PcVue Solutions®

by ARC Informatique

PcVue Solutions

Technical Highlights

www.pcvuesolutions.com

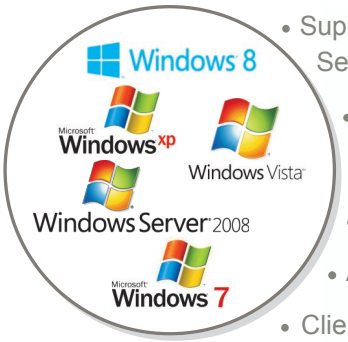
FRANCE CHINA GERMANY ITALY JAPAN MALAYSIA SINGAPORE SWITZERLAND UK USA

Contents

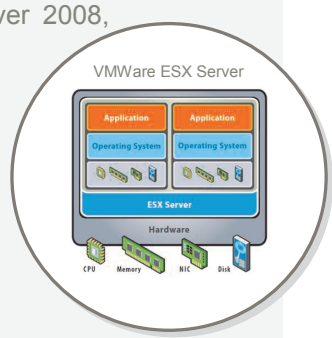
Contents

1. SYSTEM ARCHITECTURE....4
2. DEVELOPMENT....4
3. DISTRIBUTED APPLICATIONS....5
4. DATA ACQUISITION....5
5. REALTIME DATA....6
6. ARCHIVING DATA....6
7. ACTIONS....7
8. GRAPHICAL INTERFACE....7
9. ALARM....8
10. EVENT LOG....9
11. TREND....9
12. ADVANCED VCR FUNCTION....10
13. RECIPES....10
14. ACCESS RIGHTS....10
15. REPORTS AND SUMMARIES WITH DATAVUE....11
16. PROGRAMMING LANGUAGES (SCADA BASIC & VBA)....11
17. SURVEILLANCE MANAGEMENT....12
18. DBMS DATA EXCHANGE....12
19. SECURITY DEVICES....12
20. CFR PART 11 FUNCTIONS....13
21. INTERNET BROWSER ACCESS....13
22. WEB SERVICES....14
23. WINDOWS TERMINAL SERVER....14
24. TOUCHVUE....14
25. PCVUE SOLUTIONS ARCHITECTURE....15

► 1. SYSTEM ARCHITECTURE



- Supported on Windows 7, Windows 8*, XP**, Vista**, Server 2003**, Server 2008, Server 2008 R2, Server 2012* & virtual machine (VMWare®/hyperV®)
- Portability of applications from previous versions
- Open architecture
- Alarm processing
- Archive processing
- Client/server architecture

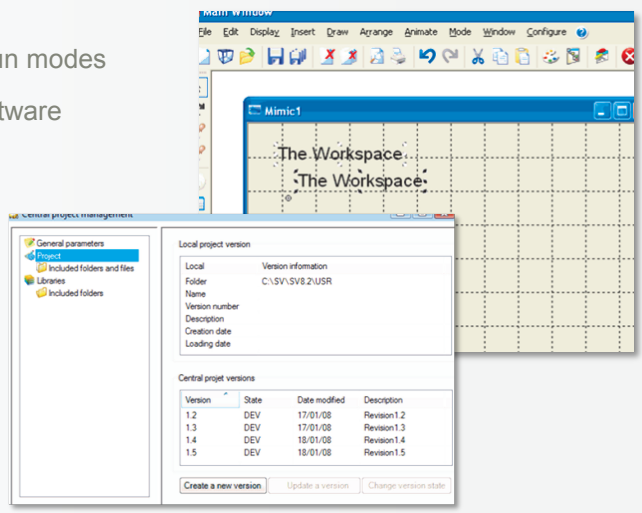


- Real time multi-tasking kernel
- Bilingual facility for menus and application
- Optimized data sharing among PcVue network stations
- Native, optimized redundancy of data acquisition & historical data
- Product structure facilitating integration of vertical approach
- Full Object Oriented technology
- Versions in Brazilian*, Chinese, English, French, German, Italian, Japanese, Latvian, Polish*, Russian, Spanish

* Available from version 11
** XP, Vista: compatible up to version 10

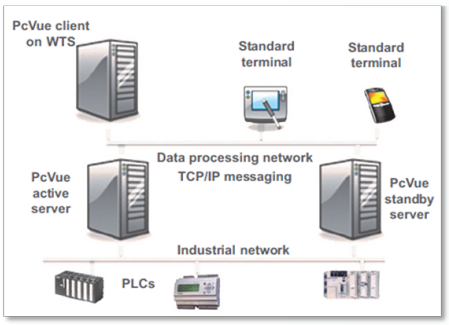
► 2. DEVELOPMENT

- Windows ease of use: an intuitive environment for development
- The same mimic may be opened simultaneously in design and run modes
- Single, integral development workspace for all aspects of the software
- Entire project data contained in one folder and its sub-folders
- Powerful object library tool: Application Architect
- Tool for simulating values of PLC variables
- Project design based on built-in configuration and parameters
- Wizards to assist configuration
- Multiple undo and redo
- Online help available in two languages
- Project Versioning Management

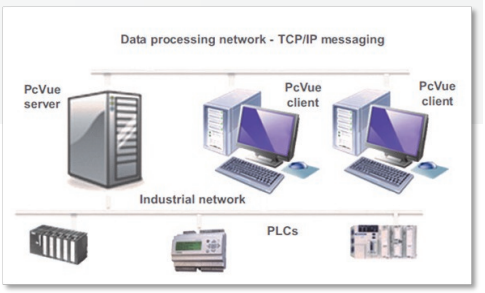


- Central Project Management with automatic loading of the latest available version on a server or local station
- No compilation required - on-line modification for all project aspects
- Plain text and XML configuration files that open in third party editors: Excel, XML Editor, etc.
- Network key as a token to control development rights across the network of supervisory stations
- Powerful scripting language for managing built-in objects and functionalities

► 3. DISTRIBUTED APPLICATIONS



- Inter-station messaging using TCP/IP
- Exchanging values of variables in real time: internal, equipment and historical
- Single configuration of the database for distributed architectures
- Concentrator station and archive server
- Administration of network users' access rights
- System variables to indicate the status of network stations and of the connections between them
- Deployment of changes and creation of variables across the network at run time



► 4. DATA ACQUISITION

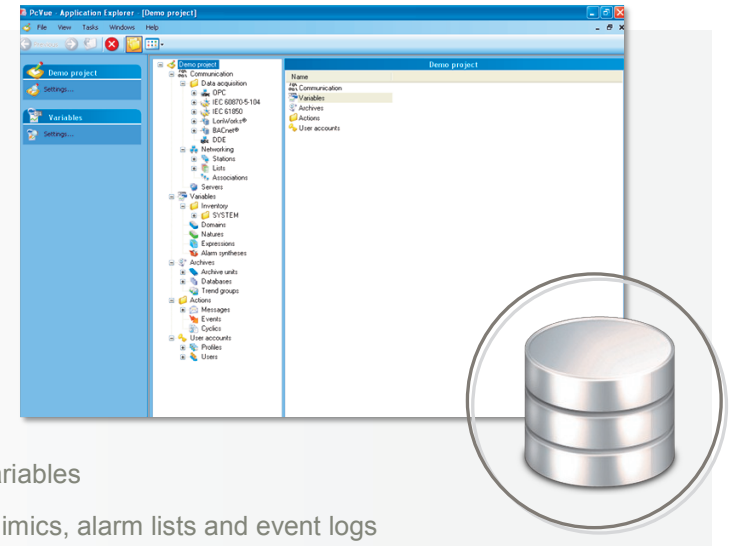
- Communication supported with PLCs, controllers, Fieldbus I/O and other industrial equipment
- Communication via serial port, Ethernet card, manufacturer specific, Hilscher and Applicom boards
- Native support of many serial and TCP/IP protocols

See 'Communication Protocols' on http://support.pcvuesolutions.com/

- Native BACnet® driver
- Native LonWorks driver supporting LNS-TE
- Native IEC 60870-5-104 client driver
- Native IEC 61850 client driver - includes support for wind farm and DER extensions
- Modbus TCP/IP slave
- OPC & XML data client and server
- Event-driven exchange with the PcVue kernel
- Polling interval is configurable for each data frame
- Prioritized queuing of user commands
- Supports time-stamping at field device level
- Time-stamping of data with millisecond accuracy
- Recording and display of the time-stamp from the source (field device or PcVue)
- SDK for custom protocols
- Built-in Tools for diagnostics & data flow auditing
- Support of V1, V2C and V3 version of SNMP, Browsing of OID and Management of Unsolicited data from Trap messages*

* Available from version PcVue 11 SP

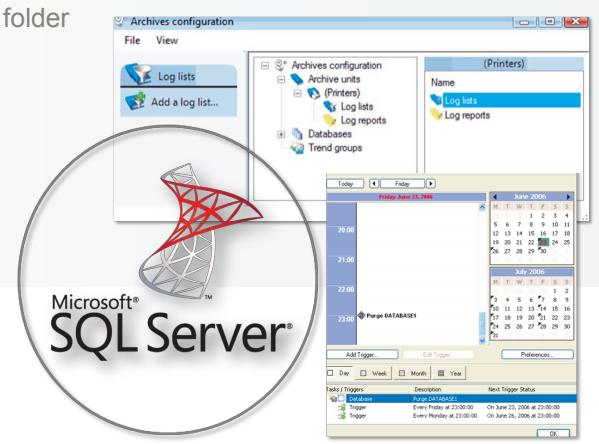
► 5. REALTIME DATA



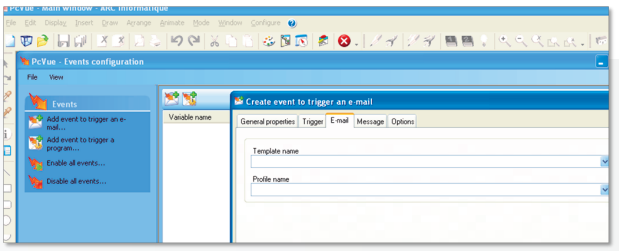
- Object-oriented Variables Tree
- Hierarchical variable name structure
- Variable types: bits, registers, texts, and alarms
- Conversion to physical values
- Deadband
- Discrepancy checking
- Expressions and formula calculations
- Chronometer and counter variables
- Level threshold detection system plus hysteresis on analog variables
- Associated labels for variables to describe them explicitly in mimics, alarm lists and event logs
- Multiple boolean & text user attributes associated with variables
- Filter-Search-Sort can be applied to alarm, historical and trend viewers depending on those attributes
- SmartGenerators: Automatic generation of the Variables Tree from many 3rd party applications such as: Unity® - Schneider Electric, LonDB - LonWorks Technology, AutoCAD, Siemens Step7®, ISaGRAF, WAGO, Yokogawa Stardom and Factory Link
- Manager Toolkit (SDK) for variables to allow a 3rd party application to subscribe to PcVue data locally or via TCP/IP

► 6. ARCHIVING DATA

- HDS - Historical Data Server records in, and replays from Microsoft SQL Server. Microsoft's freely distributable SQL Server Express edition included
- Native - records in, and replays from, PcVue's own native data storage system. Highly optimized data recording for maximum performance
- Database Creation Wizard guides you through the process of configuring data recording using the Historic Data Server
- System variables to monitor data archiving
- Log lists allow recording & displaying events, alarms and user actions in the same event log
- Back-up/restore mechanism from archive unit folder to the back-up folder
- Redundant SQL Server databases and replication management
- Viewing and maintaining SQL database properties and contexts
- Integrated database maintenance for non SQL Server specialists



► 7. ACTIONS

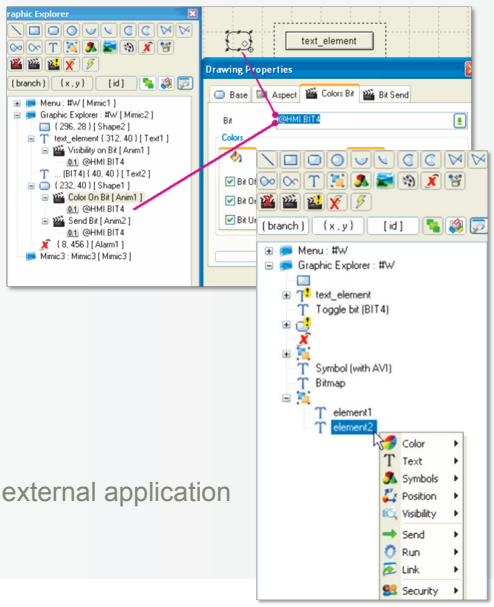


- Sending recipes and commands according to a weekly timetable, managing exception periods for public holidays
- Event-driven actions on variable & alarm changes
- Cyclical actions: run periodic script
- Web based Scheduler
- Send Email and SMS on event with template & auto completion
- Upload and download files on FTP

► 8. GRAPHICAL INTERFACE

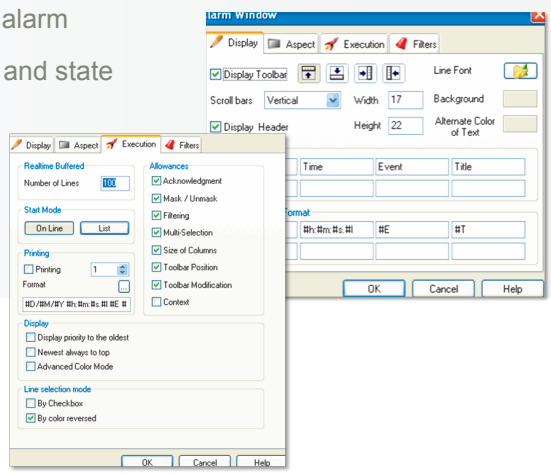
- Graphical interface based on ARC Informatique's FrontVue software
- Object oriented graphical Interface
- Color selection by color picker
- Color palette of up to 16 million colors
- Color gradients for 3D effects
- Blinking and transparent colors
- Microsoft VBA included in the graphical interface
- Integration and manipulation of ActiveX components by VBA
- Supported image formats: WMF, EMF, GIF (static, animated), BMP, JPEG, PNG, and AVI
- Animation of real 3D embedding objects using DirectX technology
- Mimics can be automatically re-sized if the display resolution changes
- Vector drawing tool
- Versatile ways of notifying loss of communication with equipment
- Visual browser to display and change object properties without ungrouping them: Graphic Explorer
- Totally configurable appearance of windows, including to/from child and parent windows
- 16 design layers with locking according to user's access level
- Decluttering support to hide or display graphic elements according to zoom layers
- Zooming on-the-fly to enlarge an area of a mimic on a separate display
- Object visibility dependent on zoom level
- Over 60 animations including text, color, position, and send command
- Use of expressions and substitution strings in animations
- Integrated support for multi-screen applications
- Template mimics for consistent look and feel across a project

- Grid animation: a facility for displaying and modifying information in a spreadsheet-like grid of cells
- Mimics cached in memory for fast loading
- Ability to associate mimic animations with shortcut keys
- Display of tool-tip text on control zones
- Ready for use on touch screen: virtual keyboard, large tool bar, large scroll bar
- Unlimited number of mimics
- Multiple animations can be applied to the same drawing element
- Mimics up to 10,000 x 10,000 pixels in size
- Option of bilingual applications with automatic language change at run-time
- Iconizing of mimics
- Option of plain text mimic format allows mimics to be created and edited with an external application
- Import /export of mimic texts



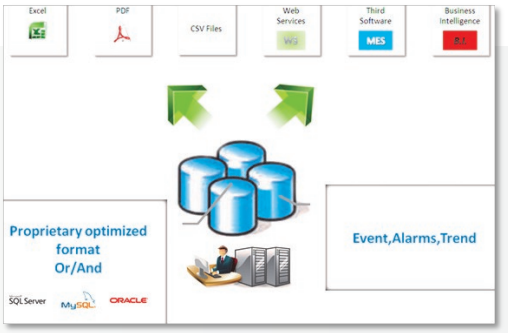
► 9. ALARM

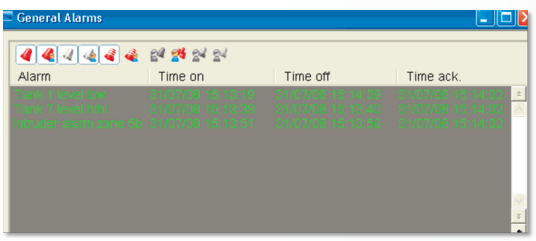
- 5 alarm states and 30 alarm levels
- Filter, Search and Sort on alarms by state, levels and/or attributes - modifiable online
- Filtering of alarm processing by station
- Alarm counters by value, level, attributes etc.
- Automatic masking by dependency and manually masking by user action
- Alarm viewers and log viewers with column based sorting
- Customizable alarm viewer
- User masking of insignificant alarms with password locking (30 levels of masking)
- Action / tip information associated with each alarm
- Fully configurable alarm colors according to level and state
- Logging of alarms to disk and/or continuous printing
- Automatic sending of acknowledgements to PLCs
- Optimized alarm states shared among PcVue network stations



► 10. EVENT LOG

- Access to Client/Server event log
- Option to append comments to events in the event logs
- Dynamically modifiable filters by attribute
- Customizable event viewer
- Recording of data to one or more archive units
- Recording of data in binary, ASCII or SQL Server formats

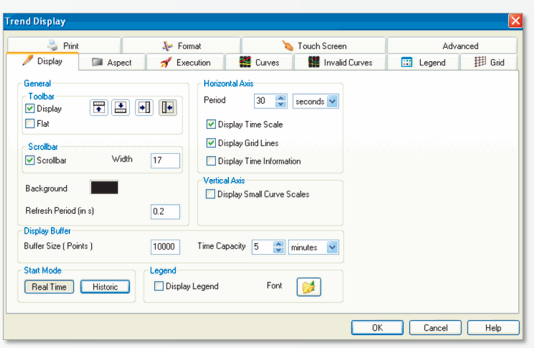


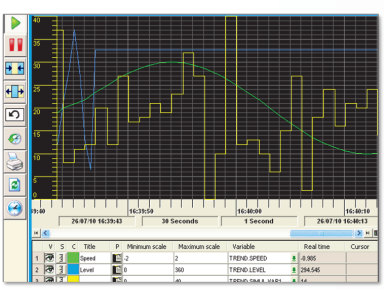


- Formats for historical logging are configurable for easy export to third party software
- Logging of alarm values, user login/logout, program execution, alarm masking, changes to variable states etc.
- Filtering and sorting of events

► 11. TREND

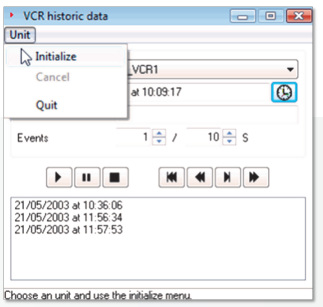
- Dynamic configuration of Trend Viewer look and feel in design and run modes, with optional locking
- Y=f(t) trends
- Logarithmic trends
- Customizable trend viewer
- Simultaneous display of real time and historical data
- Zoom in and zoom out in time axis or both time and value axes
- Cursor for reading selected values
- Multiple dynamic and scrolling scales
- Dynamic addition, deletion and substitution of variables by operator at run time





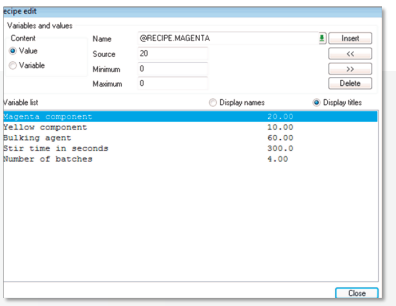
- Event-driven recording to minimize use of disk storage
- Data recording in one or more archiving units
- Data export to Excel using DataVue software or HDS module
- Printing of displayed trends on graphical printers
- Ability to draw lines for thresholds, Min & Max
- Specific colors when the trend rises above or falls below thresholds, Min or Max values

► 12. ADVANCED VCR FUNCTION



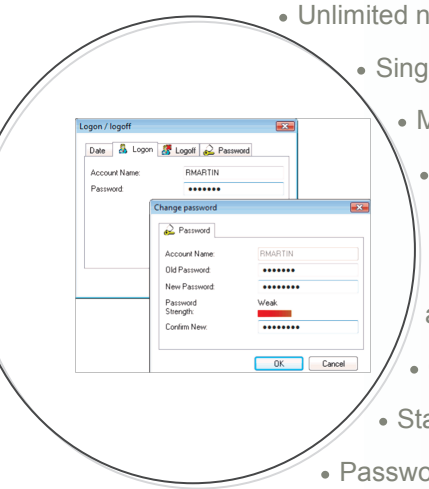
- Replay of historic variable values through mimics at various rates
- Facility for data recording for several weeks
- Replay information event by event to analyze incident sequences

► 13. RECIPES

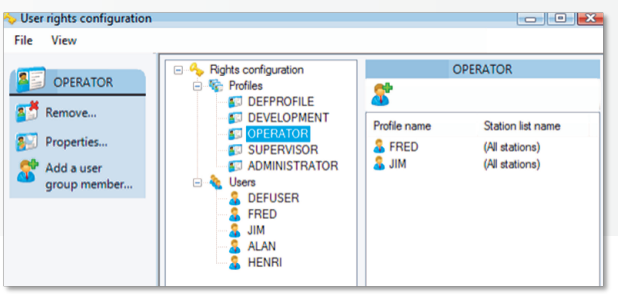


- Recipe send on demand or by event
- Up to 1,000 variables (register, and/or bit and/or text) per recipe
- Option to create a recipe based on real time values
- Inspection and modification of values before sending
- Management of recipes from a relational DBMS
- Use recipes to retrieve and save process setpoints
- Facility for logging by using a product batch index to ease extraction of historical data by batch number

► 14. ACCESS RIGHTS



- Unlimited number of users
- Single-Sign On Support: simpler management of user rights
- Management by profile for maximum flexibility
- Password strength control
- Up to 30 hierarchical profile levels
- Facility for locking access to particular mimics, command variables, log variables, alarm acknowledgement and masking, WebVue etc.
- Control of reading, creation, changing and sending of recipes
- Station dependant access profiles for multi-station architectures
- Password validity limited by date
- Ability to require password change on first login

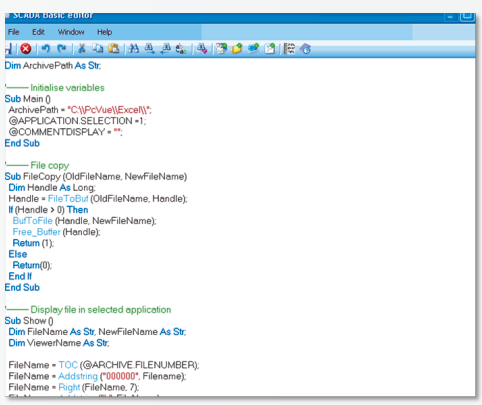


► 15. REPORTS AND SUMMARIES

- Data export as text files or into Excel
- Facility to export all archived bit and register data, from event logs and log lists
- Data extraction using criteria by date and/or batch number etc.
- Extraction request is built using a graphical editor
- Sampling period from 1 second to several days
- Facility to extract data from PcVue or ODBC archive units
- Automatic running of requests for PcVue to generate summaries, at end of each batch run, change of team, day, week, month etc.
- Automatic starting of an Excel macro after data extraction for report formatting
- Advanced, powerful reporting functionalities using Dream Report software

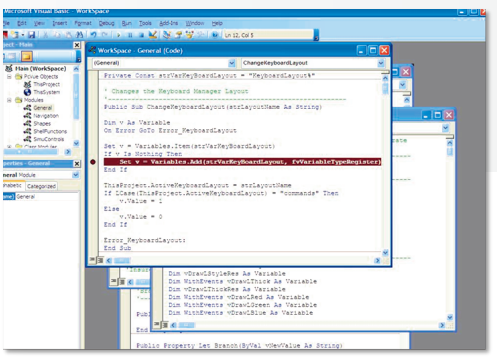
► 16. PROGRAMMING LANGUAGES: SCADA BASIC & VBA

- Specifically created to work within the PcVue environment and extend its features
- Advanced functions dedicated to supervision
- Modular structure
- Arithmetic and boolean operators
- Triggering on event
- Access to DLLs
- Access to the variables tree, historical data and alarms
- Control of multimedia peripherals
- SQL support

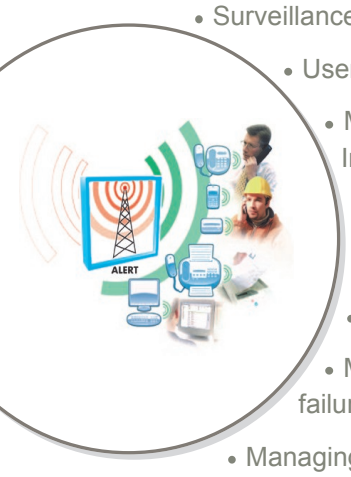


```
SCADA Basic Editor
File  Edit  Window  Help
Dim ArchivePath As Str;

'------ Initialise variables
Sub Main ()
 ArchivePath = "C:\\PcVue\\Excel\\";
 @APPLICATION.SELECTION =1;
 @COMMENTDISPLAY = "";
End Sub

'------ File copy
Sub FileCopy (OldFileName, NewFileName)
 Dim Handle As Long;
 Handle = FileToBuf (OldFileName, Handle);
 If (Handle > 0) Then
  BufToFile (Handle, NewFileName);
  Free_Buffer (Handle);
  Return (1);
 Else
  Return(0);
 End If
End Sub

'------ Display file in selected application
Sub Show ()
 Dim FileName As Str, NewFileName As Str;
 Dim ViewerName As Str;

 FileName = TOC (@ARCHIVE.FILENUMBER);
 FileName = Addstring ("000000", Filename);
 FileName = Right (FileName, 7);
```

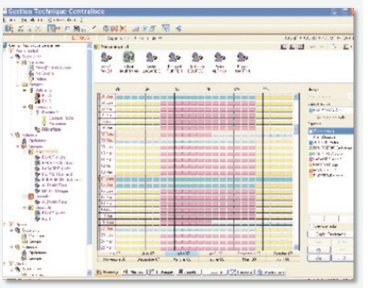
- Comprehensive editor with syntax highlighting, auto-completion and code snippet insertion
- Contextual help for language instructions
- Code snippets to automate insertion of all frequently used pieces of code : program and function comments, loop, conditional statements, new Sub etc.
- Microsoft VBA Scripting
- Trends, alarms, mimics etc. can all be scripted using VBA



► 17. SURVEILLANCE MANAGEMENT



- Surveillance management by Alert software
- User management and organizing the surveillance
- Message transmission to fixed and mobile devices, GSM, radio message, beep, fax, email and Internet browser
- Facility to acknowledge remote alarms according to the terminal used
- Facility for voice synthesis to generate audio messages
- Interfacing with OPC servers
- Monitoring the supervisory application and sending an alarm if failure occurs
- Managing redundant Alert stations
- Logging / history of events arising on the Alert system



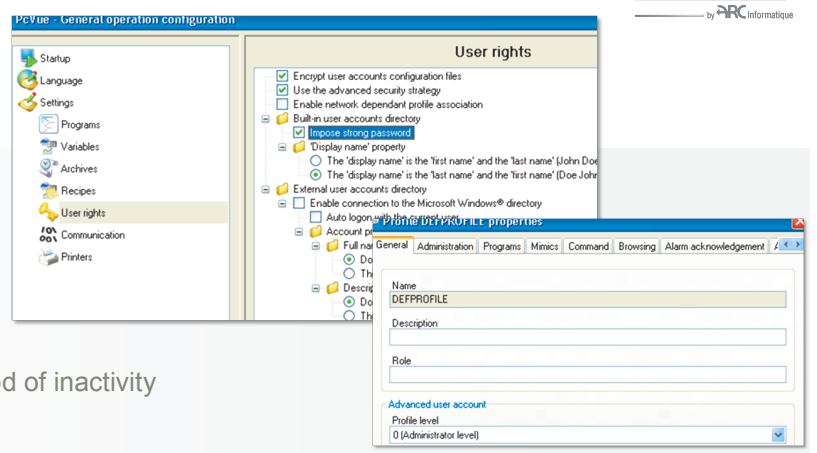
► 18. DBMS DATA EXCHANGE

- Exchange of data with DBMS via SQL requests
- Microsoft SQL Server native driver
- Bi-directional data exchange to let manufacturing orders be sent to the supervisory system and PLCs
- Cyclic or event-based operation
- ODBC / OLE DB interface for data exchange with the most common DBMSs
- Configuration by clicking, no programming required
- Data analysis by software for DBMS reporting

► 19. SECURITY DEVICES

- Automatic swapping of data server stations
- Optional redundant communication network between stations
- Messaging - uses subscription between client and server to minimize switch-over times
- Optional redundant field communication network
- Option of redundant data acquisition stations on single-master communication networks
- Option of redundant historical data server on Microsoft SQL Server
- Monitoring of frame, equipment and network condition, using individual status indicators
- Monitoring by the equipment of the correct functioning of the Supervisor
- Tool to control event flows at the heart of the system
- Log file of system events for diagnostic analysis if failure occurs
- OPC-Security specification is implemented

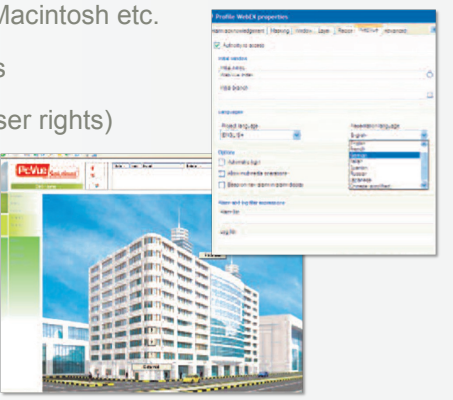
► 20. CFR PART 11 FUNCTIONS



- Audit trail
- Individual electronic signature for each user
- Option for double signature on sending commands
- Each name/password combination is unique
- Automatic logout either programmable or after a period of inactivity
- Locking after a number of unsuccessful attempts
- Recording of failed attempts to log in, with option to notify the system administrator
- Guarantee of integrity of historical data by CRC
- Logging of previous value when a value is changed

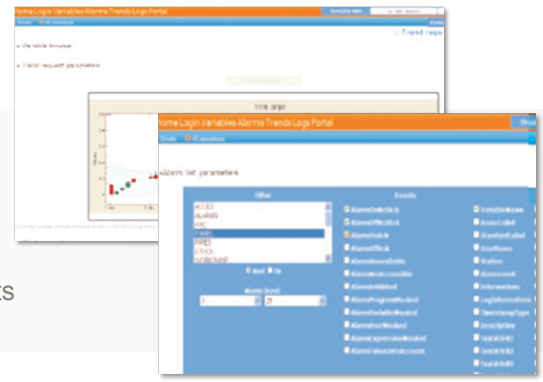
► 21. INTERNET BROWSER ACCESS

- ARC Informatique's WebVue, a light supervisory client accessed through a web browser
- Based on Sun's JAVA technology available on Microsoft Windows, Linux, Unix, Macintosh etc.
- Enables display of real-time data and access to historical data, trends and events
- Facilities for remote commands and acknowledgement of alarms (according to user rights)
- No software installation necessary on the remote station
- Optimized data exchange for mimic updates
- Encrypted data exchange to prevent problems of hacking
- Access to PcVue data server via IIS in XML SOAP
- Station for production maintenance staff, or for all occasional users



- Several users may be connected simultaneously to the supervisory application managed by the web server station
- No license required on the client station

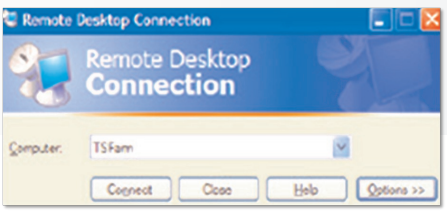
► 22. WEB SERVICES



- Service descriptions accessible in WSDL language
- Data transport via XML / SOAP
- Identification and connection sessions
- Access to real time data, historical data and alarm lists

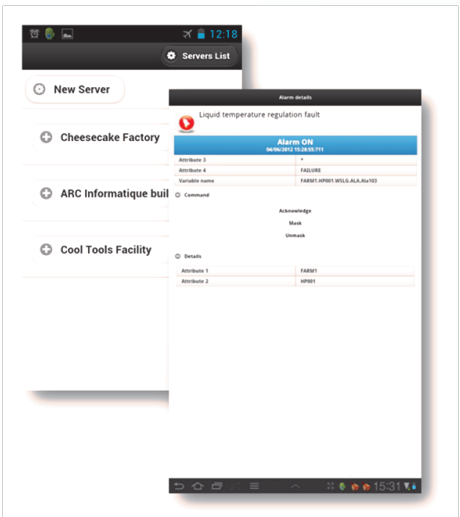
► 23. WINDOWS TERMINAL SERVER

- Client / server architectures validated on Windows Terminal Server
- PcVue clients via Microsoft RCP on iPhone, Smartphone or other operating system (CE, XPE, Linux etc.)
- Assured redundancy of data acquisition servers



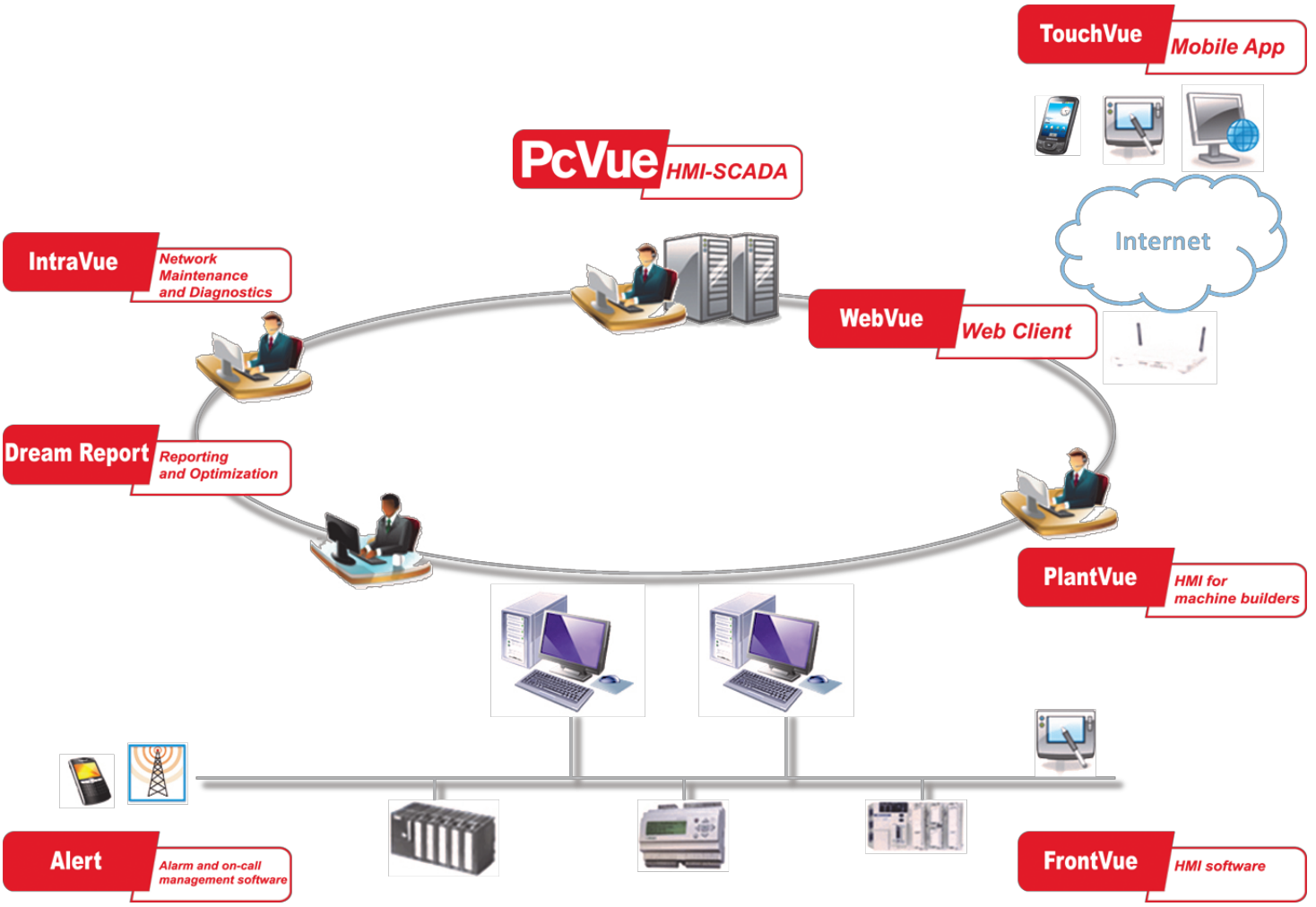
► 24. TOUCHVUE*

- A web application designed for :
  - Smartphone
  - Tablets
- Usable as a web portal for other platforms



- Provides access to the PcVue variable's tree :
  - Real-time values
  - Alarms
  - Historical event log
  - Historical trend data
- Take advantage of PcVue user rights
- Minimal configuration on the server side

* Available from version PcVue 11



Versatile HMI/SCADA software

Affordable Single-station HMI software

Alarm Management Software

Real-Time Report Generator

Diagnostic Maintenance Tool

Microsoft CERTIFIED Partner | Data Management Solutions

OPC FOUNDATION MEMBER

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

All names and trademarks are the property of their respective owners

ARC Informatique - Headquarters
2 avenue de la Cristallerie - 92310 Sèvres - France
tel + 33 1 41 14 36 00 - fax + 33 1 46 23 86 02
arcnews@arcinfo.com
www.pcvuesolutions.com