

Retriever Software Visual AppBuilder

*Advanced Software Technology
For Windows® and PocketPC® Computers*

*The Future of Computer
Programming has Arrived*



TOTALLY VISUAL

Next Generation

Visual Design

Breakthrough, Next Generation Technology for Rapid Application Development

No Programming

Retriever Software's Advanced Software Technology is all about reducing costs. This Technology has been specifically designed to enable the creation of business applications at the **lowest possible cost**. There is no way to build them any faster or at a lower cost. Visual application building is the key to cost reduction. Two Programmers trained in this Technology can do the work of three. This is a big deal. This is what shortens development time. Shorter development times translate directly to lower cost.

No Macro Language

Technology has changed. When technology changes, we should reevaluate our technology choices. Are you using the right technology, the right business application design tool?

Fast Prototyping

Visual AppBuilder is the Integrated Development Environment (IDE) component of Retriever Software's Technology. It is a visual design tool for building Windows[®], PocketPC[®] and DOS* business applications. It does not use traditional programming. It uses no compiler, linker, macros or scripting language. Once you create a couple of applications in Visual AppBuilder you will never want to go back to Visual Basic[®] again.

Visual AppBuilder creates and maintains a set of parameter files referred to as 'project files' in a totally visual manner. The project files store all the information necessary to define the user interface, processing logic, record layouts and database schemas for a complete application.

These parameter files act as input to the Visual AppBuilder Runtime Program. There are Runtime Programs for Windows PC, PocketPC and DOS portable data terminals*. The Runtime Program reads in all parameter files at startup. Information on user interface windows is used to display standard and custom windows controls. Other parameter files contain information on procedures used to implement processing logic based on user initiated events.

The Runtime Programs are Enterprise-enabled through the communications server component of Retriever Software's Technology. It is named CommManager. It provides dialup and IP network connectivity to SQL databases for all of the mobile platforms supported by Visual AppBuilder.

The visual window and dialog editor will look familiar to Visual Basic and Visual C++ programmers. It is the only part of these two products that is easy enough for a nonprogrammer to use. Visual AppBuilder makes the rest of the application design and creation process just as easy. Target database information can be imported in the Visual AppBuilder project with the click of a button. All user interface and processing logic configuration is accomplished through the use of dropdown lists, check boxes, radio buttons and edit boxes.

The functionality provided by this framework is all that most applications will require. For those who need something really unusual, standard Windows DLL functions may be called from Visual AppBuilder.

* Portable Data Terminals from Symbol Technologies that run DRDOS or MSDOS are supported

Visual Design

Totally Visual

Click on a control in the control toolbar and click anywhere on your application window to create a new control. Click on the resize node on the control to set the size. Click and drag to position the control. Use the Properties box to assign a variable or database column to the control. It is as easy as that to build a professional quality Windows user interface with Visual AppBuilder.

In addition to the standard Windows control functionality, several enhancements have been made to Visual AppBuilder controls. The value of any control can be written or read through either a variable or database column. Picture controls can be configured to support color photo or fingerprint images. All control configuration is handled through the Properties Box.

Alignment of multiple controls (including static text labels) can be precisely controlled with the buttons on the Alignment Toolbar.

No programming or scripting is used to construct modeless Windows or modal dialogs. No programming is used to build event handlers for controls. No programming is used to build the procedures called by the event handlers. Everything is done in a totally visual manner.

Programmers: If you are using Microsoft® Visual Studio® now, you will feel right at home in Visual AppBuilder. The interface is familiar and the application framework is full-featured enough that you may never need to code again. If you do need more functionality than the standard framework provides, you may call standard Windows DLL functions created in any programming language.

Non-Programmers: If you have tried to learn Microsoft® Visual Basic® (or any of the other 'easy-to-use' Windows development tools) and basically given up on the idea of creating your own software, Visual AppBuilder may be the tool for you. It does not require you to learn about a compiler, linker, make file, source, header or include file.

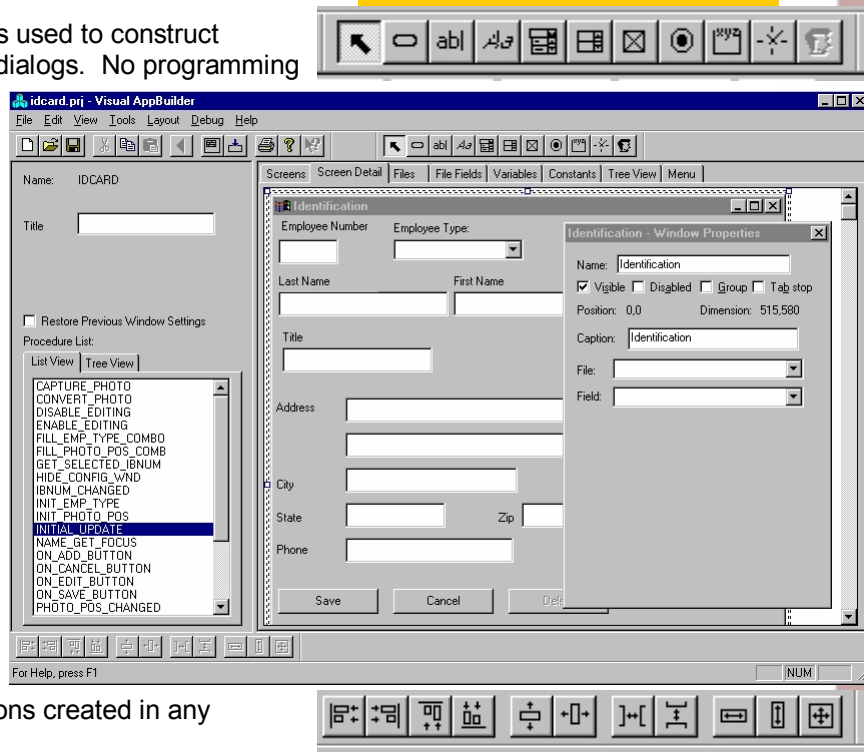
Drop and Drag
Control Toolbar

Standard Windows
Controls

Custom Controls

Properties Boxes

Alignment Toolbar



TOTALLY VISUAL

Procedures

Structured

Robust

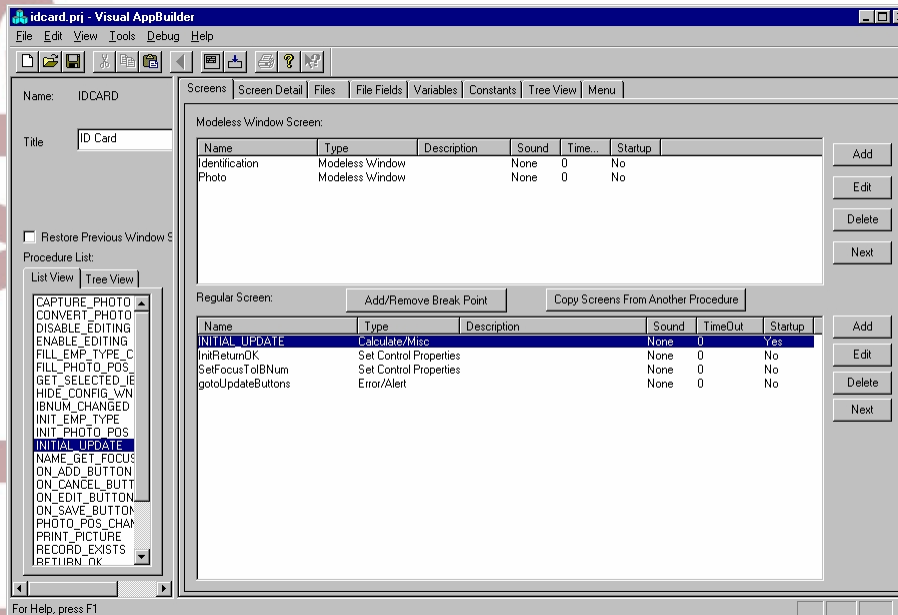
Full Featured

Structured Application Development

Procedures handle all of the processing logic for a Visual AppBuilder project. The implementation of procedures means that the logical modules can be created to perform very specific tasks. Logic that must be called in various places throughout the project is contained in a single module. This architecture makes structured design simple to implement.

Every procedure will return either an 'OK' or 'Error' value.

Conditional branching is done based on this returned value.



Each procedure is comprised of a series of individual actions called Screens. Screens include support for actions such as adding two numbers, displaying a dialog box and executing a SQL command. There are dozens of Screen types with various actions that can be performed. They cover just about anything that needs to be done for database centric Windows and PocketPC applications. Each Screen returns either an 'OK' or

'Error'. Conditional branching is done based on this returned value, just as it is at the procedure level.

All variables in a Visual AppBuilder project are global in scope. Variables used by one procedure are available to all procedures. This helps to reduce the complexity of the project.

A separate record buffer is maintained automatically for every SQL table, database stored procedure and flat file defined in the project. This buffer contains the results of the last successful database selection, stored procedure call or file lookup.

Events

Modeless windows and modal dialogs can also be assigned event triggered procedures. Each can have a procedure assigned for 'Initial Update', 'Timer', 'Print' and 'Close'.

Timers provide the ability to execute procedures without any operator intervention. They provide the capability to continuously check for specific conditions of interest and to execute a procedure when they occur.

Procedure execution can be performed either synchronously or asynchronously. Synchronous execution causes the application to wait until the procedure is finished before allowing the user to perform another task. Asynchronous execution causes the procedure to run in the background in its own thread so that the user can continue to work.

PocketPC

Mobile Computing

Support for the creation of PocketPC business applications is included in Visual AppBuilder. The development process is the same as for Windows PC applications. The visual design interface is the same as well.

Most PocketPC users synchronize data files between their device and their desktop computer using a cradle and serial cable. Visual AppBuilder includes features that allow PocketPC users to transfer data files to and from the Retriever Software communications server, CommManager. CommManager running on the central server enables the mobile devices to make real-time database updates and queries via any type of supported connection.

Support for wireless LAN equipped PocketPC devices is included. Each device has online access to any LAN, WAN or Internet based database. CommManager provides the database connectivity. CommManager also handles automatic version upgrades of Visual AppBuilder project files over the wireless LAN. As new features are added to the project, the device does not need to be cradled to be updated.

Support for bar code scanning is standard for scanner equipped PocketPC devices. Information on the bar code symbology and bar code length is available from within the Visual AppBuilder project*. Each bar code symbology may be enabled or disabled for each edit control.

A PocketPC simulator is included. It runs on any supported Windows PC platform. It allows the Developer to create and test applications without any hardware. It also allows others involved in application design and implementation to conduct application reviews and testing without any hardware. Full support for database connectivity is built into the PocketPC simulator. This allows complete testing of database related functionality without any PocketPC or Wireless Access Point hardware.

The PocketPC simulator, like the Windows and DOS simulators, includes debugging support. The Developer may set multiple break points at specific screens or procedures. Once a break point is reached, the Developer can examine the contents of all variables and record buffers. The Developer then either walks through the project one screen at a time or resumes normal execution until the next break point is reached.

Database SQL commands are not limited to add, edits and deletes from single tables as they are with other development tools. The Visual AppBuilder PocketPC Runtime Program implements an online, real-time SQL interface via the CommManager. Almost any SQL command that is supported by the target database may be processed.

Support for selected PocketPC accessories is included. These include: clip on keyboards; clip on magnet strip readers; portable thermal printers; portable label printers; bar code scanner backpacks (for IPAQ). Support for new accessories is constantly being added.

* Only for Symbol Technologies PocketPCs

Wireless LAN

Dialup Networking

Bar Code Scanning

Simulator



TOTALLY VISUAL

Databases

- Importing
- SQL Commands
- Tables
- Columns

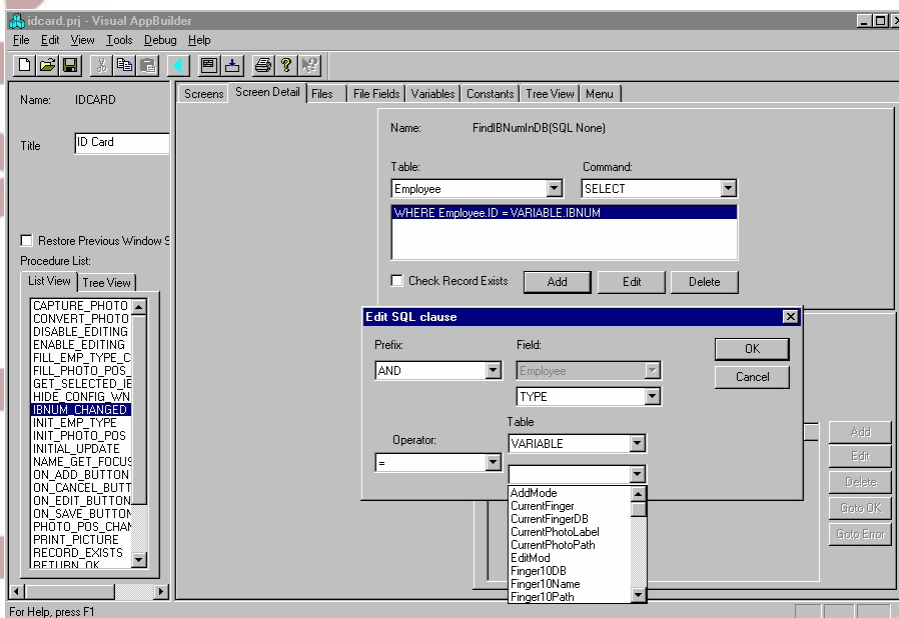
SQL and ODBC

Database connectivity is a key feature of Visual AppBuilder. Information from any Open Data Base Connectivity (ODBC) compatible SQL database can be imported into a project. This includes SQL Server, Oracle, Sybase and Access. It also includes any other data repository that can be accessed with an ODBC driver. Many Mainframe and UNIX server based databases have ODBC support.

Only the tables and stored procedures that need to be accessed by Visual AppBuilder application need to be imported into the project. Column data types are automatically

determined. Once the desired tables and stored procedures are imported, they are added to the list in the 'Files' tab. The columns contained in each table or stored procedure are added to the 'File Fields' tab. Tables and stored procedures may be re-imported if their structure changes. They may be validated against the target database at any time by the click of a button.

When a Visual AppBuilder project is executed by the Runtime Program, a record buffer is dynamically



created for each table and stored procedure. The results of the last 'SELECT' statement execution is copied to the record buffer that was created for this table. The results of the last 'CALL' statement execution is copied to the stored procedure record buffer. 'INSERT' and 'UPDATE' commands read from the record buffer to build the appropriate SQL commands. An entry level understanding of SQL command syntax is required to create a Visual AppBuilder project.

As data is copied from variables to columns, and vice versa, automatic data type conversion is performed. The designer is relieved of the burden of explicit type conversion.

SQL commands for query, inserting, deleting and updating the target database are designed with dropdown lists of standard SQL syntax and database tables and columns. Most SQL commands can be built using this method. For those commands that require keywords that are unique to a particular database or very complex syntax (i.e. INNER JOIN), support for custom SQL commands is included. The Developer simply creates a Constant that contains the SQL command, creates a table layout to hold the results of the command and optionally creates a parameter file to hold values to be passed to the custom command at runtime. Tilde characters in the custom command act as markers for the positions to receive the parameter values at runtime. This powerful, yet simple to use, feature insures that Developers are able to perform the database commands that are required for robust and full-featured business applications.

CommManager

Enterprise Level Connectivity

CommManger is a Windows 98se/Me/NT/2000/XP application that connects mobile devices to SQL databases. The connection can be either an IP network, telephone dialup or direct cable. It is designed to be used exclusively with mobiles devices loaded with a Visual AppBuilder Runtime Program. PocketPCs and Symbol Technologies portable data terminals are currently supported. Support for other mobiles devices is automatic once the appropriate Runtime Program becomes available. The CommManager typically does not require an upgrade for new devices. A Runtime Program for SmartPhones is currently under development.

Database connections are made through Windows Open Data Base Connectivity (ODBC) drivers. Any data source that has ODBC support can be accessed by CommManager. This includes SQL Server, Oracle, Sybase and Access. CommManager receives SQL commands from mobile devices, forwards them to the database through the ODBC driver and sends the results back to the mobile device. Database stored procedures may be executed by CommManager when requested by the mobile device. This is one of three ways to off load compute intensive database processing from the mobile device to the more powerful server. The other two ways are to create an extension DLL or an AppBuilder procedure.

Extendibility

An extension DLL is a standard Windows DLL. A Software Engineer may use Visual C++, Visual Basic or any other tool that creates Windows DLL to create an extension DLL. A complete Microsoft C++ sample project is included to make building an extension as simple as possible. Visual AppBuilder has support for passing arguments to the DLL functions and getting results back. Visual AppBuilder may also be used to extend the standard functionality of CommManager. The Developer simply creates a Visual AppBuilder project, creates a procedure, adds an entry in the 'Files' tab with the same name as the procedure and defines the argument list and results in the 'File Fields' tab. Both of these methods of off loading processing from the mobile device can be used where multiple SQL commands must be executed for a single transaction. Significant improvements in response time are possible due to the elimination of multiple back-and-forth wireless transmissions. The amount of data that is transmitted over a wireless connection is also significantly reduced. This can result in direct financial savings where there is a charge for the amount of data that is transmitted, as over a cellular Internet connection.

Background Processing

Batch applications typically require the conversion of data collected by the mobile device into an SQL database. Use a Visual AppBuilder project as a CommManager extension to check the upload folder for new files based on a configurable timer. Process files uploaded from a mobile device or legacy system directly into your database. Move data between platforms using FTP, email or multiple CommManagers across any IP network.

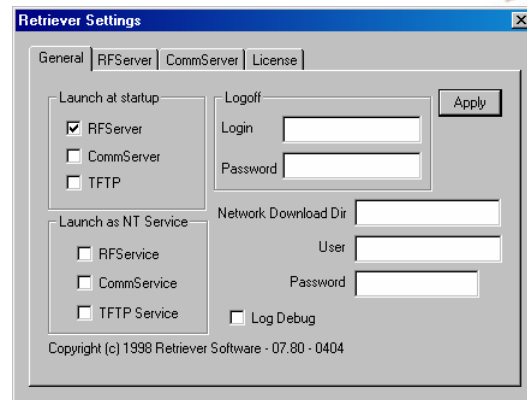
A Settings application is provided for configuring CommManager options. It is simple to use while providing complete control over server operation.

ODBC Server

IP Server

Dialup Server

Extendibility



TOTALY VISUAL

Technology Enterprise License

The Licensing of Retriever Software's Advanced Software Technology

Retriever Software Technology has been specifically designed to enable the creation of business applications at the lowest possible cost. Business applications are those that are database-centric. There is no way to build them any faster or at a lower cost. There is no other Technology that is as clearly focused on developing complete business applications. This Technology represents the future for computer programming. This is the next generation of Rapid Application Development technology that differs from previous generations because of the tremendous cost savings it enables.

Visual application building is the key to salary cost reduction. Two Visual AppBuilder Programmers can do the work of three. This is a big deal. This is what shortens development time. Shorter development times translate directly to lower cost.

The riskiest aspect of business application development is the related software engineering. The scope is difficult to accurately determine. We have reduced, if not eliminated, this problem by creating Runtime Programs that already incorporate the engineering that you need. Engineering required to stay on the leading edge of mobile computing technology is expensive and has a short shelf life. It makes no economic sense to perform engineering in-house.

Programmer turnover is a drag on your budget. Business applications created with Visual AppBuilder are very structured. This reduces the cost of transitioning support from one Programmer to another. This reduces your reliance on any individual Programmer.

Supporting multiple platforms or devices, such as PCs, PocketPCs, Portable Data Terminals, requires multiple Programmers to learn multiple development kits and tools. Visual AppBuilder eliminates this problem by allowing Programmers to learn one tool that supports the creation of business applications for multiple platforms and devices.

You will further reduce your costs when you implement one of the turnkey applications included with this Technology. Eliminate capital outlays for canned business applications for Mobile Computing, Inventory Control and Tracking applications.

Where it Fits

Where you are you using a Windows based software development tool such as Microsoft® Visual Basic®, Microsoft® Visual C++®, Delphi™, PowerBuilder, Microsoft® Access® or Java™, to perform any of the programming tasks listed below, you should be using Retriever Software Technology. The Total-Cost-of-Ownership will be significantly lower for all of the reasons detailed above.

- Creation of database-centric business applications for Windows PCs or PocketPCs
- Creation of integration modules to connect multiple database-centric systems
- Creation of Communications or Database Server for mobile devices over dialup or IP networks
- Creation of upgraded replacement for one or more legacy business applications
- Creation of low-level Dynamic Linked Libraries for features already included in this Technology

Retriever Software, Inc.
6005 Hidden Valley Road, Suite 120
Carlsbad, CA 92009
Voice: 760 929 2101
Fax: 760 929 2111
Email: info@retrieversoftware.com
[Http://www.retrieversoftware.com](http://www.retrieversoftware.com)