PNG · JPEG · PSD
- RLE · TIF · BMP
- WMF · ION · TGA
- ICO · GIF · PDF
- CUR · GIF · SVG
- SVG · animated · AAC
- PCX · PCD · ...

- AVI · WMA · Ogm
- MP3 · 3GP · Oga
- MP4 · ASF · Ogv
- H.264 · WMV · mkv
- WAV · flash · webm
- MPEG · MOV · ...
- MPEG-4 · AAIF
- DIVX · Ogg

MANAGER

Today, multimedia is everywhere. Thanks to WINDEV, it's automatic in your applications.

MAIN POINTS

Integrated and automatic
Support standard formats
Read and write



The "Image Gallery" control automatically manages the display of a set of images in a sophisticated way

FORMATS: ALL OF THEM!

WINDEV manages image formats as standard. An image can be stored as an independent file or in a table row of a HFSQL database.

AUTOMATIC DISPLAY

It is very easy to manage images with WINDEV. If the image is in a table row, it will be automatically displayed. If the image is in an independent file, simply assign the name of the image file to the image control of the window, for example:

`PART="VALVE.JPG"`
It's that simple.

IMAGE GALLERY CONTROL

The Gallery control automatically displays and manages sets of photos.

It is possible to browse through images; clicking on an image opens an enlarged view of the cell containing the image.

No programming is necessary, yet all customizations are possible in WLanguage.

IMAGE AND VIDEO CAPTURE

WINDEV enables you to dynamically capture an image or a video. This image can be saved in a file (JPEG, PNG, etc.), enhanced, emailed,...

SAVING IMAGES

WINDEV allows you to handle, modify, enhance and store images on disk. This feature enables you to change the image format (switch from JPG to PNG for example) by programming, or to store annotated images, or to read and modify their EXIF parameters.

EFFECTS ON IMAGES

WINDEV allows you to add effects to the display of images: scrolling, display from the center,...

AUDIO

All audio formats (.MP3, WAV and all formats with the MCI driver installed) are supported.

Programming is child's play: simply write:

`Sound(Sound_name)`

THE VIDEOS ON PC

With WINDEV you can easily control video sequences. WINDEV supports files in AVI, MPEG, DivX, and so on format,...

VIDEO CONFERENCING

The videoconference control is used to display the video from a camera on another computer, local or remote. It lets you create video conferences and video monitoring applications.



Managing electrical appliances of a building via the existing wiring paves the way for easy remote control by programming.

Control electrical equipment through applications created with WINDEV.

Simply use a socket or switches adapted to the X10 standard.

WINDEV also manages the DLNA standard which allows interaction with appliances that support this standard (TV, refrigerator, etc.).

You can also use the WINDEV TCP/IP communication functions to communicate with a large number of connected objects.

Sigfox and LoRa protocols are managed.

MANAGER

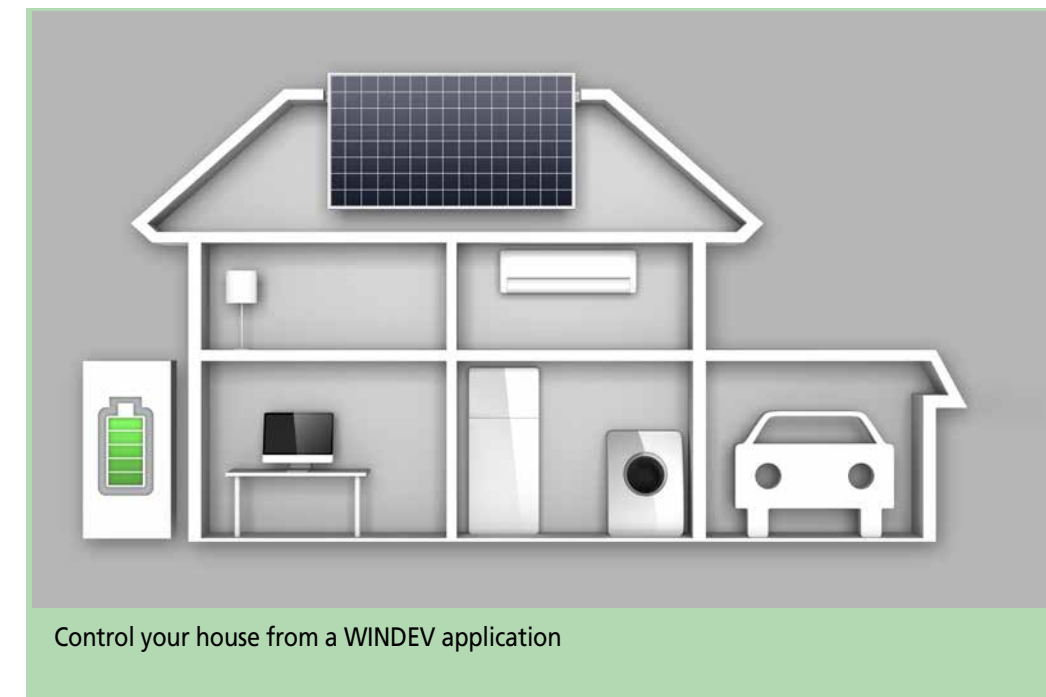
The Home automation functions with WINDEV allow to control electrical equipment using the existing wiring.

AAF TECHNOLOGY

Several automatic features are available

MAIN POINTS

Programming in WLanguage
Use existing wiring (X10)



Control your house from a WINDEV application

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 builds on existing network connection methods: Ethernet and Wi-Fi.

Thanks to the support for this standard in WINDEV, it is easy to use WINDEV for writing applications that communicate with a TV or a fridge!

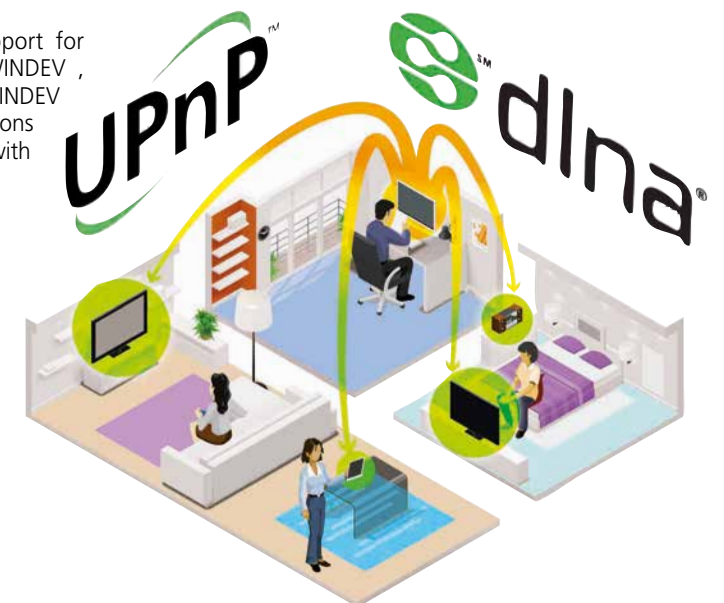
CONNECTED OBJECTS

Information sent by the connected objects can be collected by servers. The link to these servers via WINDEV applications is performed by `HttpRequest` or by `WebService`.

X10 STANDARD SUPPORT

The X10 standard is used by some electronic equipment to communicate.

The `Domo` commands let you control devices and find out their state using regular power lines.



A VERY RICH CATALOG OF EXAMPLES AND WIZARDS

Hundreds of examples and wizards supplied

WINDEV comes with an impressive set of examples and their source code. These examples serve a double purpose: tutorial first, financial second. Retrieve a single example and save entire days of programming. Reuse the examples in your applications! Before writing code, make sure it is not already supplied with WINDEV.

WINDEV®



LIST OF EXAMPLES SUPPLIED

Here is a selection of examples provided with the product that can be reused in your applications or can be used as learning tools.

- Complete CRM
- Secured remote access to data via Internet
- Click area in an image (geographic map)
- Operations using XML functions
- Using ZIP compression functions
- Using a Web Camera
- Secured remote access to data via Internet
- Using sockets
- Using threads
- Trigger
- Multiwindowing
- TreeView
- Transferring files via FTP
- Drawing curves
- Remote monitoring by Web Camera via Internet
- Telephony (CTI): auto-dial, display caller ID on PC, etc...
- Synchronize data files
- Statistics
- Service: application without UI running as background task on a server
- Scanner controlled by TWAIN
- Using queries
- Optimized search using composite keys
- Task list
- Search on Internet from a Windows application without displaying a browser
- Network: find out who is locking a

- table record
- Custom setup
- Graphic slider
- Configuring POP3
- Managing 3D shapes with the mouse
- Managing graphic schedules
- Management of Holiday and Flex Time
- Phonetic search, without using the exact spelling
- Controlling Outlook
- Transforming a number into words
- Live Messaging
- Mathematical management of matrices
- Mailing by email
- Mailing by fax
- Line smoothing
- Reflexive link
- Examples of reports: different types
- Printing by programming without using the report editor
- Direct print to a printer (using ASCII code); useful for the industrial printers
- Print preview
- Automatically import into an application the content of an Internet page (full or partial content); retrieving a price list, financial information, schedule, ...
- User groupware: define specific rights for each category of user
- Stock chart
- Managing computer hardware
- Using OLE DB to access databases
- Financial functions
- Advanced Excel management features
- Close Windows by programming

- Programmed export of table: addition to the automatic function for automatic export
- Simulation of keystrokes
- Screen saver
- Drag and Drop between windows, applications and Windows
- Dictaphone
- Drawing by programming
- Data encryption
- The dynamic compilation: how to create code that will be compiled and executed on demand by an application
- Calendar
- Calculations on dates and times
- Automatic animation of images: Parameters illustration
- Alarm
- Create assistants (similar to WINDEV's wizards) for your own applications.
- Using DCOM and COBRA (older protocols)
- Controlling word processors and spreadsheets (Word, Excel, OpenOffice)
- Generate a PowerPoint document
- Support a multi-touch screen
- Include OpenGL or DirectX code
- Create a dashboard
- Query MongoDB or Riak databases
- Sharepoint interaction example

SUPERCONTROLS

You can create your own supercontrols, to share them among your applications or among developers. Numerous ready-to-use supercontrols are provided.

- RTF toolbar, to create "text edit"

- areas
- Find/Replace function in a text
- Screen capture, to perform hard copies by programming or when clicking a button
- Counter
- Spelling checker (using the Word dictionary, that must be installed on the computer)
- Industrial type graphic unit
- Progress bar
- Assisted input of a date range
- File and directory picker
- Check the validity of a credit card

COMPONENTS

You can create your components; many ready-to-use components are provided.

- Image annotation
- Protecting the information displayed in a window
- SQL connection wizard
- Managing and sending emails
- Managing and sending faxes
- User management
- Network and system information
- Managing holidays
- Management of a tips & tricks window
- Application protection (number of users, number of computers, duration)
- Search engine management
- Secure payment
- Display the content of a memory zone
- Manage Socket client and server
- Glossary management
- Import an HTML page

WIZARDS

Wizards are very useful: they generate for you the code required for building your application.

To do so, the wizard asks questions and generates the corresponding code (and windows if necessary) according to your answers. The generated code is clear and of course can entirely be customized.

A wizard can help you with an area you're not familiar with! For example, performing a RS 232 serial link data acquisition only requires 3 minutes, no more!

- Acquiring information about the serial port
- Calculating the key of an INSEE number
- Calculation of the date corresponding to the Monday in a given week
- Calculate a deadline
- Center a window in the screen
- Load a dynamic link library (DLL)
- Time a process
- Compress a file
- Check the disk existence
- Conversion between decimal and hexadecimal numbers
- Convert a HFSQL table into a text file
- Convert a text file into a HF table
- Convert a xBase file into a HFSQL table
- Convert a date into words
- Convert a date into a string of a given format
- Convert an angle measurement
- Create an HTML page from the table data (memory or browsing table)
- Trigger a process at a given time
- Decompress a compressed file
- Last day of the month
- Determine the number of mouse buttons
- Determine whether the mouse buttons are reversed
- Status of mouse buttons
- Status of a control key

- Perform a screen shot of window
- Functions for print layout
- Managing sounds by multimedia
- Manage an audio CD via multimedia
- Multimedia management of Windows animations
- Insert a string into another string
- Run the control panel
- Limit the mouse movements
- Input mask for a real number with an exponent
- Modify the window background
- Number of the day in the year
- Open the dialog box used to format a diskette
- Open a window at mouse position
- Browse through two nested tables
- Control Word
- Control Excel
- Find a file or a directory
- Retrieve the word that was clicked
- Retrieve the elements selected in a list
- Retrieve a disk error
- Transfer the content of a HFSQL view to an Excel file
- Transfer the content of a HFSQL view to an HTML file
- Transfer the content of a HFSQL view to a text file
- Transfer a HFSQL view to the clipboard
- Transforming a number into words
- Check the Luhn key
- Check whether a year is a leap year
- Check whether the mouse is connected
- Check whether a program is already running
- Check a RIB key
- Zoom on an image

"FUNCTION" WIZARDS

These wizards generate parameters for functions.

For example, the RGB color wizard directly proposes the name of the colors and then changes them into the corresponding RGB values...

- BuildBrowsingTable
- CreateShortcut
- Encrypt
- CursorPos
- DateSys
- dCopyBlt

- Decrypt
- dPixelColor
- dSaveImage
- dSaveImageGIF
- dSaveImageJPEG
- EmailSendMessage
- EmailStartSession
- EmailStartSMTPSession
- EnumControl
- Event
- ExeInfo
- ExtractString
- fEncrypt
- fDecrypt
- fDriveInfo
- fWrite
- fWriteLine
- WinSize
- fExtractPath
- FinRedemption
- FinDecreasingRedemption
- FinLinearRedemption
- FinPeriodInterest
- FinPaymentNb
- FinInterestRate
- FinCurrentVal
- FinNetCurrentVal
- FinFutureVal
- FinRepayVal
- fRead
- fReadLine
- fOpen
- fDir
- fSelectDir
- fSelect
- flmageSelect
- fTrackFile
- fTrackDirectory
- FTPConnect
- grCreate
- HAddScheduledOptimization
- HAddScheduledBackup
- HAlias
- Random
- HChangeName
- HChangeRepRpl
- HcreateView
- HDeclare
- TimeSys
- HFilter
- HImportText
- HReadFirst
- HReadSeekFirst
- HOpenAnalysis
- HIndex
- iPreview
- iBorder
- iCreateFont
- iPrintReport
- iP-

- rIntImage
- iMargin
- BitmapInfo
- INIWrite
- INIRead
- iParameter
- iParameterDuplicate
- iParameterWatermark
- ExeRun
- ListSeek
- LoadImage
- NumberToString
- NetworkConnect
- NetworkDisconnect
- NetworkDirName
- RGB
- SelectColor
- sParameter
- sOpen
- StatCorrelation
- StatCovariance
- StatAverageDeviation
- StatStandardDeviation
- StatStandardDeviationP
- StatMax
- StatMin
- StatAverage
- StatSum
- StatVariance
- StatVarianceP
- SysColor
- SysEnvironment
- TreeAdd
- TreeModify
- CurrentTitle
- Confirm
- Error
- Info
- Password/Login
- OK/Cancel
- YesNo

To develop faster, an example is always useful!

ONLINE RESOURCES (FREE ACCESS)

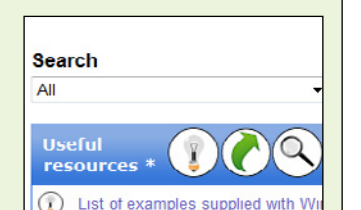
Before starting any new development, run a search in the examples!

You will certainly find pieces of code that can be reused in your application!

This can save you hours, days or even weeks of development time.

The www.windev.com site

proposes several development resources. You can download these resources freely.



CREATE AUTOMATED TESTS

Automatically generate
regression tests

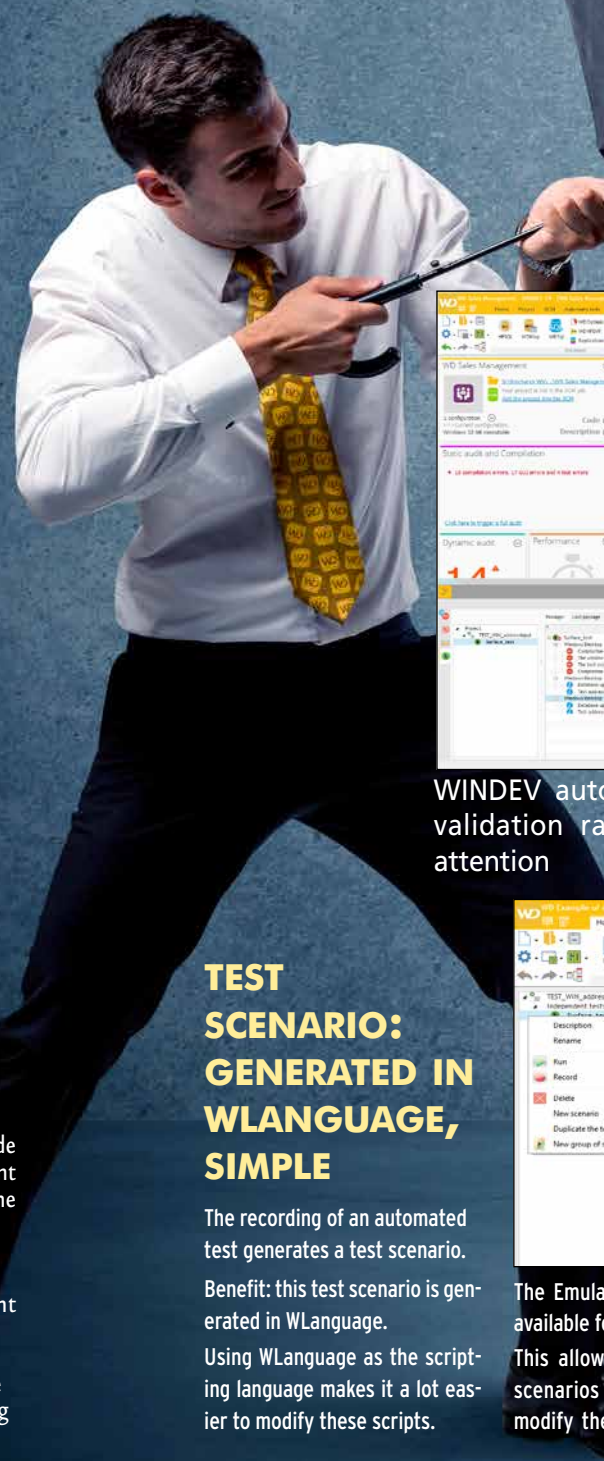
The quality and security of an application depend on numerous factors other than the code:

- how complex or simple the language is,
- programming in an unfamiliar foreign language or in the mother tongue,
- how complex or intuitive the environment is,
- need or not to use software from different software editors,
- GUI generator to limit user errors and false data
- ...

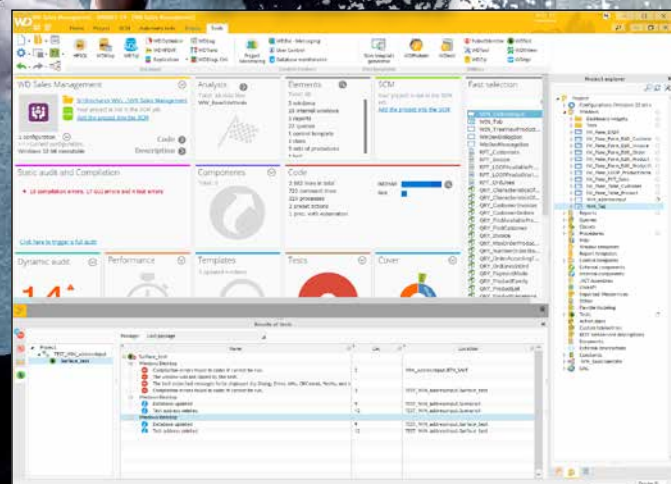
The automated test phase is only one of the phases that ensure the high quality of your software, but it is important and absolutely necessary.

WINDEV proposes regression-tests, unit tests, integration tests, load balancing tests, code coverage.

Test scenarios are created by simply recording your actions, to be replayed later and validate each new version of your programs.



SYSTEMATICALLY TEST YOUR APPLICATIONS



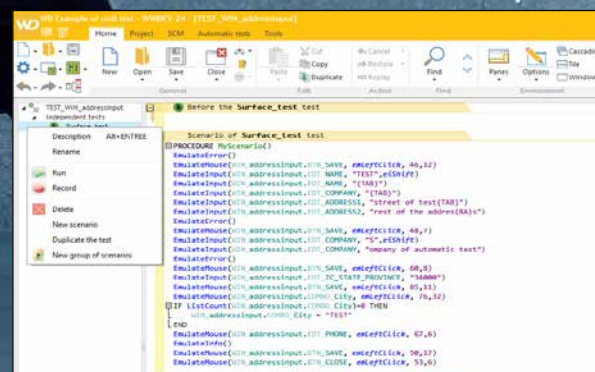
WINDEV automatically calculates the application's validation rate, and lists the tests that warrant attention

TEST SCENARIO: GENERATED IN WLANGUAGE, SIMPLE

The recording of an automated test generates a test scenario.

Benefit: this test scenario is generated in WLanguage.

Using WLanguage as the scripting language makes it a lot easier to modify these scripts.

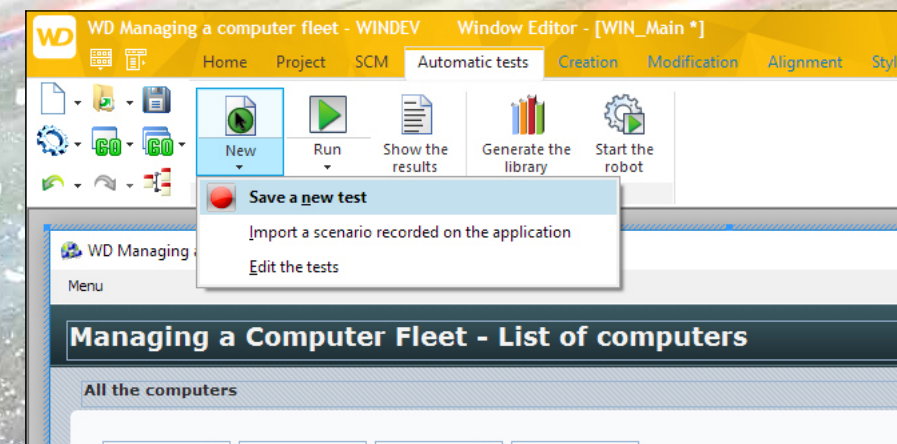


The Emulate function family is available for this purpose.

This allows you to modify the scenarios in order to add or modify the values to check, to

add a column, ...

The use of WLanguage also makes it easy to loop actions : load testing is easy.



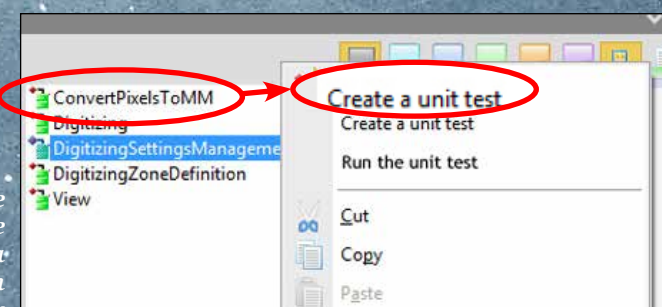
Menu to record or replay a scenario.

A FULLY INTEGRATED TOOL

Test management is fully integrated into the environment: window editor, code

editor, executable creation... The Dashboard (see page 18) displays the result of the tests, and it allows you run them.

The tests and their results are automatically available to all the members of the development team.



In the environment: create a unit test on a procedure with a simple right-click

CODE COVERAGE

WHAT IS THE CODE PERCENTAGE CHECKED?

WHAT IS CODE COVERAGE

Code coverage is the measure of the coverage of tests run on an application.

Each code line run is considered as being "checked". Which does not mean that the test is successful, it only means that the line was run. These tests are both "manual" tests (execution of code lines during a GO for example), and automatic tests.

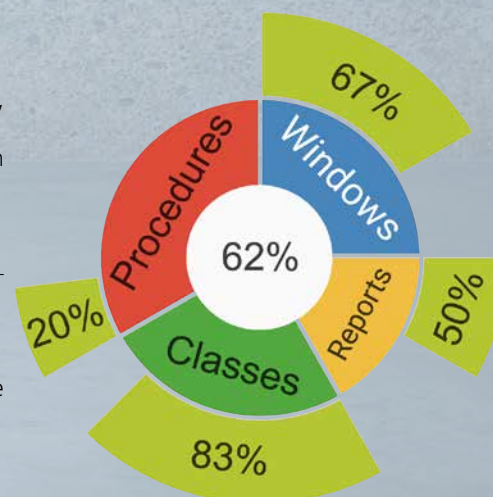
The code coverage is used to detect the code lines that have never been run.

These code lines are found in all objects: window, control, procedure, method, "piece of code", ... Code coverage gives a good idea of how much code has been tested in an application.

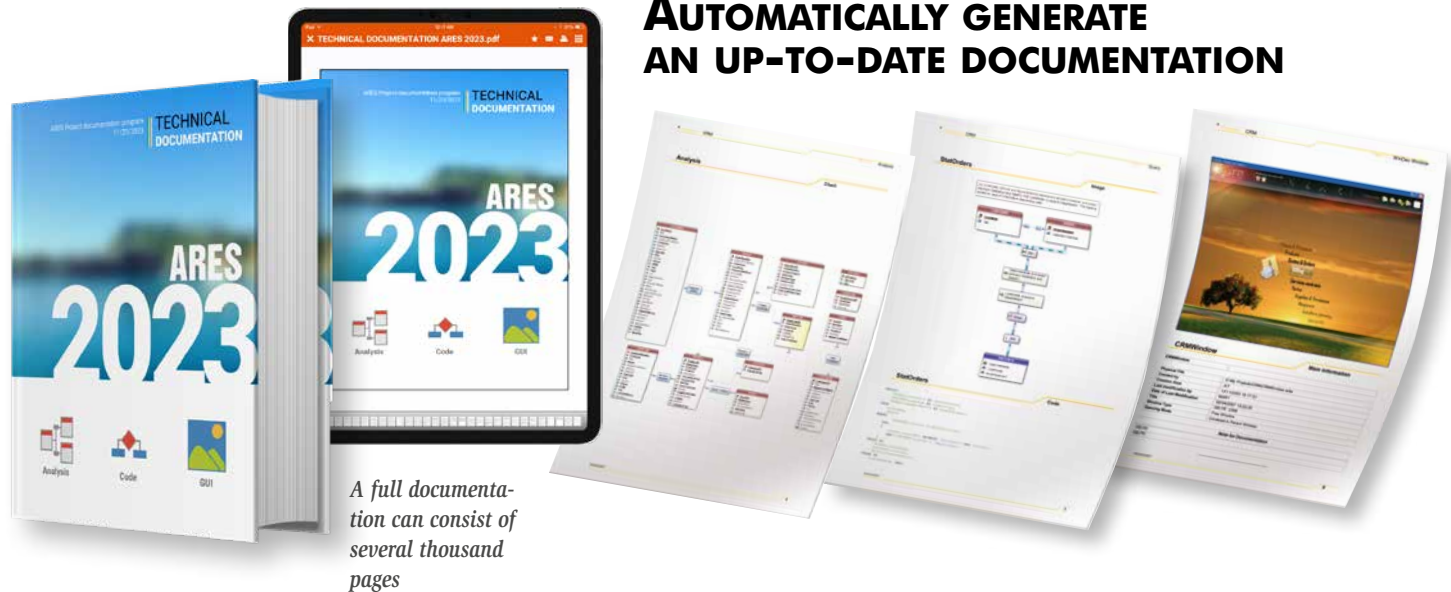
VISUALIZATION OF CODE COVERAGE

The coverage rate is displayed in several places:

- Project dashboard
- Project explorer, at the level of each element.
- in the code editor directly: a color indicates the executed lines.



TECHNICAL DOCUMENTATION IN 1 CLICK



A full documentation can consist of several thousand pages

AUTOMATICALLY GENERATE AN UP-TO-DATE DOCUMENTATION

1 DOCUMENTATION? 1 CLICK!

WINDEV comes with an analysis and programming documentation generator.

The full documentation is created in one click by reverse engineering your project, and can be edited at any time, so it is always up to date.

This generator will save you entire days.

MANAGER

A technical documentation is fundamental for a subroutine, or simply to help a new member join the team. Here the documentation is automatically created.

AAF TECHNOLOGY

AAF can be printed with the documentation

MAIN POINTS

Always up-to-date documentation
Print on paper, HTML (for Intranet), PDF, Word, OpenOffice...

THE FULL DOCUMENTATION IS ALWAYS UP TO DATE IN ONE CLICK

Thanks to WINDEV, and the reverse documentation technique, you benefit from a complete, up-to-date and directly usable documentation at all times.

And this only requires one mouse click, ...

A COMPLETE DOCUMENTATION CONTAINS 13 SECTIONS

- 1• Cover
- 2• Project description
- 3• Dashboard
- 4• Schedule
- 5• Business rules
- 6• Data schema
- 7• UML models
- 8• Window description
- 9• Report description
- 10• Query description
- 11• Description of classes and Webservices

- 12• GDPR
- 13• Main index and appendices

MAKE MAINTENANCE EASIER

The documentation is essential for maintenance.

New developers assigned to a project can easily get familiar with its features and architecture.

This facilitates their integration into the team, and allows them to be more efficient more quickly.

CONSULTING COMPANIES : MAKE SIGNING CONTRACTS AND COLLECTING A LOT EASIER

For an ESN, a documentation is often requested by the client when the contract is signed, and later during the acceptance phase of the application. At each revision of the documentation, you save days

thanks to WINDEV.

EASILY DISTRIBUTE THE DOCUMENTATION: HTML, PDF, WORD...

Easily distribute your documentation: print, HTML, Word, Open Office, PDF...

CUSTOMIZABLE DOCUMENTATION

You can customize many parts of the documentation: fonts, size, images, etc... Several documentation templates are available.

GDPR

The documentation contains a "GDPR" section to help you respect this European standard mandate.

A documentation is a requirement for any professional development. This is of course a standard feature of WINDEV.

With the telemetry offered by WINDEV, you will finally know how your software is used, which options are the most used, which are the least used and/or which are not used at all, what are the calculation and response times, etc

You know which windows and processes are used the most, therefore you identify what you need to optimize.

You also know which processes and windows are never used, and you can remove them from the application.



The data collected for each control (here "search" control) is visible directly in the editor

MANAGER

The telemetry feature allows you to understand how your deployed applications are really used and to know which features to concentrate on.

MAIN POINTS

Understand how your applications are really used
Detect dead code

TELEMETRY : WHICH FEATURES DO YOUR END USERS USE?



Telemetry collects and aggregates important information on the application, windows, controls, processes...

AMONG THE COLLECTED DATA...

The telemetry feature collects a large number of data: regarding the hardware, the use, by window, by report, by process, by control, by menu choice, ... The telemetry feature also collects the potential application shortcomings.

The amount of data collected is very large: maximum, minimum and average number of users, number of times run, version used, usage frequency, wait time...

The telemetry feature also displays some very useful "Top 10" lists:

- most used windows
- most used queries
- most used reports
- least used windows
- least used queries
- least used reports

- longest processes
- most used processes
- most used AAFs

TRANSPARENT COLLECTION

The data can be collected from your servers, or from the cloud (for instance PCSCloud offers a turnkey telemetry solution).

Data collection has no impact on the performance of your applications.

WHAT DO WE MAINTAIN BUT ISN'T USED BY ANYBODY?

The unused application elements are signaled: windows, reports, queries...

And even more precisely, the unused controls (buttons that are never clicked for example) are signaled for each window. After taking the necessary pre-

cautions, you may want to delete these processes from the application.

Be careful though not to delete a process that is only used once a year (like a yearly report for instance).

The application will be lighter, and maintenance easier. Your teams save time.

A better understanding of your applications will allow you teams to create even more efficient programs.

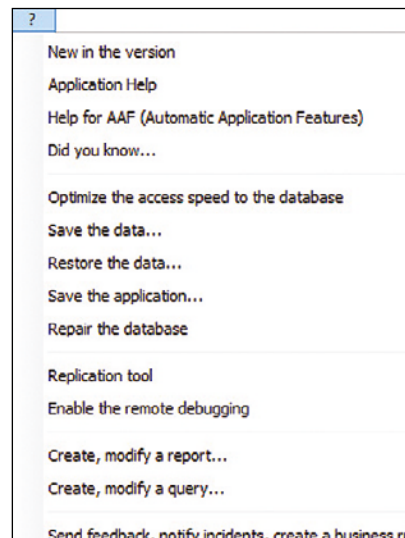


PROVIDE **HELP** WITH YOUR APPLICATIONS

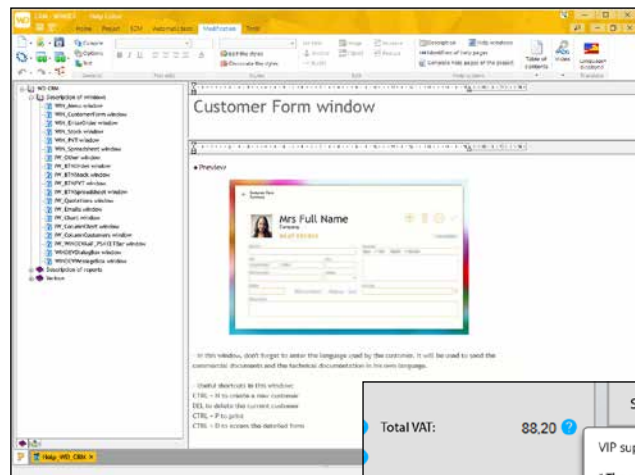
WINDEV comes with a help generator.

This generator enables you to provide a professional help with your application, which will improve your users efficiency.

WINDEV also inserts a "?" menu in your application (if needed), which contains the link to the help system, a link to the list of new features, backup options...



HELP USERS TO BETTER USE YOUR APPLICATIONS



The help creation editor

2 examples of automatic tooltips (IBR pictos) for your applications



CREATE THE HELP FOR YOUR APPLICATION

WINDEV allows you to easily create several help levels in your applications:

- HTML help
- PDF help
- WinHelp help
- CHM help (HTML help)
- tooltip
- status bar
- help related to a control

Tooltip, status bar and control help are created directly in the development environment through the "7 tabS".

Help is created using the help editor.

AN EASY-TO-USE EDITOR

The help generator automatically creates:

- help pages
- screen copies of the applica-

tion

- links to the corresponding processes of the calling application.

Several elements can be configured (colors, buttons, background image, etc.).

AUTOMATICALLY FILL HELP WITH BUSINESS RULES

The help file can be automatically generated by the Business Rules entered in the analysis.

OTHER AVAILABLE FEATURES

The help generator offers features that make it easy to create help:

- create link with keywords
- detection of broken links
- adding information to an image: arrows, text,...
- text style management
- link to Internet page

• link between different CHM help systems

The help generator lets you easily create an interactive help system.

THE IBR PICTO

A pictogram can automatically appear next to each control that offers a tooltip: it's an IBR picto (Integrated Business Rule).

These tooltips can be automatically filled with the distributable Business Rules (non-confidential rules) associated with the control.

With WINDEV, the help generator comes as standard.

TRANSLATE YOUR APPLICATIONS AUTOMATICALLY



Developing multilingual applications is increasingly necessary.

There are of course countries that use several official languages: Belgium, Switzerland, Luxembourg, Canada ...

And then there's l'Europe! WINDEV provides an innovative and powerful solution to manage foreign languages (Latin character sets, non-Latin character sets -Unicode UTF8-, left-to-right and right-to-left writing).

For applications targeted for the North American continent, English, Spanish and French ensure the largest possible distribution of your software.

Translate your applications in several languages, spread them around the world!

64 LANGUAGES PER APPLICATION



UP TO 64 LANGUAGES PER APPLICATION

Multilingual support (64 languages per project) is automatic in your applications: specify the languages to use, and translate texts, labels, etc, ... Unicode is supported.

The multilingual support takes into account the specificity of each language: input/display mask (date,...), centering,...

USE AN AUTOMATIC TRANSLATION SOFTWARE

You can use a translation software or site to translate each caption in real time directly from the editor.

DIRECT INPUT IN DIFFERENT LANGUAGES

Ease of use is our standard! The input is directly performed in each language (Russian, Chinese, French...).

MANAGER

Translating an application for a new market has never been this easy. WINDEV comes with all the tools needed.

AAF TECHNOLOGY

Combine all the languages into the same EXE or limit an EXE to one language

MAIN POINTS

64 languages per application
A single executable
Instant visualization in the editor
Your own terminology dictionary that grows automatically

This feature is available for the windows, reports, the messages in the code...

AUTOMATIC TEXT EXTRACTION

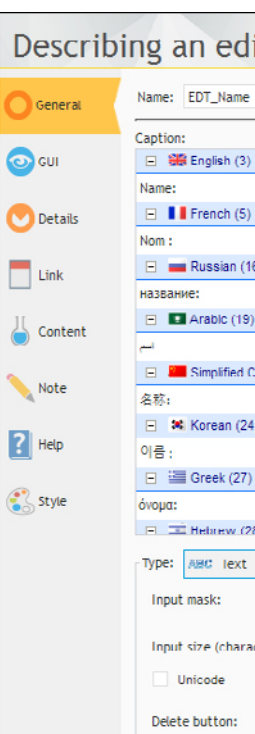
The WDMMSG tool, available separately, lets you extract all the "text" in a project, and reintegrate it after translating it.

Useful if you want your application to be translated by a translation agency or a software! DeepL is supported.

CREATE YOUR OWN DICTIONARY

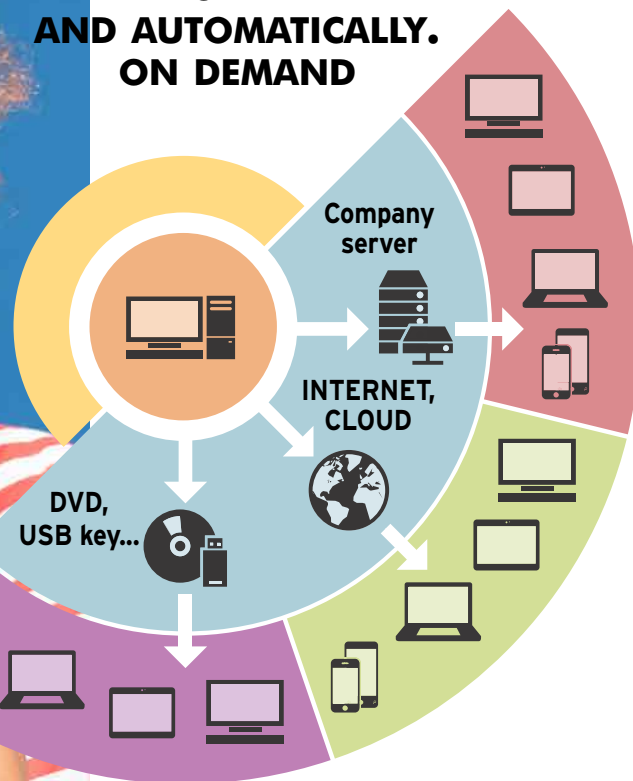
WDMMSG also automatically creates a database containing the source texts used in your programs, and automatically proposes a translation whenever possible.

Developing multilingual applications is easy with WINDEV!



DEPLOYMENT, VERSION MANAGEMENT AND MAINTENANCE: AUTOMATIC

DEPLOY FREELY AND AUTOMATICALLY. ON DEMAND



CHOOSE THE TECHNOLOGY THAT SUITS YOUR NEEDS

WINDEV offers different types of setup based on the type of deployment to perform:

- Simple setup
- Setup from a server
- Cascading setup.

Simple setup

In a Simple setup, a setup file is generated (.EXE or .MSI).

This setup file can be distributed any way you want: DVD, USB key, email, cloud...

This is a "basic" setup.

Setup from a server

In this mode, the setup

program is deployed from a reference server: network server, server, cloud...

When the reference setup program is updated, all the machines will be updated automatically, without any human intervention.



Push mode is supported. (see next page)

Cascading setup

Cascading setup is the most sophisticated mode, intended for large scale deployments.

In this mode, intermediate servers serve as relays to balance the load.

Push mode is also supported. (see next page)

Deploy in one click

SETUP = AUTOMATICS

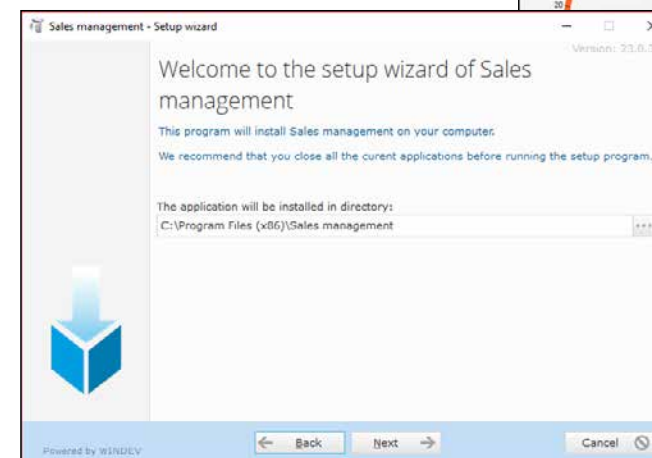
The integrated environment of WINDEV knows your project, the databases it uses...

Therefore, it knows how to automatically create a full setup program.

Of course, you can modify this program, customize it, modify it...

As for all the other modules, this module is supplied with WINDEV.

Setups are multilingual.



Easily create standard or custom Setups for your applications.

You can also create "MSI" setup programs.

ASSISTED CUSTOMIZATION

The elements to install are easily picked from lists; By default WINDEV offers elements from the modules you used in the application.

All the elements can be customized: title, background image, logo, end-user license text, readme, etc...

The program group(s) will be created automatically using the icons you specify.

The setup program can be fully customized since its source code is provided.

LIVE UPDATE, DVD, USB KEY, INTERNET, CLOUD...

The setup program generator allows for flexible deployment. It creates programs on DVD, USB key, HTTP, and any media.

LIVE UPDATE: ALWAYS UP-TO-DATE INSTALLED BASE

All you have to do is install the new version on the server and each user computer will be updated automatically on its own (live update), via the company network or via an Internet connection or even in the PCSCloud cloud.

Therefore, you can be sure that all the computers are always updated.

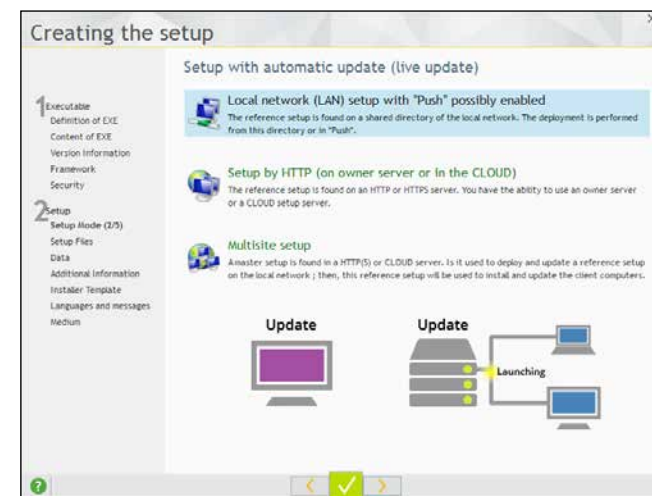
SETUP FROM THE CLOUD

You can place a reference setup (in 1 click) in the cloud.

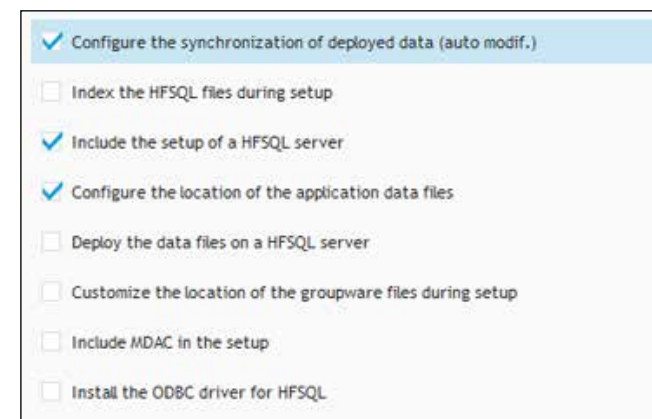
This way all your authorized users can install and update their applications from anywhere in the world, without you having to worry about anything!

Setups and updates are simplified for distributed teams.

Create easy and powerful "Setups" with WINDEV



Live-update options



Examples of setup configuration (here excerpt of the data map)

WINDEV®

MANAGER

Managing the setup and the maintenance of applications automatically makes them more reliable, more accessible. Time saved is also quite impressive.

AAF TECHNOLOGY

Automatic update of table structures by comparison with the application's version. Remote control of applications and connected users.

MAIN POINTS

Push setup
The application manages its own updates

Continues >>>

HTTP SETUP, CLOUD SETUP



HTTP SETUP
A reference setup program is deployed on an HTTP server.
Each station starts the setup program using the provided address.
When the reference setup program is updated, all the machines will be updated automatically.

SETUP FROM THE CLOUD
The reference setup program can be deployed in the cloud.

HTTP SETUP : MANAGING THE HTTPS SECURED MODE
The Https secure protocol is supported. The connection to the server is secure.
The setups are protected.

HTTP SETUP : AUTHENTICATION
An HTTP server may ask for a login and password: your setups are secured.

NETWORK/LAN SETUP

REFERENCE SETUP PROGRAM
A reference setup program is deployed on a network server (file sharing).
The reference setup program is an executable in this case.

Each machine runs this executable to perform the first installation.
When the reference setup program is updated on the server, all the machines update themselves automatically.

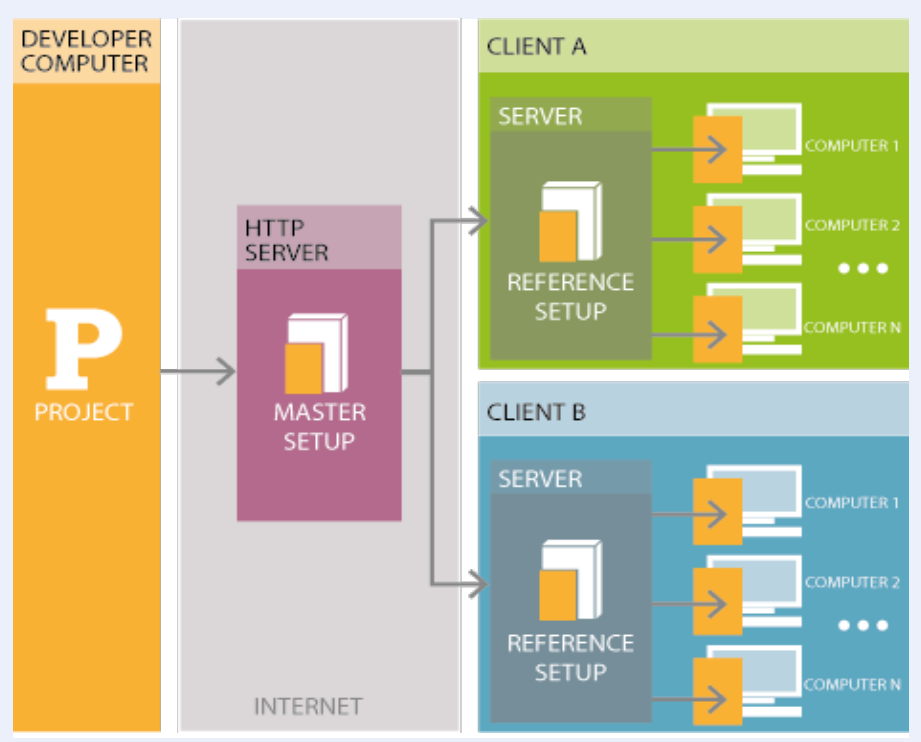
PUSH SETUP
"Push" installation are generated. See page across.

ADMINISTRATION TOOL OF THE INSTALLED MACHINES

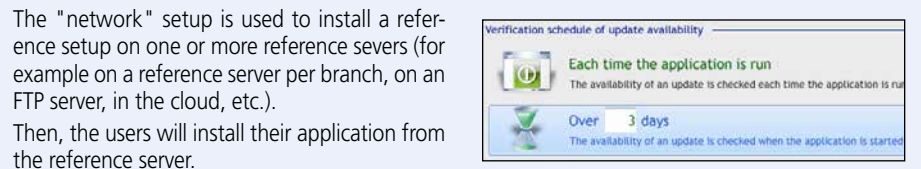
The Setup COntral Center lets you administer the application inventory

- Force the application to stop on user machines during maintenance time
- Modify the update check time, manipulate version history
- Know the connected users, the version installed on the different machines of the network
- Trigger "push" setup...

CASCADING SETUP



REFERENCE SETUP PROGRAM to avoid useless processes and connections.

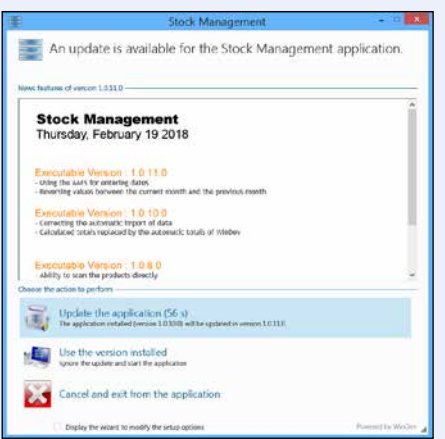


REFERENCE UPDATE
The end user machines will automatically detect new updates on the reference server, and will trigger if needed an update request.
Whenever it is started, an application installed via a network setup checks whether an update is available on the reference server.
During this check, if a more recent version is found on the server, the application update is proposed to the end user.

NETWORK UPDATE : VERIFICATION SCHEDULE
The frequency for checking the availability of a new update (see above) can be configured:

- each time the application is opened (default choice),
- the first time it is opened in a day,
- Every X days,
- only if the machine is connected to the network.

You can check the verification schedule this way,



An information text can be displayed when installing an update

RESTORING VERSION N-X

Who has never had to reinstall the previous version of an application in an emergency?
This possibility is available. On the reference server, you can configure the number of successive versions to keep.
The administrator can decide at anytime which version is the reference version (it doesn't have to be the latest one, for example you could reserve the most recent version for beta testers).
The "?" application menu offers the list of available versions.



Choosing an older version on the end-user machine

SETUP SIGNATURE

WINDEV lets you sign your setups..
Just select a certificate in the setup creation wizard.
The integrity of the installation pack is guaranteed then. If the installation pack is altered (due to a network transfer error, a virus,...), the setup will not run.



Sign your setup programs

AUTOMATIC HFSQL® DATABASE MANAGEMENT

Which developer hasn't ranted about having to write some quick and dirty hack to increase an item size or add an item to an existing table?

PUSH SETUP

"PUSH" INSTALLATION
The WINDEV push setup administrator makes it possible to:
which to install the application instantly or schedule it



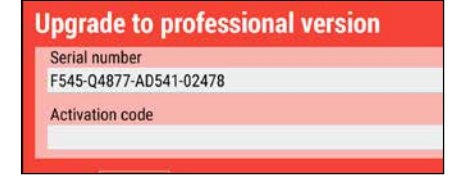
With WINDEV, it is possible to install an application on 25,000 PCs without leaving your chair... easy, thanks to the "Push" mode.
In this mode, a remote administrator software launches the setup, instead of each user having to do it on their computers.
If ActiveDirectory is used, the defined groups can be used directly.

- Trigger the PUSH installation
 - View the version numbers of the application installed on each computer
 - Trigger updates
 - View the setup status report
 - ...
- Push installation mode eliminates physical presence. It prevents additional operations, oversights and errors.

- View the computers and groups on the network
- Define the computer on directly.

Furthermore, the user is reassured about the installation: the name of the software publisher is always included!

ACTIVATION CODE



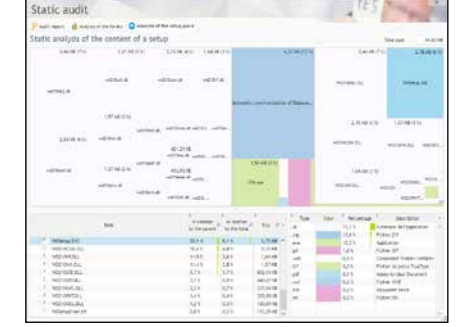
This feature lets you manage the unique remote activation of a program or an update.
A key is generated on the client computer.
The client sends an activation request (via Internet), receives another activation key, then can activate its application.

APPLICATION PATCH

For a minor application update, you can provide additional resources (windows, reports, ...) as patches or as independent objects. For security reasons, using patches is not recommended.

CHECKING THE CONTENT OF A SETUP PROGRAM

The audit lets you analyze the content of a setup program.



Detail of the generated setup program: each rectangle is proportional to the size of the module

Managing the installation and update of your programs is easy with WINDEV.

The problem is even more complex when several versions of the application are in use: the application version as well as the database version have to be checked.
Writing those hacks is always tricky because they alter the data.
With WINDEV, all this is a thing of the past!

WINDEV will automatically create the procedure to update the file and will automatically install it and execute it when updating your application.
This procedure will have all the old versions of the application (up to 100), and will update the "old" HFSQL databases if necessary.



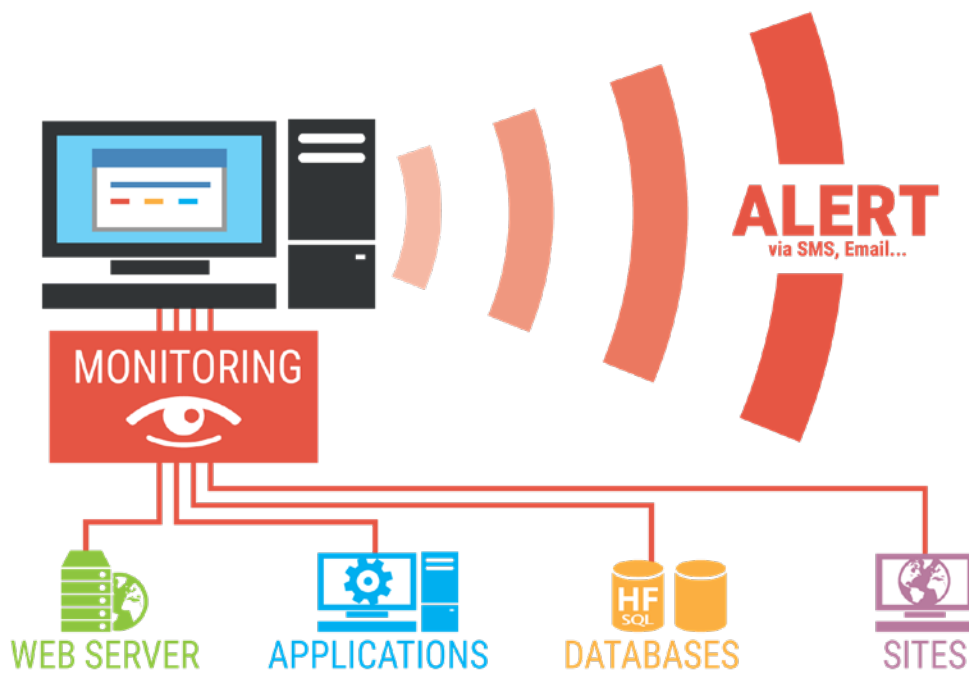
ROBOT (WATCHDOG): IT MONITORS YOUR APPLICATIONS AND YOUR SERVERS

A monitoring robot is supplied as standard with WINDEV.

The goal of this robot is to check that an application or a server **works** all the time, or at a given time.

If the monitored element fails (hardware failure, Internet connection failure, system shutdown, etc.), the robot starts the **alerts** that have been defined.

You're instantly notified.



MONITORING: POWERFUL AND EASY

WHAT TO MONITOR?

The robot can be used to monitor, for example, the following elements:

- HTTP server
- NNTP server
- SNMP server
- file server
- email server
- WEBDEV application server
- HFSQL server
- WINDEV application (1 line to add in the application)

WHICH WARNINGS?

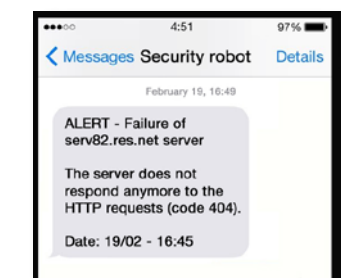
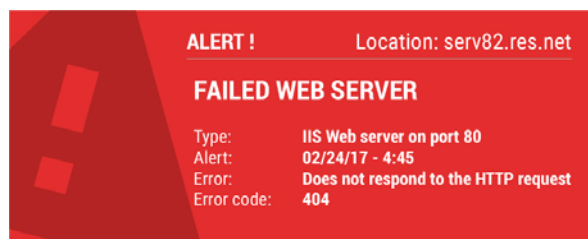
The server alerts, at choice, by:

- sending a configurable email message to the specified addresses (up to 20 addresses)
- message sent to a specific application (internal messaging, ...)
- message sent to the integrated messaging system
- control screen (visual warning and/or sound)
- starting a WLanguage procedure
- third-party program (this program can for instance, send a configurable message via SMS to chosen numbers).

You can choose a combination of these warnings.

Among the monitoring parameters that can be specified, you'll find :

- frequency: run the test every X, from 1 second to 1 day
- repetition: in case there's no answer from the monitored element, how often to retry and how long before triggering the warning
- text of the message to send
- the message's medium (SMS, e-mail, ...).



Warning message automatically sent to a cell phone

MANAGER

The monitoring robot is used to ensure an uninterrupted service for the applications, the file servers or the Internet sites.

MAIN POINTS

- Service continuity
- Rich and easy configuration
- Easy implementation



How to manage user feedback? The bugs they report, and their suggestions?

WINDEV comes with the "feedback" component that you can include in your applications.

It helps the user enter the information and manages structured customer feedback (via an internal network or via Internet).

The requests are then retrieved and managed by the "Project Monitoring Center", which can assign the task to a team member.

If it is a bug, the request is turned into an issue and stored in the "Project Monitoring Center" (see p 14).

The users are guided when filling out their requests that are structured. **Information doesn't get lost anymore**, the quality of your applications improves.

MANAGER

The feedback component, included in your applications, enables users to send back their suggestions and requests automatically.

AAF TECHNOLOGY

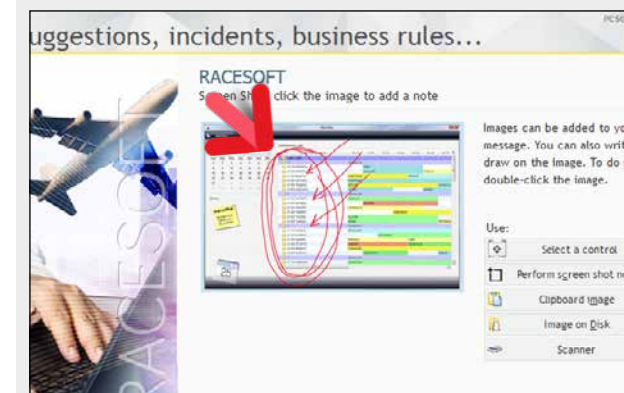
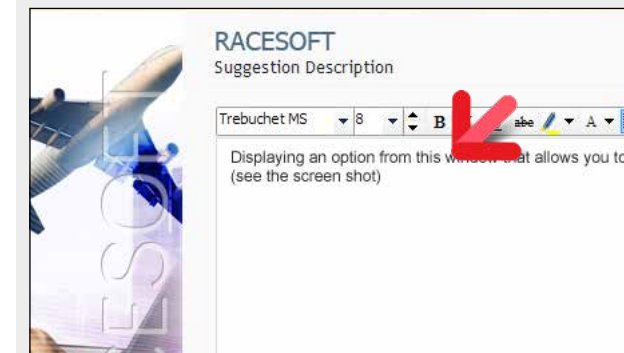
Feedback is an AAF component

MAIN POINTS

- Be responsive and analyze your users' requests
- Automatic integration in the Control Centers

MANAGE INCIDENTS AND SUGGESTIONS FROM YOUR USERS

CAPITALIZE ON THE USERS' EXPERIENCE!



4 THE PROJECT MANAGER AUTOMATICALLY RETRIEVES THE MESSAGE IN THE CONTROL CENTER

The user's message automatically lands in the Project Monitoring Center of the development team: It can be processed immediately!

1

THE USER COMMUNICATES

The user can send a message to the creator of the application (or to the IS department) from the "?" menu, (generated by WINDEV if requested). If the application runs into a bug, the wizard can be started automatically.

2

THE USER ENTERS THE MESSAGE

The user describes the problem or request. The hardware and software configuration is automatically detected and added to the message.

3

THE USER ANNOTATES THE SCREENSHOT

The copy of the current screen is automatically attached to the message. The user can annotate it automatically using the integrated editor. Other screenshots or attachments can also be included. At validation, the message is sent over the Internet.

Manage user requests with WINDEV.

WINDEV: YOUR COMPANY'S BEST ALLY

Prestigious customer testimonials

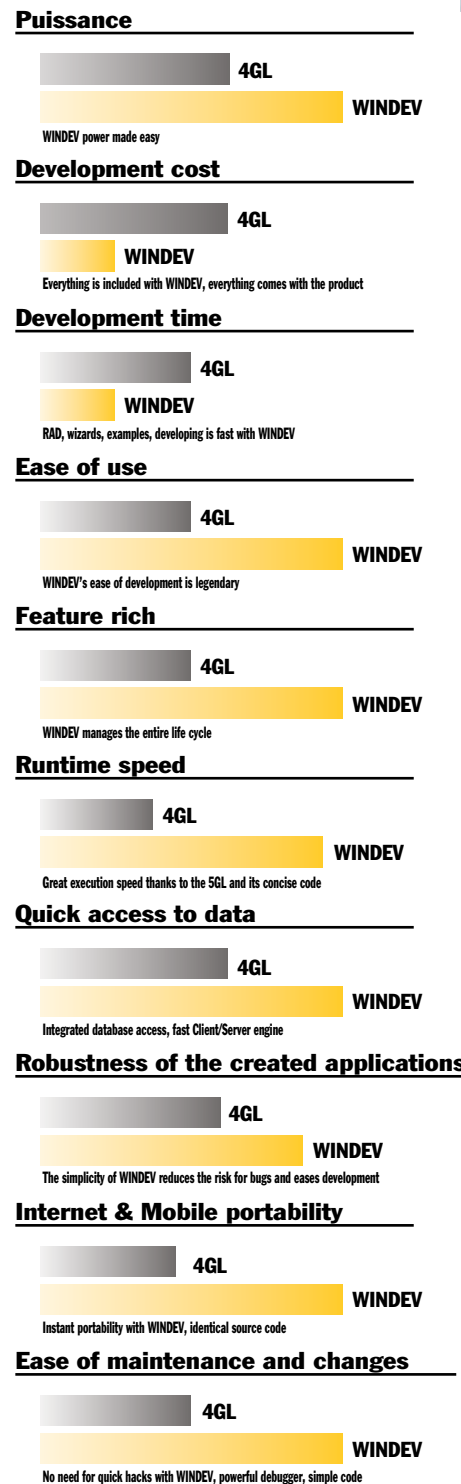
WINDEV is the only product on the market to offer such development productivity

WINDEV®



COMPARE THE FUNCTIONALITIES!

low < —————> high



AN UNPARALLELED ALM ENVIRONMENT!

SATISFACTION	RESPONSIVENESS	DELIVERY	RELIABILITY	SPEED
Developers focus on business needs, not on code = the applications finally match the needs	Up to 20 times fewer lines of code = development and maintenance times are drastically reduced!	The time to place on the market is reduced = this allows you to gain market share	You program is easier to make = it is more reliable	The code is cleaned up = the program is faster

WINDEV is the only development environment that allows such rapid professional development.



FOR YOUR TEAMS : MANUALS AND TUTORIAL INCLUDED

MANUALS PROVIDED

WINDEV is delivered with 2 printed tutorials: concepts and Tutorial (also available online). Paper manuals are always useful!

COMMUNITY-CONTRIBUTED ONLINE HELP

A powerful online help (over 8,000 pages) is available as well as a large number of educational examples.

The online help is in a community-based format, which means that developers can add their own comments, details about each topic.

mat, which means that developers can add their own comments, details about each topic.

GET STARTED IN ONE WEEK

Usually it only takes about one week for a developer to become comfortable with WINDEV.

More time savings!

Find customer testimonials on www.windev.com.

CUSTOMER TESTIMONIALS

Customer testimonial

"Since we installed WINDEV, the department hasn't stop growing. New contracts keep coming in as a result".

Customer testimonial

It took only one week for our team to become fully productive which really illustrates how simple developing with WINDEV is.

Customer testimonial

"WINDEV is the best choice in terms of productivity and reliability".

Customer testimonial

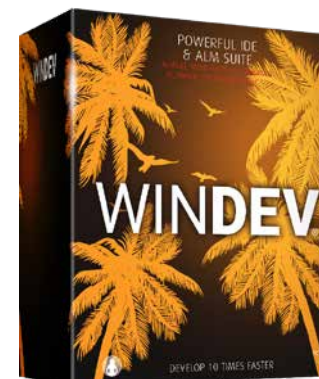
"The WINDEV IDE is the only product on the market to offer such development productivity"

Customer testimonial

"The productivity that WINDEV brings us in our development projects gives us the means to execute all our ideas and improves our market exposure"

Customer testimonial

"WINDEV offers a set of rich features well suited for complex projects. Without WINDEV we would have never been able to carry out such project, especially in the required time frame"



WINDEV, PLAIN COMMON SENSE: 10 FACTS

- 01 your clients are in a hurry : they demand short project cycles**
Develop 10 times faster with WINDEV. Your teams respect their deadlines.
- 02 You are not part of an experimental lab: your projects must come to an end**
The success rate of WINDEV projects is outstanding: your teams are successful
- 03 power comes from simplicity**
WINDEV is easy to use. Your teams are more efficient with WINDEV.
- 04 developers must focus on the business needs, not on the tool or OS**
A simple and integrated tool allows you to focus on what matters: the application.
- 05 your customers want to keep their current systems and hardware**
Applications made in WINDEV are resource-efficient and cross-platform.
- 06 a project should be documented**
The documentation guarantees a long life for the application. Automatic with WINDEV!
- 07 deploy without any constraints**
Freely deploy locally, via the network, over Internet, in the cloud.
- 08 teams perform better**
Clear, easy to read English commands improves code readability and makes maintenance easier.
- 09 a single language for all the platforms**
WINDEV's unique language approach is the perfect answer to platform heterogeneousness.
- 10 budgets must be respected**
Rapid development with WINDEV results in controlled budgets.

CALCULATE YOUR SAVINGS



Other tools

FEATURES		Other tools
UML modeling tool	included	€
Unlimited multi-OS database	included	€
Cluster	included	€
Word processing, Spreadsheet, PDF Reader	included	€
Report generator	included	€
PDF document printing	included	€
Bar code printing (QR code, EAN,...)	included	€
Query editor	included	€
Image editor	included	€
Pivot table (Cube)	included	€
Remote debugger	included	€
Performance profiler	included	€
Data acquisition/sending (IoT, RS 232, USB and //)	included	€
Versioning tool (SCM)	included	€
Static audit, Dynamic audit, GDPR audit	included	€
Continuous integration (agile development)	included	€
Translation of your applications into 64 languages	included	€
online help generator	included	€
Multi-level setup generator	included	€
Monitoring robot	included	€
Control Centers: Scheduling, Quality, Requirements	included	€
Analysis and program documentation generator	included	€
Time Tracking	included	€
Regression test center	included	€
User feedback management center	included	€
Self-training time	1 week	€
Custom hotline (email, 15 inquiries)	included	€
200 examples	included	€
Development time (1 to 10 ratio)		€
Product price list		€
TOTAL		€

WINDEV is a complete environment. Its very competitive price is made possible by its success and the large volume of sales.

The first quality of WINDEV is its power. Its second quality is its reliability.

Its third quality is its ease-of-use, now stuff of legend.

The fourth is its openness.

The fact that WINDEV's cost is very low is only one of the factors of its success.

MANAGER

The very low price of WINDEV and its very low learning curve are nothing next to its reliability and its power. But a reasonable price is always a plus.

MAIN POINTS

Everything is included and integrated
Very short self training time

A DAY WITHOUT WINDEV IS A DAY LOST: ORDER WINDEV TODAY!

PC SOFT AT YOUR SERVICE



WINDEV®

For over 25 years, PC SOFT has been helping professional developers develop their strategic applications better and faster.

What other publisher has such confidence in their software that they offer you free custom Technical Support (Hotline)?

The ease-of-use of our environments and their reliability allow us to offer you this service, which is fundamental for your efficiency, free of charge.

AT THE SERVICE OF DEVELOPERS FOR 25 YEARS

For more than 25 years, PC SOFT has created development tools. This is why we know what we're talking about, and above all, it's why we know you.

Several millions of applications developed with PC SOFT tools are running worldwide, in all professional fields.

QUICKLY TRAIN YOUR TEAMS IN WINDEV

Many simple, efficient, and accessible ways are available to get you trained quickly:

- Tutorial (500-page "printed" manual delivered as standard

- + online)
- More than 100 examples
- Videos
- Consulting services

FREE SUPPORT

A simple email to the Hotline can save hours or days!

We are so confident about our product that we offer free support: it is free (15 inquiries).

Note that the hot lines of most of our competitors are more expensive than the cost of WINDEV itself.

A RICH COMMUNITY

PC SOFT offers exchange forums for developers.

PC SOFT newsgroups are moderated: their content is technical and professional.

A PC SOFT CONSULTANT ON YOUR PREMISES

PC SOFT can make an experienced engineer available to you in your offices (or by videoconference), for a duration of 1 to 5 days

By your side, the PC SOFT engineer will show you how to take advantage of WINDEV in your specific project.

WINDEV allows you to easily reach your objectives.



MANAGER

PC SOFT answers all your requests. Our free technical support (we have total confidence in our products) is real guarantee for your teams.

NEW

WINDEV, WEBDEV and WINDEV Mobile share projects

MAIN POINTS

Free, personalized, technical support
Quality training
Intervention on site

ENVIRONMENTAL POLICIES

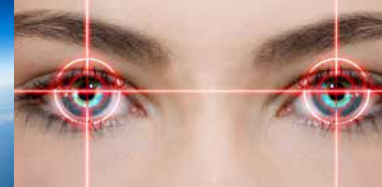
When PC SOFT prints "paper" documents, PC SOFT, the paper supplier or the printer, (FSC - Forest Stewardship Council - certified and PEFC - Program for the Endorsement of Forest Certification - certified) replants as many trees as used for the printing. The FSC label was created by the FSC NGO, which includes among others Greenpeace, Friends of the Earth and the WWF. Also, we favor pulp coming mainly from recycled wood (from furniture mills for instance) and from controlled forest clearing. As for the delivery of the software, on request they are available without packaging or "paper" documentation. For example, a license for 10 developers can be supplied with only 2 sets of paper documentation on request.

PRESTIGIOUS REFERENCES



Go to the www.windev.com site to read several customers among PC SOFT's tens of thousands share their experience. We will send you this issue free of charge, don't hesitate to ask us (you can also view the articles in PDF format on the windev.com site, in the "Testimonials" section).

You'll be able to see for yourself the variety of use WINDEV can be put to..



DEVELOP ALL TYPES OF APPLICATIONS

While you are reading these few lines, millions of PCs in the world are running applications built using WINDEV. Software with over 500,000 deployed copies, that manage billions of dollars, that work with databases containing several hundreds of millions of records, or on networks with thousands of remote machines in real time, ...

You too, like them, build your software more easily with WINDEV.

MANAGEMENT

- CRM, ERP, EAI, EDI, mail order, KM, CAPE, CAM, sales, accounting, payroll, management, amortizations, portfolio, budget...
- Management of different fields: automotive sales and repair, trade, food chain, dating agency, hairdressing, ready-to-wear, photo shops, non-profit organizations, air freight, city offices, cemeteries, fresh produce warehouse, trade union, marina, dry cleaner, SPA, oil distributor, HOA, optical shop, express shipping, temp agencies, maritime company, airport, cosmetic industry, publishing house, toy industry, newspaper...
- Genealogy software
- Applications linked to ERP, SAP, Mapix, Sage...
- Management of computer inventory, helpdesk
- Industrial packaging
- Real-time inventory management, with laptop and PDA linked by radio and GPRS
- Complete management of a 500 food store chain, with connection to cash registers, to the headquarter mainframe...
- Real-time management of ID cards
- Organization and optimization of stores
- Worldwide logistics management for a car manufacturer
- Tool for optimizing inventory management in the ready-to-wear sector
- Census and poll
- Work time management (vacations, clock...)
- Print giant labels (with bar code)
- Personnel management using picture
- Crop optimization based on quotas and type of culture
- Statistics, reporting
- Consumption billing debited from a smart card

MEDICAL

- Automatic analysis of medical samples
- Management of: Hospital, Clinic, Medical building, Doctor, Dentist, Nurse, Pharmacy, Chiropractor, Emergency technician
- Ultrasound optimization
- Management of thousands of employees for "Médecine du Travail" (work health department)
- Measure the volume/pressure of internal organs...

SPACE

- Stellar seismology study (software loaded on a space probe)
- Calculation of comet orbits
- Editing the sky maps
- Automatic generation of an airplane flight log
- Interface for the defense system of a large country
- Monitoring a stratospheric balloon...

EDUCATION

- WINDEV is used in a lot of engineering schools
- Tutorial including 3,000 windows
- Student self evaluations
- manage the report cards (grades, ...) for students in several thousands schools
- CAL training for a banking software running on mainframe and distributed at 50,000 copies...

FINANCE

- Bitcoin operation monitoring
- Financial transaction management for clients on 15,000 computers spread over 400 connected networks
- Banking back office
- Insurance premium and claims
- Stock price retrieval
- Banking terminal interface (DAB and GAB)
- Commercial land management, on laptop, connected to main system via Client/Server...

INDUSTRIAL

- Supervision software
- Control of an automatic feeder for livestock
- Airbags testing
- Engine testing management
- Monitoring of tests for train braking system
- Monitoring and simulation of flow for dams
- Data entry in a vineyard of the ripening stage of grapes, with GPS positioning
- Real-time entry of veterinary procedures
- Controlling an electronic microscope
- Monitoring of printed circuit presses
- Calculation for building design
- Control of automatic industrial wood cutting operations
- Control drilling/milling equipment
- Control of a viscosity measure instrument
- Analysis of mechanical chocks
- Control of automated paint mixing equipment
- Controlling an interactive vocal server
- PABX and PCBX Management
- Modeling of a drinking water network
- Creation of artificial images of mechanical parts

- Remote surveillance of sensitive areas
- Remote surveillance of a network of water reservoirs
- Monitoring of car making robots
- Checking the access to nuclear central areas
- Send/receive message on a laptop from a boat
- Acquisition and process of weather related data
- Remote control of an extended network of diode display panel
- Automation of adhesive film cuts
- Examination of combustible radioactive chips
- Interactive terminal issuing transportation tickets
- Interactive information terminal in a department store
- ISO normalization programs
- Technical construction calculations
- Help pre-cabling a building
- Technical documentation management (aviation)
- Workshop Management...

ETC...

This list is not exhaustive of course, but it gives you a good idea of the power of WINDEV and how our customers use it.

Gain a competitive edge, choose the best development environment to develop your applications : WINDEV.



WINDEV®

INTEGRATED DEVELOPMENT ENVIRONMENT



F R E E
E X P R E S S
V E R S I O N

Download now!

Time-unlimited version