Designed for Microsoft

FOUNDATION

OPC — OLE for Process Control

PROFIBUS

activex

FOUNDATION HSE — High Speed Ethernet

Microsoft Visual Basic Technology — Featuring

I'VE GOT HART ABILITY

Flip-Flop and Edge Trigger

Integrator

smar
system302

ProjectWorx

AlarmWorx
smar
System302

TrendWorx

GraphWorx

OPC - Based HMI / Scada Client

1.40
1.17
0.93
0.70
0.47
0.23
0.00

8:55:44 AM
2002   5/20/2002

Description
PV
OUT

Screen Browser Menu

PIC 201

Open
Close

200-VS-001

UV-201

LSHL201A   LSHL201B

LIC-201

\Program Files\Smar\ProcessView\Examples\GraphWorX
Edit View Favorites Tools Help
Search Favorites History
ress C:\Program Files\Smar\Process View\Examples\GraphWo

Oil & Gas In
Trend Alarm Operat

ProcessView

Process Visualization and Operation Software

smar

PROCESSVIEW

Features

- Integral part of SYSTEM302.
- Built on Microsoft Windows technologies.
- Built on several OPC technologies.
- Single integrated system database.
- Redundancy for high availability.
- No programming knowledge required.
- Windows NT security.

Introduction

ProcessView suite is a set of powerful software modules in SYSTEM302 that includes all the best-of-breed applications the operator needs for process visualization and operation, advanced alarming, trend analysis, reporting, supervisory control, and much more. ProcessView is the base of the plant "information architecture" which provides the traditional monitoring functions. The operator can build the system and integrate workstations and other applications with unparalleled ease, economy and performance. Configuration of graphics, alarm and trending is as easy as pointing and clicking. No programming, scripting and compiling knowledge is required. ProcessView is also very easy to install and setup.

Finish your projects on time and within budget!

Because of its modular design and flexible licensing scheme, ProcessView can easily be expanded and grows with you as your requirements grow. It is possible to expand without having to replace existing software modules, as was the case for monolithic architectures in the past.

ProcessView takes full advantage of the popular Windows NT operating system including DCOM client-server architecture, security, LAN, Internet and dial-up modem networking, RAS, graphics, sounds and multimedia, pointing devices, ODBC, fonts and printing.

Because industry standards are followed throughout the system, costly and difficult interfacing problems are eliminated cutting cost and implementation time. Standards-based interoperability eliminates unforeseen interpretation problems reducing the overall project risk. SYSTEM302 has an unprecedented level of integration and ease of use, yet complete openness and security, unlike other integrated control systems.

SYSTEM302 lets you choose which software you are using. It is therefore not a must to use ProcessView. An off-the-shelf HMI/SCADA software supporting OPC can be used instead, such as InTouch by Wonderware, RSView by Rockwell Software, AIMAX by TA Engineering, etc. However, ProcessView has by far a much better implementation of OPC and it is easier to use. Furthermore, a vast library of display templates to fully benefit from Fieldbus is available.

SYSTEM302 Software Architecture:

Unlike DCS, SYSTEM302 has no proprietary database and therefore does not require custom device drivers to communicate with third party hardware or software, such as controllers or plant information systems. Advanced control no longer needs to connect through a proprietary database or the historian in a heterogeneous fashion. The open SYSTEM302 software architecture based on OPC eliminates the need for all these drivers. Therefore SYSTEM302 has no "Driver List", any device or software with OPC can be used.
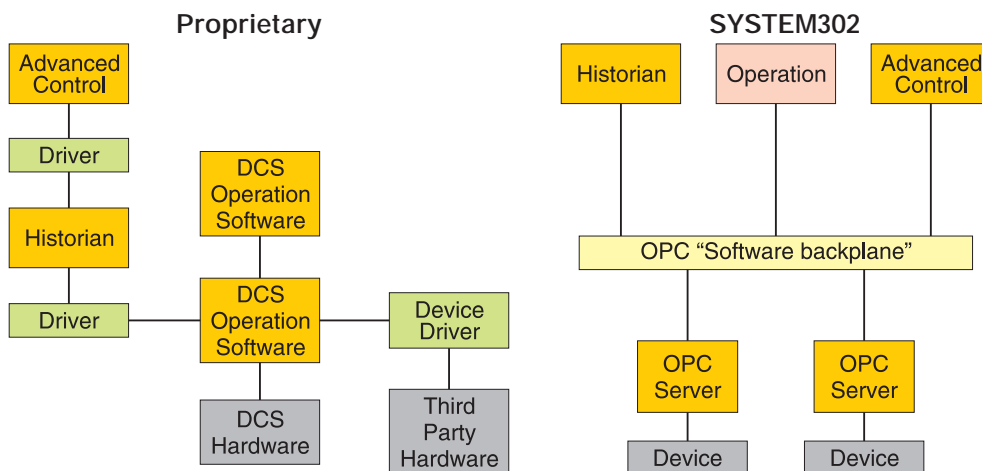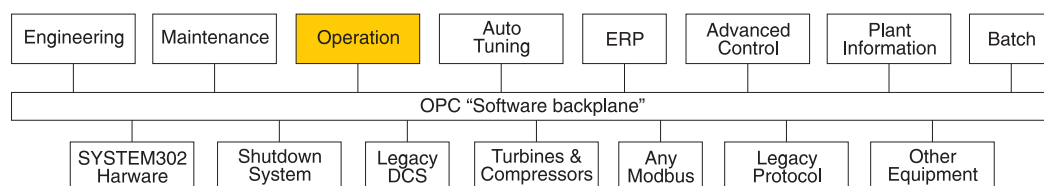

Software Architecture Evolution

Most control systems only support OPC as a gateway internally remaining closed, using their own operator software inseparable from the console. However, the OPC implementation in SYSTEM302 makes it a truly open system.

Unlike proprietary systems that require a dedicated computer as a gateway to exchange data, SYSTEM302 enables direct access to all data for other applications.
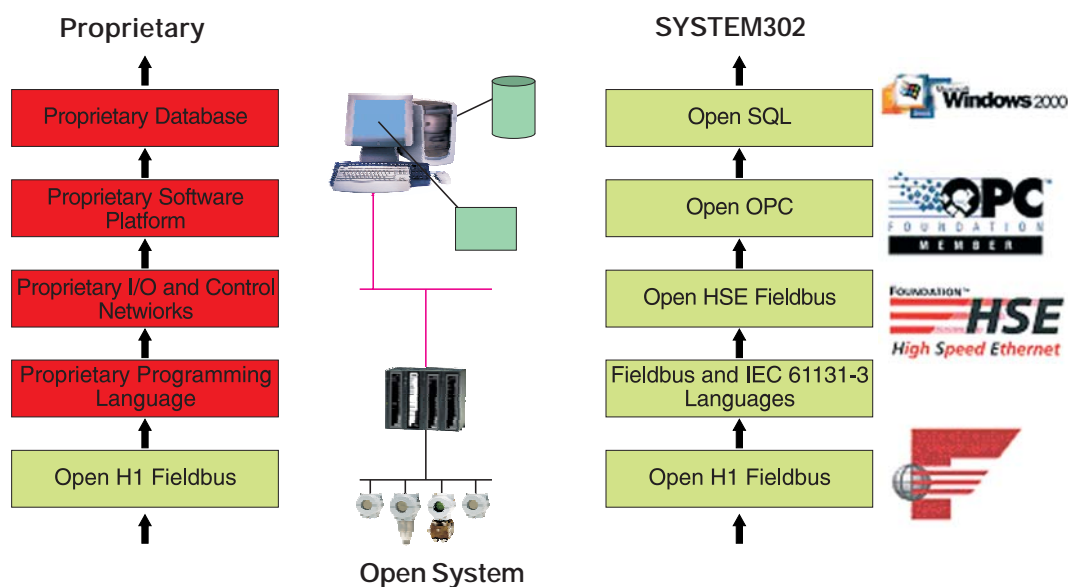

Built on OPC

3

Software and database interoperability
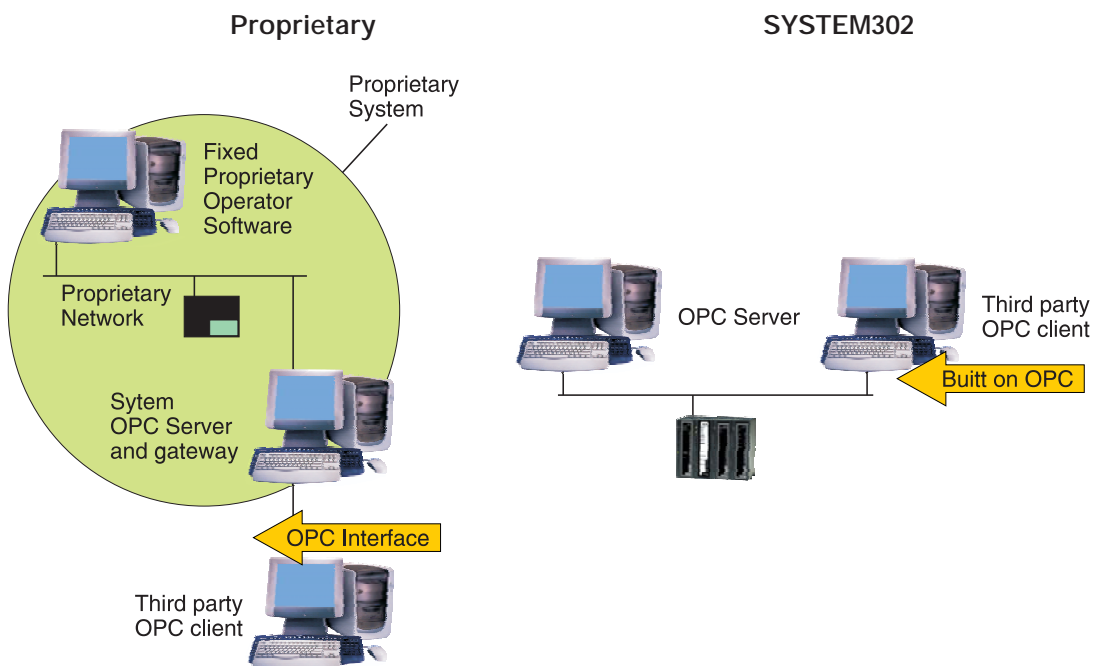
Just using an open field-level network such as FOUNDATION™ Fieldbus H1 does not make a system open. To fully benefit from plant information, the entire information architecture must be based on open standards from top to bottom including software and database interfaces. This is where other systems fall short and SYSTEM302 excels. The OPC interoperability makes it possible to select any software and any hardware from thousands of devices and applications available, opening up a large number of possible solutions. SYSTEM302 already enjoys more support from companion software than any DCS. Thus third-party software and hardware can be added on to automate and fine-tune every aspect of the plant.

Engineering	Maintenance	Operation	Auto Tuning	ERP	Advanced Control	Plant Information	Batch

OPC "Software backplane"

SYSTEM302 Harware	Shutdown System	Legacy DCS	Turbines & Compressors	Any Modbus	Legacy Protocol	Other Equipment

SYSTEM302 Information Architecture

The combination of Fieldbus networking and OPC software permits connection and tight integration of third-party components, software and subsystems. SYSTEM302 provides an unbroken chain of open technologies starting with FOUNDATION™ H1 networking at the field-level, HSE at the host-level, OPC for software interfaces, ODBC/SQL for databases, VBA for scripting and ActiveX for graphics objects.

Proprietary

- Proprietary Database
- Proprietary Software Platform
- Proprietary I/O and Control Netwiorks
- Proprietary Programming Language
- Open H1 Fieldbus

SYSTEM302

- Open SQL
- Open OPC
- Open HSE Fieldbus
- Fieldbus and IEC 61131-3 Languages
- Open H1 Fieldbus

Open System

Every software module in ProcessView, like every component in SYSTEM302, is designed to also be able to work as a stand-alone product or as part of some other system. Conversely, a third-party application can take the place of any application in ProcessView. For example, if a third-party historian is preferred it can be used in place of *TrendWorX* without having to replace other parts. Using popular and well-understood technologies, system maintenance becomes very easy. As compared to proprietary DCS, the dependency on costly after-sale support for SYSTEM302 is reduced since you are able to solve many problems yourself.

Freely select software applications

A modern control system needs more than just configuration and monitoring software, more than inflexible "closed" applications and inaccessible data associated with proprietary DCS.

Adding new applications for statistics, advanced control or other data processing from your preferred supplier to a DCS is difficult or even impossible due to its proprietary nature.

The SYSTEM302 software architecture is interoperable and very flexible. Because OPC is such a widely adopted specification among manufacturers of automation software for Windows, there is almost no limit to what can be done.

Through OPC, ProcessView seamlessly integrates with hundreds of applications from Smar and third-parties for sophisticated control and management of multi-product and multi-stream batch, ERP and supply-chain, MS Office, tuning, advanced multivariable control and optimization, Statistical Process Control (SPC), modeling simulation, inferential sensing and plant information systems.

These applications plug into SYSTEM302 without the need for custom drivers providing all the features previously found only in large DCS systems. Thus ProcessView integrates with very powerful homogenous software solutions.

Supports a multitude of devices and networks

As part of most systems, it is necessary to integrate third-party equipment being part of skids or package units, such as paper quality scanner, gas chromatographs, compressor controls, turbine controls, and emergency shutdown systems, to existing systems, such as legacy DCS.

Using OPC servers for the different hardware components you can easily connect hundreds of third-party PLCs, I/O Devices, legacy DCS Systems, and popular I/O bus interfaces, such as Profibus, Interbus, CAN bus and DeviceNet, to SYSTEM302. These OPC servers form a decentralized global database with universal access from ProcessView and all other OPC clients.

ProcessView in a single software displays data of all types from anywhere in the plant, through Fieldbus, conventional, legacy DCS and communication protocols. System-wide operation is thus possible from a "single dashboard". That means new, as well as old and third-party equipment can be operated from the same workstation. All clients in the system access the same servers eliminating inconsistencies. OPC is a convenient way to connect existing equipment to ProcessView in a plant retrofit scenario.

Migration and integration of data from old systems is made easy once OPC servers from third parties are developed for most DCS. ProcessView can thus replace dull consoles as a first step in the migration process.

Plug-'n'-Play ease of use

SYSTEM302 is completely tag-based, eliminating the need for mapping, cross-referencing and all worries about device and memory addresses associated with HMI in the past. The data in any server can be picked up simply by pointing and clicking in a universal tag browser without having to key in any tag or location. For example, if a function block is instantiated in the Syscon engineering tool, all of its parameters become available to ProcessView and other clients. There is no need to retype any tags, eliminating problems due to typographical errors.

Universal tag browser

Single integrated database

In SYSTEM302 data only exist in one place at a time in the server. If a parameter is set from one application in one workstation, that parameter will be displayed with this value in any application in any workstations eliminating inconsistencies. The parameter is known by the same name in all applications preventing confusion. That means once a tag is created it is known by the same name throughout the system. Similar as stated before, when a function block is instantiated in the Syscon engineering tool, the communication from the OPC server is automatically generated allowing all parameters to be accessed from ProcessView without having to re-enter data. When high availability is required, redundant OPC servers may be deployed.
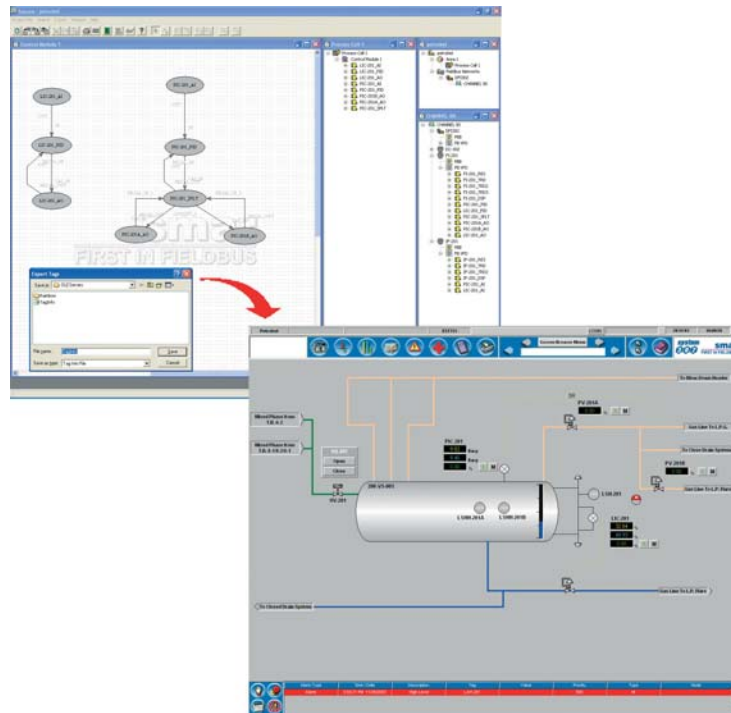
Based on leading open technologies

The extraordinary benefits, savings and ease of use in SYSTEM302 are made possible by correctly implementing not just one or two of the leading open technologies, but all of them. These technologies include OPC-DA for real-time data access; OPC-HDA for historical data access; OPC-A&E for alarm and event reporting; ActiveX graphics objects; database access through ODBC, SQL, ADO, OLE_DB, MSDE; VBA scripting and the Internet.

OPC is the technology at the core of ProcessView and it eliminates old driver problems such as all hardware and software features not being supported, version incompatibilities, and application conflicts. In addition, ProcessView provides network support and the reassurance of independent interoperability testing. OPC also eliminates the need for difficult API programming and, unlike DDE, allow multiple applications to simultaneously share the same server.

VBA is tightly integrated into ProcessView but for the most part there is no need to be familiar with VBA programming as most graphics can be configured by simple point and click. Only very sophisticated interactive pages, which bring the user through complex sequences, need VBA.

High availability

To ensure a high degree of availability, many components in the SYSTEM302 architecture, including ProcessView, implement redundancy. Previously, the extent of redundancy implemented in ProcessView could only be found in expensive DCS.
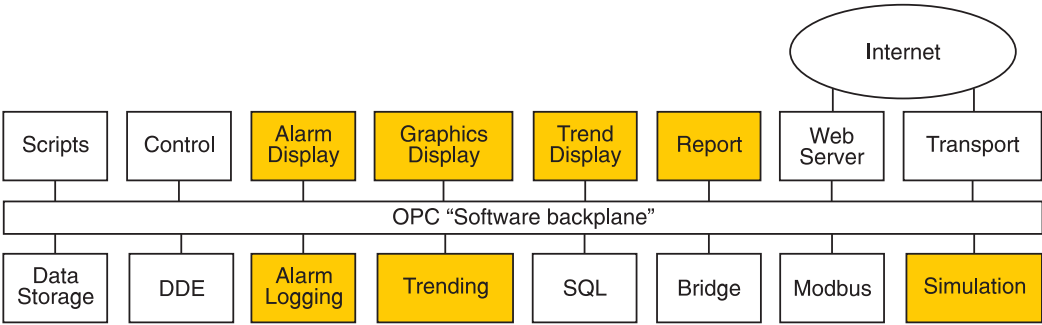
Ethernet is the medium for the host-level network carrying FOUNDATION™ HSE protocol for closed loop control and for DCOM used by OPC and other Windows functions. When redundancy is required, a pair of OPC servers can be employed. If one OPC server fails or cannot access data from the associated hardware, the secondary takes over. It is possible to use redundant OPC servers with singly or redundant hardware depending on the level of availability required.
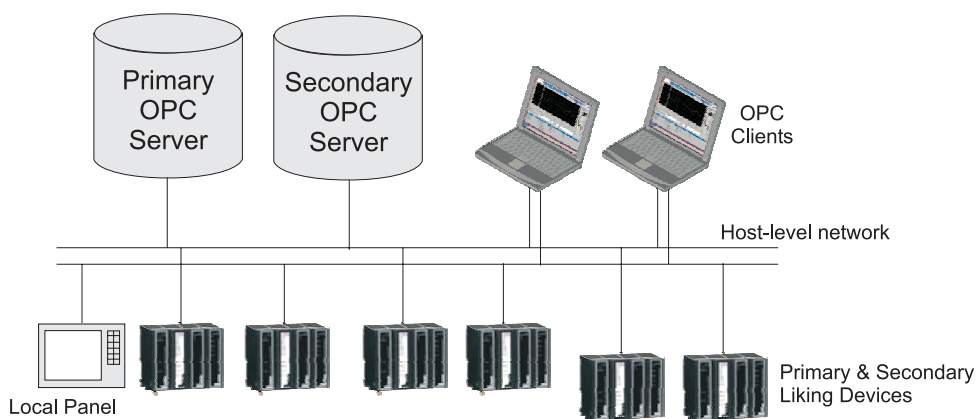
SYSTEM302 Network Architecture

Other measures can be taken to increase availability, such as use of industrial grade computers, RAID disk system, hot replaceable hard disks and power supply unit, extensive self-diagnostics.

ProcessView Architecture

ProcessView is a modular software consisting of standard and optional application modules. The standard applications handle graphics, alarms, trending and reporting as well as several utilities. Optional applications include SQL logging, OPC bridging, DDE and Modbus access, data storage, web server, and Internet transport, scripting and control. These applications can be mixed freely with third-party software. All applications plug into and share data over the OPC "software backplane". OPC is not a single centralized database. Part of it exists distributed across the computers in the system communicating using DCOM networking also the architecture can be redundant.

						Internet	
Scripts	Control	Alarm Display	Graphics Display	Trend Display	Report	Web Server	Transport
OPC "Software backplane"							
Data Storage	DDE	Alarm Logging	Trending	SQL	Bridge	Modbus	Simulation

ProcessView Software Architecture

Unlike other "client" software, ProcessView implements OPC the way it was supposed to be - direct without intermediate proprietary database mapping. ProcessView is completely based on the OPC software architecture. Some process visualization software retain a proprietary database relying on inefficient DDE technology, and only use OPC like a driver for this database requiring data mapping and renaming. ProcessView has completely abandoned the use of a proprietary database using OPC and accessing parameters directly, with the same name, without intermediate conversion. Therefore, with ProcessView one piece of information is consistently known by the same name throughout the entire system. This reduces errors and documentation work. Direct OPC access is a necessity in a Fieldbus based system such as SYSTEM302 because it would be impractical to map all the information in the field into a traditional database.

Proprietary   **SYSTEM302**
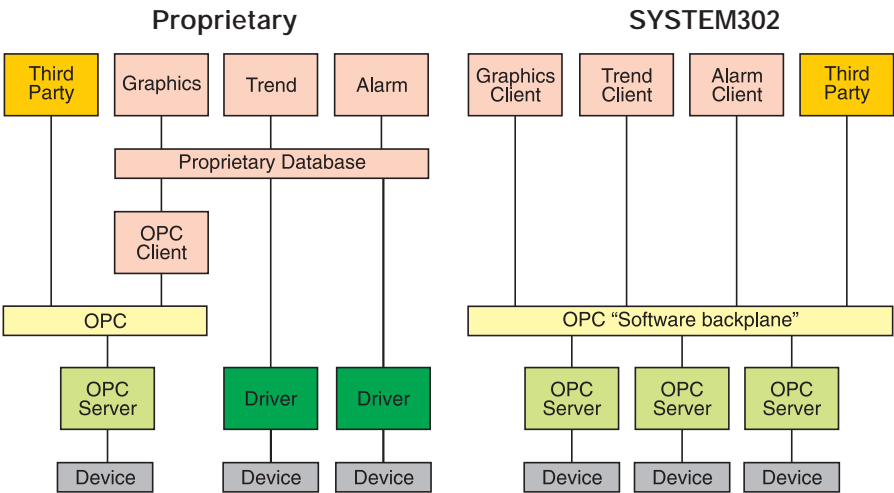
OPC-to-the-core

Enterprise Wide Connectivity

From SYSTEM302, information may be disseminated throughout the enterprise to the screens of supervisors and managers in a number of ways using ProcessView applications or third party software, to bridge the gap between control system and business applications. The open architecture makes real-time information quickly available because it is easy to get and interpret. It is easy to incorporate SYSTEM302 into the corporate IT-infrastructure allowing business applications to access plant data and collaborate eliminating the need for slow, tedious and error prone process of collecting and re-entering data manually.

A small-scale solution is a direct OPC link that can be used to bring data from the plant floor direct into MS-Office applications such as MS-Excel for freeform reports - without requiring an HMI.

A large-scale solution is to use MES (Manufacturing Execution System) software like plant historians and information systems, such as ApenTech InfoPlus.21 or OSI software PI system. This software come with OPC servers already available and in turn integrate with transaction-based ERP (Enterprise Resource Planning), such as SAP R/3, for which direct OPC connection is also possible.

Enterprise connectivity
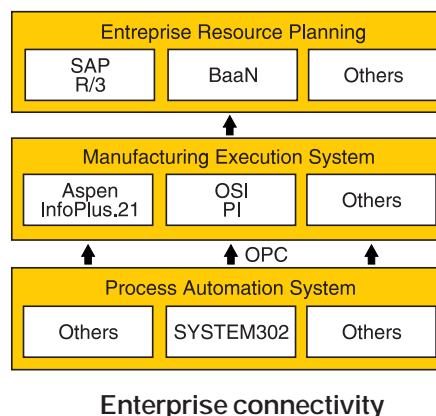
It should be noted that the enterprise information flow is logically modeled in hierarchical layers, where data is passed from control to execution and up to planning. These applications today typically execute on computers connected on the same physical Ethernet networking in a flat homogenous network architecture perhaps only separated by routers, not a mishmash of different technologies as was the case in the past.

Another possibility is the use of the ProcessView web server to make information available from any web browser on the Internet or corporate Intranet. Important process and diagnostic data can percolate up through every level of the enterprise over the corporate Intranet in real-time and be used to improve the bottom line of the company by improving response, reduce errors and overhead. Live production information can be used for planning in the business domain. Access over the Internet is also possible.

Operation

For ease of use ProcessView provides powerful graphics for freely design plant-specific process flow mimic graphics and standard operational displays including trending, alarms, and reports. ProcessView is modular having several applications running simultaneously. You can freely jump between displays, graphics and applications. ProcessView can be configured to interface to the user in other languages, to make menus and prompts easier to understand to those not fluent in English. It is possible to use an optional web server operation and monitor an application anywhere from a web browser.

Graphics

In the past, operator workstations were limited to a few colors on a black low-resolution screen. Creating dynamic animations, menus and action buttons was difficult. ProcessView takes full advantage of the Windows GUI allowing object oriented graphics to be designed in millions of colors in high-resolution and using standard Windows controls and existing OLE and ActiveX objects to unambiguously get the information across to the operators fast with a minimum of engineering. *GraphWorX* is a standard module within ProcessView that can be used for freely design graphics such as plant-specific process flow mimic and to create traditional hierarchical operational displays based on templates, whichever way the operators want it.
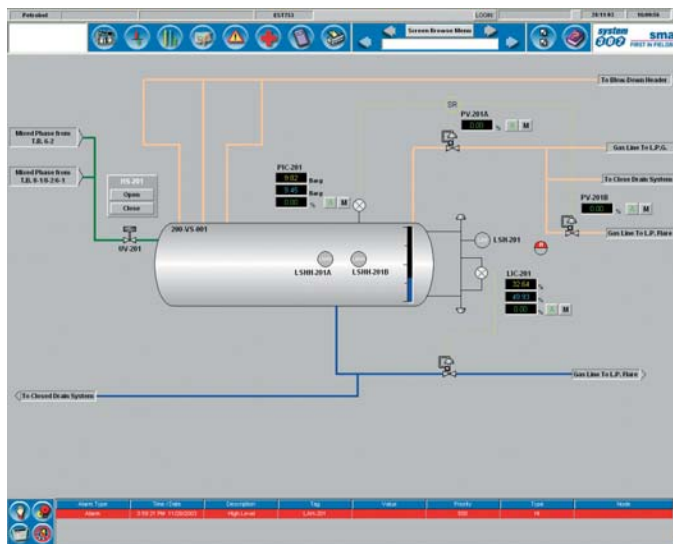
Process Flow Mimic Graphic

User-friendly operation

Graphics can be created without restraint and therefore designed in an easy way of use to the operators. For example, graphics can be designed to look like other existing systems in the plant, or to look like the system or control panel you are replacing. Process flow mimic graphics can provide a lifelike display of the process to graphically depict the actual process situation. *GraphWorX* permits many approaches in which graphics can be designed and animated: traditional P&ID style using ISA or SAMA symbols; 2D or 3D life-like graphics, or even a digital photo, whichever suits the operating philosophy of the plant best. Similarly, controls can be control panel-like buttons, switches, dials and gauges, Windows-style buttons, slides and text.

All kinds of static and fast dynamically animated shapes illustrate the process to the operators allowing them to quickly spot abnormal states. Process point values can be shown graphically as bargraph or other symbolic shapes for a quick at-a-glance overview and as numerical value for exact reading. All displays and graphics that show real-time data are continuously updated. If communication fails a reserved symbol is shown instead, flagging the problem to the operators. Fieldbus parameter status can be shown adjacent to the values. Shapes can dynamically change height/width size (bar/fill), location (slider), rotation (dial), disable (hide), color, flash, and be animated in any combination so as to represent level in a tank, a rotating stirrer, pump, fan or motor, or moving conveyor belt etc.

Operators can initiate control actions through familiar Windows push buttons, radio buttons, popup menus, and check boxes. Button (soft key) action includes loading a specific display, jumping back or forward, close or open a new window, close or open a child window in the existing window, write or toggle a value, hide or unhide objects, launch other applications or run VBA script. Multi-state parameters can be shown with different color and description for each state. Operators are able to easily access specific displays and graphics. Different levels of detail can be layered enabling automatic de-cluttering when zooming in on graphics.

Drawings, operating procedures, and other information can be incorporated directly into graphics. Trending and alarm summary may also be included in any graphic. The amount of displays and graphics is limited only by hard disk capacity.

Scripts and macros for sophisticated user interaction and application integration

Though a vast majority of functions are already provided by *GraphWorX* as standard functions, sophisticated macros that perform a sequence of steps or complex interactions with the user, other applications or databases, will require scripts. The popular Microsoft VBA is a scripting language tightly integrated into ProcessView. The scripts can be used to perform a series of functions initiated by a single operator action. Complex tasks can therefore be automated simplifying operation.

Easy to configure powerful process flow mimic

GraphWorX includes simple and powerful object-oriented graphics design tools in the same application that makes it easy for the system integrator to create user-friendly graphics for the operators during the engineering stage. Several people can work concurrently at different stations to create graphics. Toggle between runtime and configuration mode at the click of a button makes graphics easy to troubleshoot and saves valuable time. There are no separated graphics tools or database editors required. Static and animated color graphics may be designed freely. Toolbox includes lines, circles, rectangles, fills, arcs and text. Objects can be arranged in order, rotated, flipped and aligned. Vector-graphics shapes and bitmaps such as P&ID and drawings in various formats from other applications may be copied, pasted, and imported.

No programming knowledge is required even to achieve advanced animation. No programming, no compiling and no debugging. *GraphWorX* has direct OPC server access and uses global tags that are unique throughout the system. Using built-in expressions, calculation and processing can be done on tags before display, including arithmetic, bit masking, relational, logic and advanced math functions. There are no databases in the workstations hence inconsistencies are avoided. Graphics editing is easy assisted by grid, copy, cut, paste, duplicate, delete, multiple levels of undo and redo, replace tags, labels, and file names. Graphics can be exported to HTML format use in a web server for web browser access.

Container for powerful ActiveX and OLE objects

In the past animated graphics components where completely proprietary, once created for one application they could not be used in another. *GraphWorX* is an OLE container making it possible to reuse software components from other suppliers. Thousands of ready-made ActiveX and OLE objects with sophisticated animation, powerful user action, and several options for great flexibility are available from third parties that can be dragged straight into the graphics. Insert third-party components to enhance and extend ProcessView and link them to tags tailoring ProcessView to specific project needs. Enhance the operator interface with slider, spin button, scrollbar, calendar, clock, hierarchical browser tree, toolbar, progress bar, status bar, list box, combo box, grid (spreadsheet/table), tabs. Several controls included and optional with combine ActiveX technology with OPC so that during configuration an OPC universal browser is used to connect the control to the data source by pointing and clicking. For example, ActiveX for alarm summary viewer and trend viewer are included. The optional ActiveX toolbox provides gauges, switch, sliders, vessels and a scheduler to perform tasks at a specified time or optionally you can create your own ActiveX using VBA or *ToolWorX.*

Save time using reusable graphics

Whole screens and symbols may be saved as reusable graphics templates that can be pasted into graphics to save time, reduce error and improve consistency as well as aesthetics. It is also possible to draw faceplates, detail screens, and processing equipment only once and use "alias" to reuse it for many control loops and displays.

Symbol library

GraphWorX includes an extensive library of reusable static and dynamically animated 2D and 3D symbol templates to graphically represent industrial processing equipment. Several symbols such as pipe and duct segments, tanks and other vessels, miscellaneous processing equipment, valves and instruments, computers, motors and pumps, buttons and switches, as well as Smar and SYSTEM302 specific are available in a library. An optional symbol library includes thousands of additional crafted symbols.

The user can create and edit graphic objects as symbols, build and maintain a personalized library. There is no limit to the number of Symbol Library files you can create, or to the number of symbols that can exist within each file.
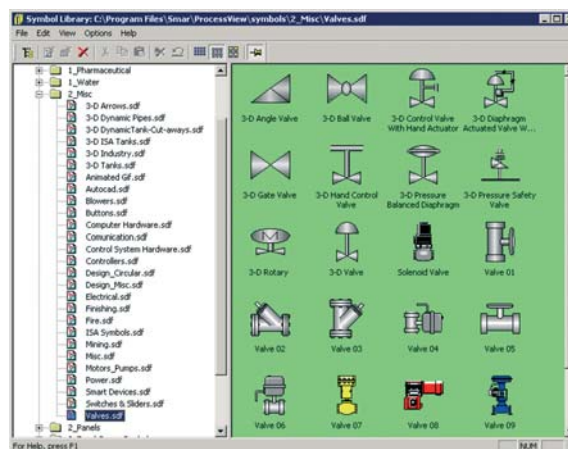
**Library containing Smar and SYSTEM302 related symbols**

Embedded VBA programming and debugging

VBA is the scripting language for ProcessView embedded in the *GraphWorX* development environment and, when used, opens up nearly unlimited ways for operator interface to be extended and tailored for the plant needs. Other systems use proprietary languages to create macros and batch sequence logic, while ProcessView uses the popular VBA scripting language also found in many business and industrial applications to create powerful macros and to automate functions. Unlike other applications that maintain proprietary "macro" script language offering only a programming interface to VBA, limiting its capabilities and increasing complexity, ProcessView has VBA embedded. The VBA in *GraphWorX* is the same as in Excel and Access and other Microsoft applications. VBA connects to *GraphWorX* objects, ActiveX and to other OLE applications such as Excel, Access and more.

VBA is an industry standard and powerful programming environment. It is the fastest and easiest way to create and customize Microsoft Windows applications.

VBA may be used for complex functions, such as to translate data formats, move data, and perform upload/download data. VBA can be used to create toolbars; wizards and special functions to fine-tune and customize the user interface to suit the operators. Batch control is another case where VBA can be used for recipes including functions to download setpoints and set-up parameters, and to execute sequences.

ProcessView comes with this powerful editor for forms and scripts.
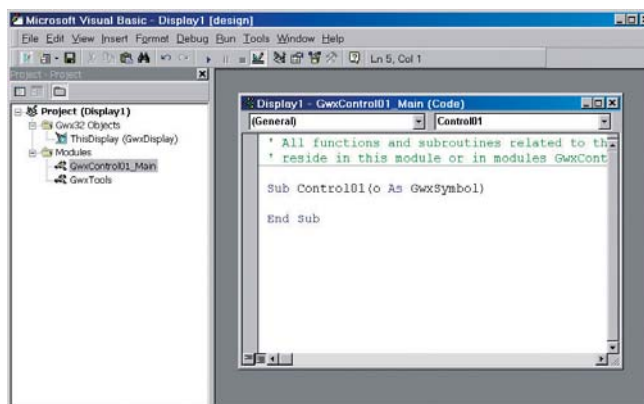
Embedded VBA Editor

SYSTEM302 display

Special faceplates, displays and symbols have been designed to let SYSTEM302 make full use of Fieldbus features, such as quality and limit condition status, scaling and block mode. Traditional "DCS-style" hierarchical displays for plant overview, faceplate groups and details, and other common displays can be provided complete and tested using consistent color schemes. Existing or customized display formats can be used.

In addition to standard display and plant-specific process flow mimic graphics, any form of graphics can be configured including screens to show sequence status, schedules and profiles, messages and hints, system overview and individual device details.

Overview display

Overview displays contained condensed process information, allowing "at a glance" check on status of the entire plant and serving as a good starting point for navigation to underlying groups etc.

Faceplates and group display

From the faceplate group display the operator may monitor the process and initiate control functions using familiar faceplate controls. Individual faceplates can be used as popup in a graphic or several together in a group display. Faceplates show dynamic process and status information about a single control loop and permit an operator to change control parameter values or mode for the loop. Faceplates display tag, descriptor, values with quality (validity) and limit status, unit, mode, alarm status, discrete states and bargraphs. It is possible to change mode, output, discrete states, setpoint and issue commands from these faceplates. Existing or customized faceplate formats for each point type can be used. Typically six faceplates per group display can be accommodated.
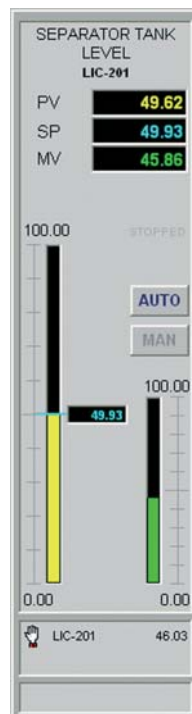
Loop detail tuning display

Loop detail displays provide more dynamic and configured variables associated with a loop such as scaling, tuning, alarm limits and dead-band. A separate format suited to each type may be freely configured. Persistent real-time trending in loop tuning is provided as aid.
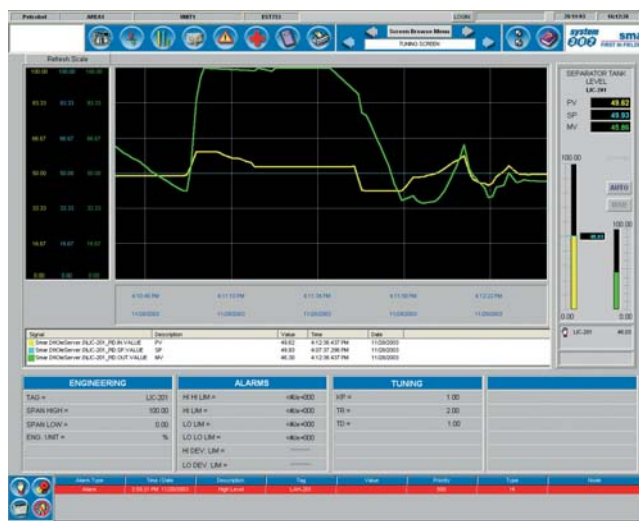
SYSTEM302 PID Detail Tuning Display

Trend

Trend display provides a visualization of the process behavior over time. *TrendWorX* is a standard module in ProcessView built on the distributed OPC-HDA client-server architecture that makes it interoperable with other applications based on the same specification with plug-n-play ease of use. Therefore *TrendWorX* can be used in conjunction with other OPC HDA clients and servers. *TrendWorX* has a scalable architecture starting with historical logging to MS Access for small to medium-scale systems to MS-SQL server database for large-scale systems. *TrendWorX* allows real-time acquisition of thousands of data points from just about any source for trending, historical data logging, reporting, and analysis.
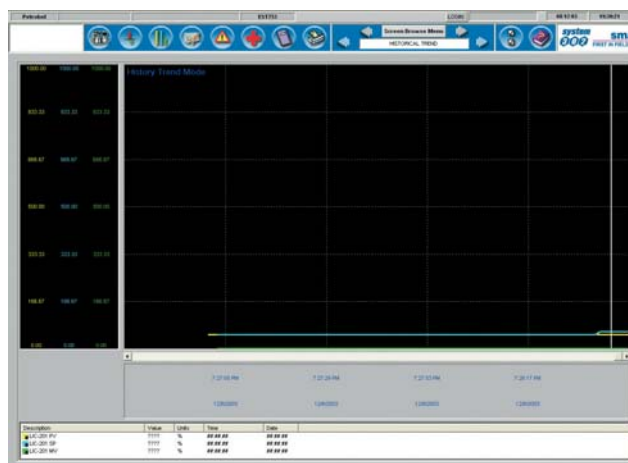

SYSTEM302 Historical Trend Display

Other TrendWorX features include:

- Hot database switching;
- Database redundancy/merging;
- Running statistics support;
- Microsoft Data Engine (MSDE) support;
- Backup historical data for long-term historical data archiving.

Trend architecture

TrendWorX has scalable client-server architecture with a distributed trend subsystem for single or multiple users. Historical trending is done to a historian integrated through ADO and OLE_DB technology to a MS Access, MS-SQL server or Oracle database engine. No SQL or database knowledge is required because the configuration is completely graphical. The *Trend View ActiveX* chart in turn accesses the information from the historian using OPC-HDA. Real-time data can be trended at the same time as historical data.
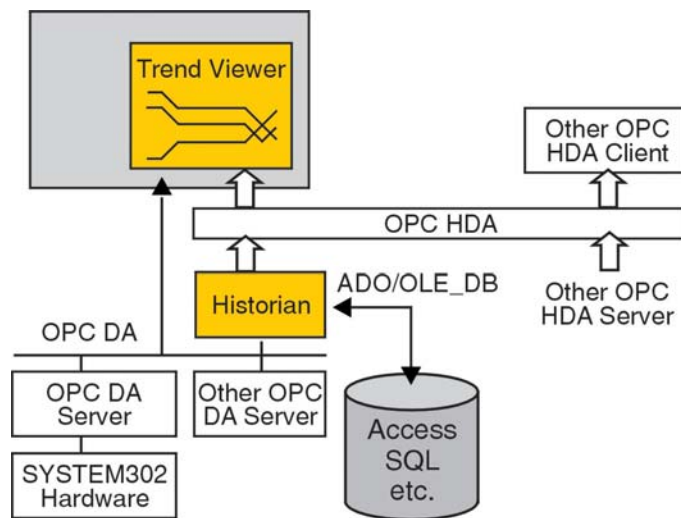
Client-Server Historian Architecture

Multiple *Trend View ActixeX* charts and other OPC-HDA clients can simultaneously access the data from one or more ProcessView or third-party HDA servers in the same computer or servers distributed over the network. Unlike proprietary systems where third-party applications cannot access the data or complex API programming is required, SYSTEM302 is completely open.

Trend viewing

Trend viewing can be done in three modes combined in the same chart depending on requirements:

- Real-time data direct from an OPC-DA server only while the screen is active;
- Real-time data direct from an OPC-DA server with persistent background buffering even while screen is temporarily hidden;
- Historical data from OPC-HDA server logged continuously allowing full data playback of past values.
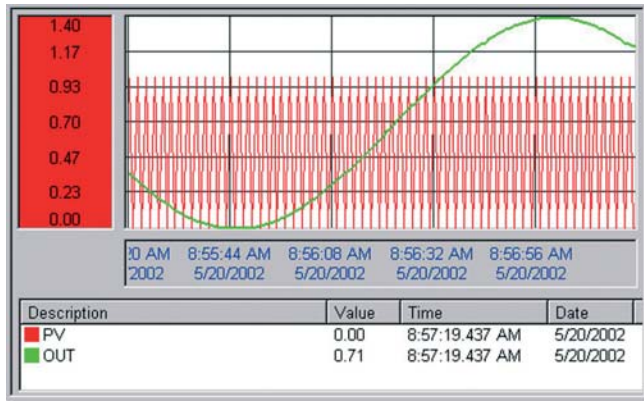
ProcessView

Trend Viewer ActiveX Chart

Real-time trend viewing and historical replay is done from the *Trend Viewer ActiveX* that is typically dropped into standard *GraphWorX* displays or plant-specific process flow mimic graphics, or any third-party ActiveX container. For pure standalone trending applications the *Trend Viewer ActiveX* is dropped into *TrendWorX* without the need for other modules. A *Trend Viewer ActiveX* chart can simultaneously display trends from one or many HDA servers, ProcessView or third-party servers, as well as real-time data direct from any OPC-DA server. For persistent real-time and historical trending, the data collection continues even when the display is not active. The *Trend Viewer ActiveX* can be customized freely to suit the application and operators.

The user can connect signals to pens, which are coming from an OPC server or are the result of a calculated expression to show the real time data. Configure pens to display history data and compare the results from different days and runs, at the same time. For easy comparison each pen is represented by a different color, tag and unit. Several trend display formats are supported, such as time-based, X-Y plots, Logarithmic plot, bar type, strip chart and the new trend type, the circular chart.

The user can set the levels at which alarm lines will be drawn into the trend if desired.

Trend Reports

TrendWorX has the capability to log data to a relational database. In addition to the standard tools available for accessing these data, *TrendWorX* has built in capability for historical data utilities and reporting.

The user can automatically send data to Excel, text files or Access/SQL database. Historical data may be exported to Excel and other applications to generate reports and charts.

Reports can be configured to execute immediately, one time, periodically or when an event occurs. That is, the report is configured to run as soon as possible, or at a desired time and date for example. Event based reports provide finer control over timing of report execution.
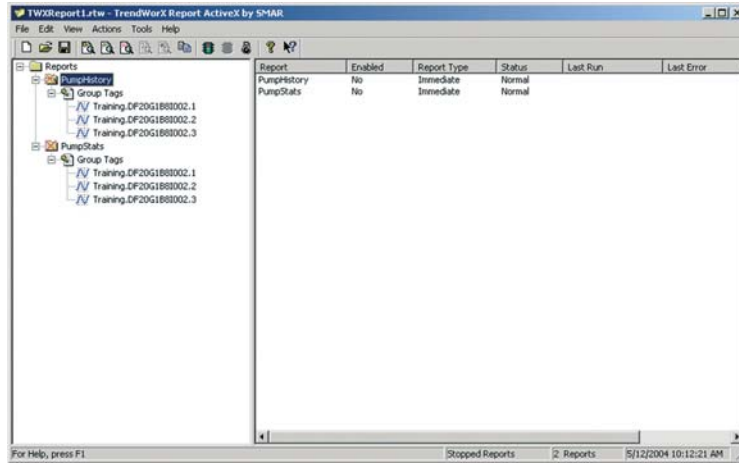
System supports report format generation using a conversational, fill-in-the-blanks approach. Any variable in the system may be included in a report. It is possible to activate a report on demand, time or event. Reports may be displayed on a screen as well as printed on a report printer.
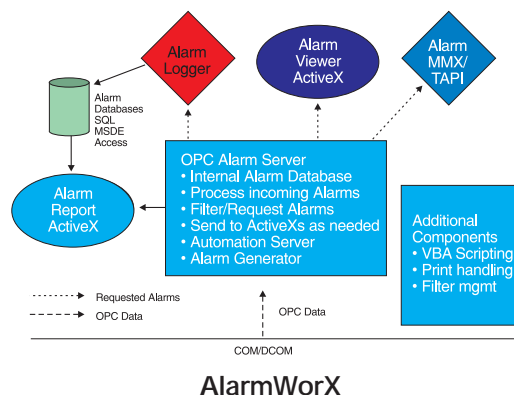
Alarms

Alarms are summarized with all pertinent information such as tag, priority, type, group, descriptor and time stamp. They may be acknowledged from any display and be configured for printing. Alarm summary may be sorted and be several pages long.

Process and system alarms may be annunciated audibly and displayed, and may be stored in history files. Alarms may have different priorities assigned. It is possible to assign alarm groups. Annunciation of an alarm condition at any process variable field input occurs within 2 seconds. Each alarm and change log history file entry contains the time and date of occurrence, tag, descriptor, the value or state, and the type of event.

AlarmWorX is a distributed enterprise-wide alarm and events management system. *AlarmWorX* is the first OPC compliant alarming software based on the new OPC Alarm & Events 1.0 specification. It includes powerful alarm detection, sorting, filtering, viewing, logging, Alarm Tag Browser and much more.

Alarm Configuration is easy with the Alarm/Event Configuration Explorer. The Configurator uses the familiar Windows Explorer metaphor with a hierarchical tree control and a combination of list and form views relating to the selected item in the tree. Alarm configurations are saved to an Access or SQL database. No database knowledge is required due to the graphical interface.
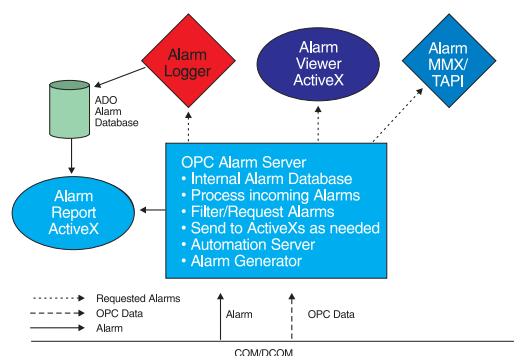

AlarmWorX

ProcessView

Several time saving ActiveX Controls are provided with *AlarmWorX,* including the *Alarm Viewer ActiveX* and *Alarm Reports ActiveX.* The alarm ActiveX controls can be embedded into the *AlarmWorX Container,* GraphWorX, Visual Basic, HTML Internet/Intranet based WEB pages or other third party ActiveX containers.

The *AlarmWorX* logger can capture alarms to Access, MS SQL or Oracle databases or to a redundant set of printers. Create alarm reports and calculations with Microsoft's built in VBA scripting language. Alarm calculations can be performed on individual tags or groups of tags.

Advanced OPC alarm and event architecture

AlarmWorX is based on the OPC Alarm & Events specifications. The interfaces allow more modular implementation. The events that arrive at the client are informational text indicating that an actor performed an operation on a target, and are related to an alarm or condition. Conditions are basically defined as having single active and acknowledge bits. The conditions the client subscribes to are assumed to have names that will be reported to the client. This provides a possible link to data access and also can be a filter criteria.


OPC Alarm & Events

Alarm logging

The *AlarmWorX* Logger provides a permanent copy of alarm and event notifications produced by any OPC Alarm & Events Server, including the *AlarmWorX Server.* The alarm and event data may be stored in an OLE-DB or ODBC database and/or sent to a printer.

The *Logger* reads its configuration information from a Microsoft Access Database file during runtime to determine what alarm and events to log and where to log them. A single Microsoft Access Database file (mdb file) can contain multiple named configurations to be run by one or more nodes on a network. A single node can also run multiple configurations simultaneously.
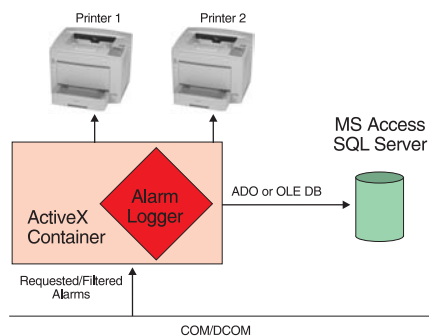

Alarm Logger Service

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Alarm reporting

The *AlarmWorX* Report allows reporting (user configured or pre-configured) and graphing of alarms. The source of the Alarm data is alarms previously logged by the *Alarm Logger.* The *Alarm Report* is an ActiveX, allowing it to be placed in any ActiveX container application, including *GraphWorX*, VB or a web page.

AlarmWorX Report ActiveX
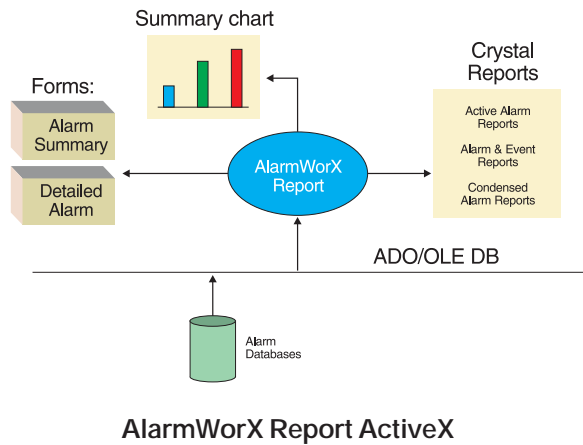
The user can connect to the data source and indicate the parameters, select which columns to include in the report as well as indicating the order of their appearance. The Report ActiveX allows the user to sort the alarms gathered for the report according to the pre-configured data types involved in the report. Besides sorting data by type, the user can also have data listed in an ascending or descending order. The user is able to select tags as filtering criteria. Customize the grid appearance and the chart type that will be generated from the report data.
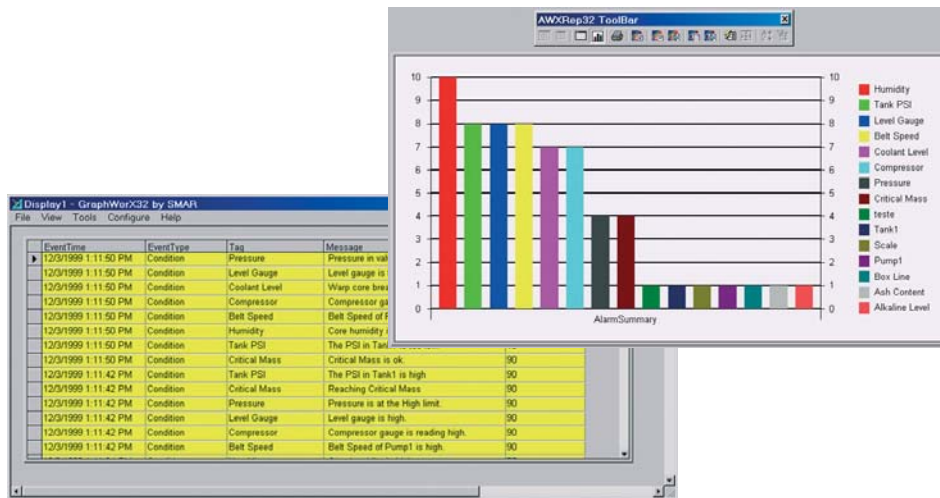

Alarm Report

Alarm analysis

Track events over days, weeks, months, years. *AlarmWorX* analyzes the alarms and shows the ones which occur most frequently. Pareto charts, shift reports, historical trends, daily reports and more are all standard. Export alarm data as ASCII text or in an ODBC compatible open database format.

Multimedia advanced annunciation

The advanced alarm annunciation feature frees up operators, while they don't have to constantly stand by and watch alarm panels. Send notifications only to on-duty personnel using the built-in scheduling mechanism. Create sophisticated (yet easy to build) work schedules with vacation times, re-occurring patterns and more.
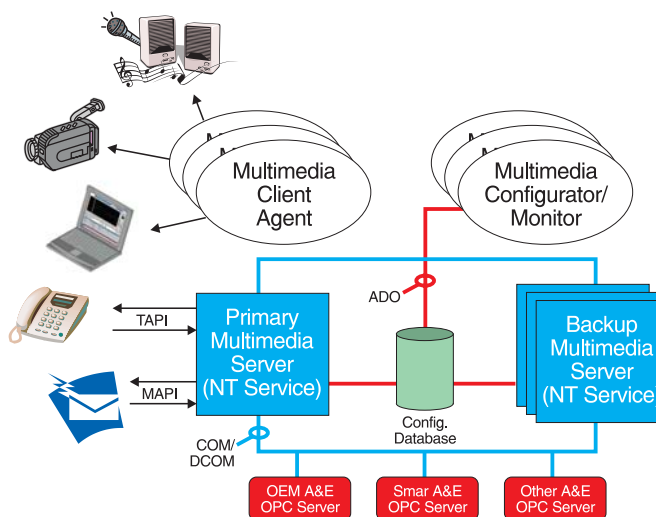

Add-on Components

The *AlarmWorX* Configurator allows you to configure alarms using several different media to notify anyone, anywhere, of an occurring alarm. *AlarmWorX* Multimedia is an option of *AlarmWorX* that provides OPC-compliant multimedia technology for remote alarm notification. Various "agents" are provided, including:

- Paging (including SMS/TAP support): deliver alarms not only to numeric pagers, but also to alphanumeric and even two-way pagers. Use the templates provided out-of-the-box, or configure your own message formats to send the information you need to the handy remote devices. Supports not only the TAP paging protocol standard, but also the newer SMS paging services for universal worldwide support.

- Wireless two-way paging: Using only a modem, *AlarmWorX* will relay the alarm text, as well as the value, to alphanumeric pagers. Using the integrated scheduler, *AlarmWorX* notifies multiple people having different work schedules.

- Telephone: *AlarmWorX* can act as an alarm "voice mail" system using standard telephony technology. Configure *AlarmWorX* to automatically dial out, or call into the voice mail system. Use any touch-tone phone, control playback, listen to messages, acknowledge alarms and receive live information.

- E-mail: *AlarmWorX* is MAPI (Mail API) compliant. Simply install e-mail software on the same node where *AlarmWorX* is installed and wait for the alarm messages to be sent to you E-mail.

- Fax: Stay informed of your alarms and events via FAX. The *AlarmWorx Multimedia Fax Agent* delivers your alarm messages to remote fax machines. It can even send an optional cover page, so recipients know the urgency of the message.

- Voice annunciation of alarms via text-to-speech or recorded .wav files: *AlarmWorX* speaks to you announcing your alarms and events utilizing digitized CD quality sound. Simply connect to your existing building public address system using an off the shelf PC sound card. A set of standard sound effects, sirens, bells, whistles, tones, horns, and more are included. Record as many of your own messages as you want using the built-in recording studio functions.

- MS Instant Messaging, Pop-up Web Pages: Alarm Messages can even be delivered using the latest Internet technologies. Receive MS Instant Messages, or have an HTML Web page pop-up on your screen whenever a critical problem occurs.

- Computer screen marquee: *AlarmWorX Multimedia* can send alarm and event messages to external scrolling marquees. There's also a software scrolling marquee, permitting your important messages to scroll across the screen of a PC, either local or someone on the network.

How AlarmWorX Multimedia Works

The figure below provides an overview of how *AlarmWorX Multimedia* enables you to send and receive alarms using various multimedia agents.
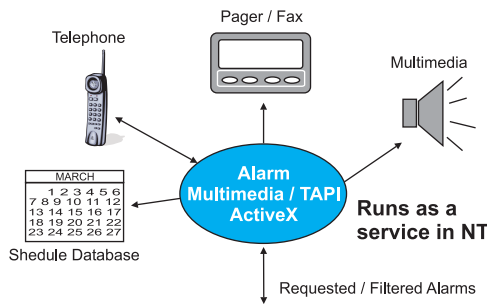
The *AlarmWorX Multimedia Configurator* is a database with a user interface that allows you to configure alarms, alarm action sets, multimedia agents, and alarm acknowledgement codes. You can also use the *Multimedia Configurator* to create subscriptions to OPC Alarm and Event (AE) servers. In addition, you can configure schedules and destinations for alarm notification messages.

Project Management and Deployment

ProcessView contains numerous applications with multiple components, requiring a well-trained user in order to successfully create, integrate, deploy, and manage projects. Each of these components requires complex setup of many different types of configuration files, databases, and OPC servers, as well as runtime and security settings. To simplify the management and deployment of ProcessView applications, *ProjectWorX* has been introduced: a configurator that integrates all ProcessView applications into a single, easy-to-manage format.

ProjectWorX provides unmatched productivity, deployment and collaboration capabilities to ease project development. *ProjectWorX* is designed to aid systems integrators and users in the creation, management and deployment of their projects. Projects consisting of graphics screens, alarms, trends, scripts, OPC servers and much more can be organized into separated projects, or packed into a single, compressed file, or saved for use in other projects. The Project Bundler utility allows entire projects to be packed and deployed to other local or remote computers. When a project is "unpacked," the project directories are completely reconstructed on the target computer and your application is up and running, saving on deployment costs.
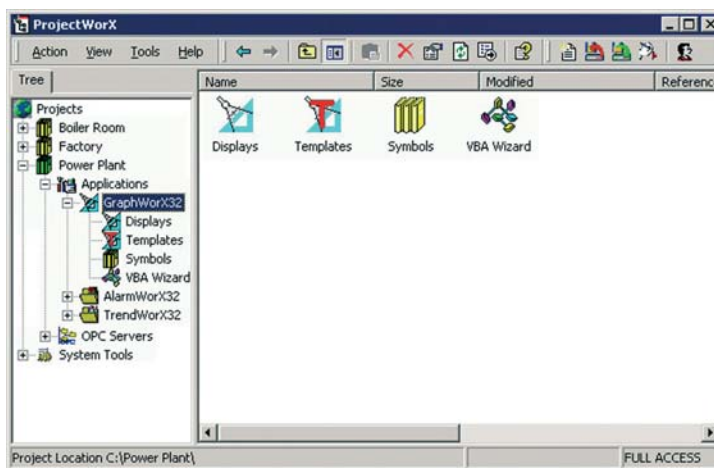

ProjectWorX makes it easy to search for and replace machine names and OPC tags throughout all project files using a global find/replace utility.

ProjectWorX uses Microsoft® Visual SourceSafe®, allowing several people to collaborate on a projects simultaneously, configuring security settings to password-protect projects, and providing back up projects. This software application can also help meet FDA and other regulations by providing a log of development actions.

Multi-tasking and Multi-threading Environment

ScriptWorX is a powerful application that allows the creation and management of Visual Basic for Applications (VBA) 6.0 scripts. It coordinates the successful execution of user defined VBA scripts, allowing you to create custom solutions for those special niche project needs. *ScriptWorX* unique multi-tasking, multi-processor environment allows multiple scripts to run concurrently. *ScriptWorX* takes maximum advantage of VBA 6.0 multi-tasking and multi-threading capabilities. Simultaneously perform calculations, manage databases, and execute any operation available in the VBA language to access reports or perform recipe operations.

As with all Smar products built on the OPC-To-The-Core technology, *ScriptWorX* is an OPC Data Access client application. That means it can easily plug-n-play not only with Smar servers and components, but other 3rd-Party hardware interface drivers and software as well.

OPC Data Access points can serve as an "Event Trigger" for scripts. For example, have a script run whenever a digital point turns on or off; build complex expressions combining multiple OPC data points together to create versatile script triggers. Combined with alarm filters, this powerful tool solves even the toughest project demands.
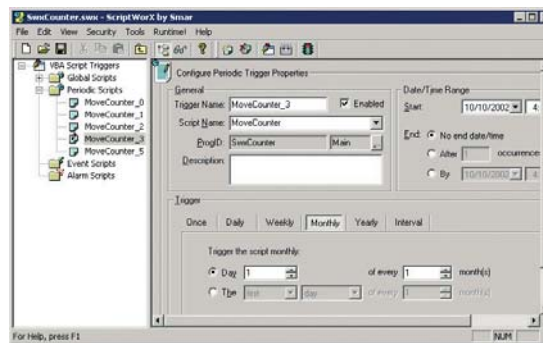
A built in Script Monitor function provides tuning and analysis of script execution.

ScriptWorX also comes with a powerful *Script Wizard* function that aids in the code creation of commonly used scripts. It helps in creating a direct connection, for example, to OPC Servers, permitting your VBA code to read and write directly to data points. The Script Wizard can also automatically generate code to interface with *AlarmWorX, GraphWorX*, and *TrendWorX* components.

Because the scripting is Microsoft's Visual Basic for Applications 6.0, a extended set of development and coding tools are available to the user, such as setting breakpoints, stepping through the execution of programs line-by-line, color-coded comments and keywords, and an extensive help and example file system. Easily tie into Batch, MES, MRP or corporate systems, integrating factory floor OPC information with such systems as Baan, SAP, Microsoft's SQL 7.0, Access and Oracle.

Web browser access

WebHMI is a Thin Client Web solution that enables standard Web browsers, such as Internet Explorer and Netscape Navigator, for use as real-time operator interfaces to manufacturing and factory floor applications. Based on ActiveX technology, *WebHMI* provides you with a powerful and versatile approach to using the same standard HMI (Human Machine Interface) components included in ProcessView.

WebHMI delivers industry-standard, real-time OPC (OLE for Process Control) information. *WebHMI* likewise delivers fast, worldwide graphical operator visualization, trending and alarming information - both real-time and historical - and HTML-based reports.

Since *WebHMI* Web components are packaged in standard Microsoft .cab files (or in the case of Netscape are referenced by .dpl files), your server and clients can be located anywhere. Similarly, you can store .cab or .dpl files anywhere on your network. Installed and resident on one or more *WebHMI* servers, these components (e.g., *GraphWorX*, *TrendWorX*, or *AlarmWorX*) are delivered automatically, quickly, and "in the background" to a browser on the client-side machine. Since WebHMI delivers the necessary components required for performing HMI and SCADA functions (e.g., building control, manufacturing, and process monitoring), it is not necessary to have any Smar products installed on the client machines.

Ultimately, *WebHMI* turns a Web browser into an OPC client when the browser views Web pages located on any *WebHMI* server. As mentioned above, standard browsers such as Internet Explorer and Netscape are used to view Web pages from the *WebHMI* server. Once a WebHMI site is up and running, you can instantly create multiple browser stations by having your clients launch the Web browser and visit the appropriate page.
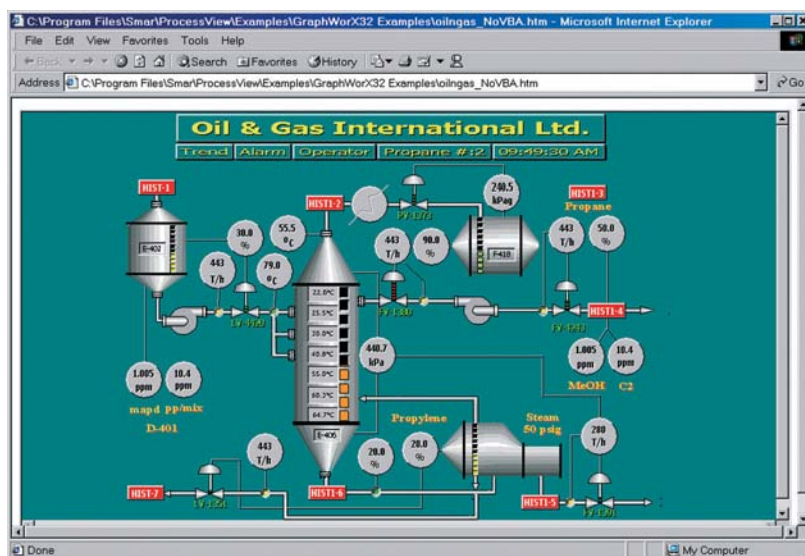
Web Server

WebHMI provides OPC and visualization information from any ProcessView OPC based product to any computer running Microsoft's Internet Explorer Browser. Perform remote browsing over a corporate Intranet or Internet. Based completely on Microsoft DNA architecture, *WebHMI* uses ActiveX and DCOM technology to provide Web based visualization. Unlike other similar applications which use Java or non-Microsoft technology, *WebHMI* is exclusively designed from the ground up to take advantage of Windows NT, 95/98, Win 2000 and Windows CE.

View over the Internet or Intranet traditional operator real-time displays with animation, live data trends, reports and alarms. Integrate your HMI application with traditional Microsoft Browsers to perform remote and low cost monitoring of key manufacturing information.

Real-time networking and communications with factory floor information is provided via standard Microsoft DCOM and the industry OLE for Process Control (OPC) standard.
WebHMI not only allows the viewing of display information but also provides for security, data entry and real-time interaction with your application.

Portable and local operation

The first suite of powerful automation software with scalable architecture for running HMI on Windows powered Pocket PCs and Windows CE devices. Now you can have your alarms, animated graphics, and trend data information at your fingertips wherever you may roam.

It is possible to harness the power of ProcessView from handheld PCs. From any hardware running Windows CE or the Pocket PC 2002 operating system, users have access to live HMI displays, alarms, trend information and more. Also included with the suite of applications is the Communication Bridge enabling each of the Pocket ProcessView components over your LAN, WAN, Internet/Intranet or wireless communications to connect with your main ProcessView system.

Multilingual operation

ProcessView supports language aliasing with automatic range and value scaling, as well as unit conversions, formatting, and font selection, provided by the Smar Language Configurator.

The Language Configurator provides Czech, Dutch, English, French, German, Italian, Russian, and Spanish as default languages. You can add a new language to your configuration database. You can also add language subsets, which allow you to create an additional configuration to be used with a language. You can apply a language with a translation other than the default for that language. The purpose of language subsets is to provide different measurement systems for a selected language translation.

Trend historian (HDA server)

TrendWorX has the distinction of being the first OPC compliant trending product to be not only an OPC Data Access client application, but also be an OPC Historical Data Access (HDA) server. That means it can easily plug-n-play not only with Smar servers and trend components, but other 3rd-Party hardware interface drivers and trending software as well.

Historical data logging enables replay of data in the *Trend Viewer ActiveX* or any other third party OPC-HDA client.

The *Trend Logger* can use a database of a specific file size. When the Logger reaches the maximum size, it removes older data from the database. Also, the *Trend Logger* can be configured to create a new database every week or month, for example. This way, data stored in the past will be preserved.
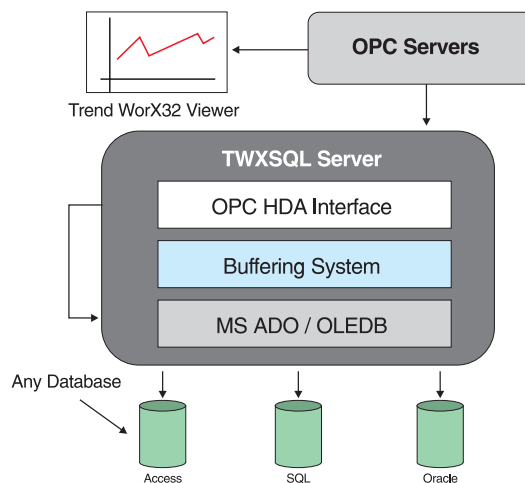
Size HDA server logging capacity to your requirements

MS Access is a file-based database whereas MS SQL Server, MSDE and Oracle are server-based databases. The underlying difference here is that MS Access can handle a small to normal load of tags to data log, while SQL Server and MSDE can handle a much larger load of tags.

You can use Access for less than 1,000 tags and rate of 5 seconds or slower for data collection rates and not continuous data logging. For larger loads, MS SQL Server or MSDE is the only choice. SQL server can utilize hardware resources to yield great performance, even in a multi-use environment and has enterprise architecture. Oracle has been shown to have lesser capability than MS SQL Server.

Database Backup and Maintenance is a key decision factor among database applications. Users require backing up their historical data, doing scheduled (periodic) maintenance tasks on the database and defragmenting their database after extended periods of use. MS Access does not offer most of the above while client database connections are open. In contrast, MS SQL Server as well as MSDE is a self-maintainable database engine, which can accommodate scheduled backups, periodic maintenance tasks, defragmentation and much more. MS SQL Server and MSDE databases do not require stopping all database activity in order to perform these tasks. This is not the case with MS Access however.

Large-scale trend SQL (data logger) client-server historian

The Smar *TrendWorX SQL Server, TWXSQLSvr*, can be deployed on the same PC where the database resides or on a different PC networked to the database. In addition, the end user can have multiple PC's where *TWXSQLSvr* is deployed, data logging to the same (or different) databases therefore providing a much more scalable and distributed data logging architecture.

A key feature of *TWXSQLSvr* is its ability to handle data logging and data retrieval with respect to multiple types of databases concurrently, therefore enabling the end user to develop a very cost effective data logging and data retrieval application.

Alarm and trend server management

The ProcessView Tray Utility is an application that appears in the lower right hand corner of your Windows Task Bar. ProcessView *Tray* is a convenient tool that provides a way to either manually or automatically start and/or stop ProcessView applications such as *GraphWorX, AlarmWorX Server, TrendWorX Logger* and others.

You can completely configure ProcessView *Tray* to determine which applications you want to start with ProcessView *Tray.* You can specify in which order the applications are supposed to start and also put in delay times in seconds.

Data Marshalling

DataWorX is an OPC compliant client and server application providing multiple functionality.

DataWorX is the only software that allows multi-level OPC data redundancy. Connect any number of OPC Servers to an OPC process visualization software or any OPC Client. Acting as a bridge between various OPC Servers, *DataWorX* provides different OPC Data Channels. Once multiple IO channels are established between PCs, *DataWorX* will switch between a primary PC (node) and a backup PC on the network.

DataWorX functionality includes: OPC Server to OPC Server Data Bridging, OPC Aggregation and mission critical OPC-Based Redundancy.

DataWorX offers unique Data Bridging technology allowing the connectivity of any OPC Server to any other OPC Server, providing Plug and Play interoperability. For example, connect a legacy DCS to SYSTEM302 and share data easily and seamlessly. Data can also be manipulated through expressions and calculations before being transferred to the other equipment, providing a powerful set of transformation options.

DataWorX is fully compliant with OPC 1.0a and OPC 2.0. Plug and play with any OPC compatible process visualization and Control application using the OPC custom interface. Create Visual Basic or VBA based applications that work with built in OPC 2.0 OLE Automation.

DataWorX is based on COM/DCOM technology and supports local, Intranet or Internet operation. *DataWorX* comes complete with OPC Configuration Explorer for rapid configuration, integrated real-time monitoring of OPC tags and a powerful OPC Universal Tag Browser for Internet and Intranet tag viewing.
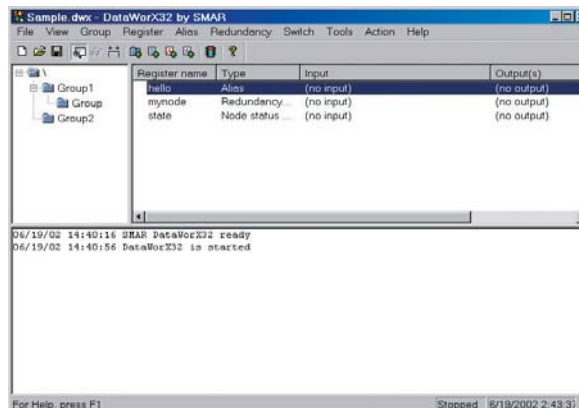
Gatewaying

In the past, tight integration between a DCS and other systems such as emergency shut down, paper scanner, gas chromatograph etc. could only be achieved if the same manufacturer made them. OPC removes this limitation. Other systems in the plant such as existing legacy controls, or critical control systems for emergency shutdown, or paper machine quality controls with large amounts of data, can be tied into an OPC based system with relative ease.

A dedicated server station acting as a gateway may be fitted with the appropriate interface and run an OPC server. An OPC bridge application can be used to mirror data in one system onto the other and vice versa. This way information can be exchanged for supervisory and control. Using OPC more things can be integrated, things that could not be integrated before.

Redundancy management

Where a shut down must be avoided implementing fault tolerant measures such as redundant OPC servers can increase the system availability. Redundant OPC servers are executed in separate computers connected to primary and secondary host-level network and device respectively.

DataWorX is executed in each client workstation. *DataWorX* looks at the primary and secondary OPC server and switches to the secondary should the primary fail. The OPC client in turn looks at redundancy manager. The switchover is completely bumpless and automatic, there is no need to reconfigure the client. Diagnostics are available to see if primary server is being used. This allows notification to technicians in case of server failure. Once the primary recovers there is an option to switch back to primary, or not.

Aggregation

Another benefit of *DataWorX* is found in its OPC Data Aggregation feature. Connect any number of OPC Clients (**Smar**'s or third-party clients), and *DataWorX* will consolidate the OPC Data Requests automatically. This aggregation can help in reducing the load on the OPC Server itself. *DataWorX* takes care of getting the data and then disseminating it to the appropriate client applications.

Easy OPC based data storage and sharing

Typically control systems demand a persistent storage place for a generic pool of parameters. These parameters may be useful to control the behavior of the system. Some examples may be to start/stop trend logging, trigger reports, trigger scripts, enable/disable alarm tags, and so on. Other projects may have the need for a pool of recipe parameters or just some general-purpose global variables.

The DataStore OPC Server provides a standardized method for configuring these parameters and exposing them to OPC Clients. The parameters are exposed to clients programs as standard OPC Items (tags), but the actual item values are obtained from a Microsoft Access database (*.mdb). The DataStore product contains two parts: a configuration module and the actual OPC server, the runtime module. The configuration module allows you to create a database that holds configuration data of the tags, such as the tag name, the ranging, and the alarm settings. The runtime module uses a runtime database to access the actual values of the tags configured. Due to the open format of the configuration database as well as the runtime database, the user is free to understand its format and to create third-party database manipulation tools as well.

MSDE Manager

The ProcessView *MSDE Manager* is a new module in ProcessView. The *MSDE Manager* allows you to manipulate and configure databases when data logging to MSDE 7.0 and MSDE 2000 databases. In addition, if no MSDE installation is detected, the *MSDE Manager* prompts you to install MSDE 2000 or MSDE 7.0.

MSDE (Microsoft Data Access Engine) is an MS SQL Server-compatible database engine with enhanced database server functionality. The *TrendWorX SQL Data Logger* supports both MSDE 7.0 and MSDE 2000. MSDE 2000, which is the newer version of MSDE, has enhanced performance and uses less memory and CPU capacity at the expense of hard disk space.

The *MSDE Manager* is an OLE Automation-enabled, dialog-based application that can be started within Visual Basic for Applications (VBA) or OLE Automation-enabled applications.

OPC Servers for system integration

For a generic protocol OPC server such as for Modbus, all communications settings have to be done and parameter have to be mapped only once in the server.

The Modbus OPC Server provides direct communications to any Modbus compatible PLC or device. It supports both popular Modbus RTU & ASCII protocols for applications requiring either multi-drop communications or remote telemetry via modems. Import directly CSV formatted databases for rapid deployment. The Modbus OPC Server comes complete with OPC Configuration Explorer for rapid configuration.

The Modbus OPC server is an ideal way to integrate shutdown systems, weighing scales and other subsystems.

ProcessView
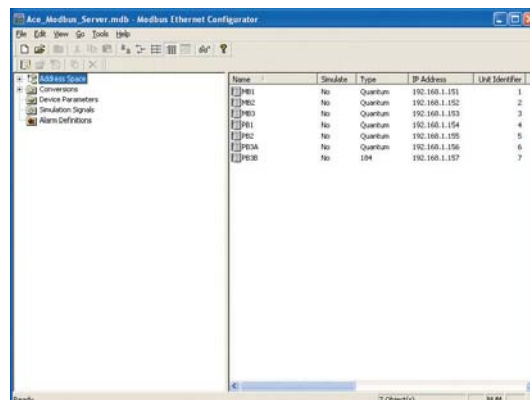
DDE Gateway

The *DDE OPC* Server provides direct communications to any DDE Client or DDE Data Server. It supports bi-directional communications to any DDE application. Time saving drag & drop capability provides easy and seamless connection to DDE applications. The DDE OPC Server provides read and write access to DDE Topics and Items to applications such as MS Excel or popular HMI and SCADA products.

The DDE OPC Server is fully compliant with OPC 1.0a and OPC 2.0. Plug and play with any OPC compatible HMI, SCADA and control application using the OPC custom interface. Create Visual Basic or VBA based applications that work with built in OPC 2.0 OLE Automation support.

All Smar OPC Servers are based on COM/DCOM technology and support local, Intranet or Internet operation. The DDE OPC Server come complete with OPC Configuration Explorer for rapid configuration, integrated real-time monitoring of OPC tags, a powerful OPC Universal Tag Browser for Internet and Intranet tag viewing and a OPC Test Client application.

Checking DCOM Configurations

DrDCOM is a potent networking utility to help ProcessView users with DCOM configurations. Available as a standard part of ProcessView, *DrDCOM* is also available as a stand-alone component for rapid network setup and configuration. Using a familiar Explorer-like user interface, you can browse for OPC Servers and eliminate difficult DCOM configurations. Development and system commissioning times are dramatically reduced with *DrDCOM* at your side.

DrDCOM is ideal for testing DCOM and network interfaces as well as configuring Data Access, Alarm/Events and HDA COM Objects or Servers. With a single click *DrDCOM* automatically configures your entire network. All the configuration details are at your fingertips, clearly presented in property panels. *DrDCOM* features a powerful auto-configuration wizard, troubleshooting test wizard, helpful status window display messages and much more.

DrDCOM provides support for NT logger and *AlarmWorX* logger and runs on Windows 95, Windows 98, Windows CE and Windows 2000.
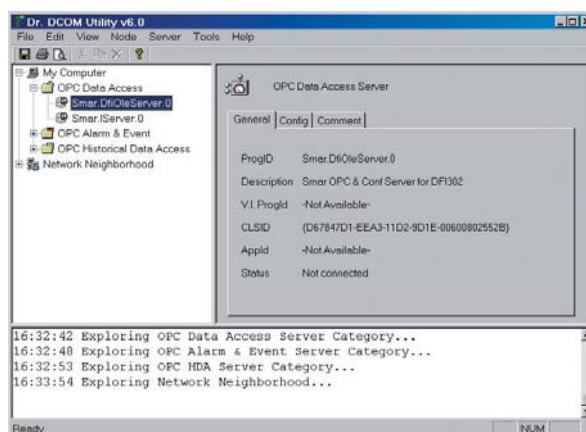
Diagnostic and Tuning

Using a technology that has been incorporated into all Smar products, *TraceWorX* provides online diagnostics and tuning of applications running in ProcessView system. *TraceWorX* is designed expressly for systems integrators, OEMs and customers who want to have tools for doing their own troubleshooting and diagnostics.

TraceWorX tracks the runtime activity for each ProcessView application and logs the runtime data to a log file based on user-configured trace levels. The log file provides a thorough, color-coded report detailing all activity for the application, including the time, the date, the severity level, and a description of the event or problem.

TraceWorX also features several options for reporting issues to technical support. If you are experiencing problems with any applications, the log file deployment options, such as compressing and e-mailing log files, are ideal for tracking and archiving data and sending detailed reports to technical support. Developers can use these reports to identify the source of the problems.
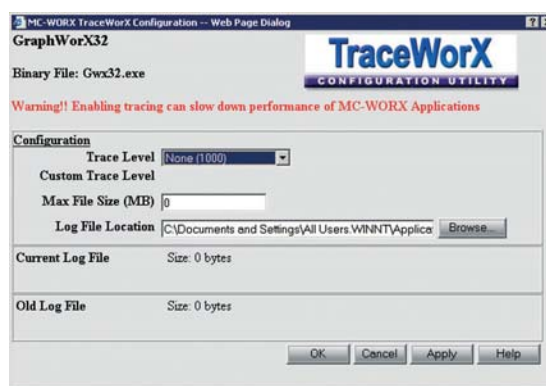

OPC troubleshooting

The *OPC DataSpy* is powerful OPC Data Access and Alarm/Events analysis application that allows the testing and monitor OPC information for data, alarms, data quality, performance and compliance with the OPC Foundation Standards.

The *DataSpy* is ideal for testing OPC Data Access or Alarm Servers for OPC minimum and optional compliance. Troubleshoot OPC communications issues quickly and easily with the integrated OPC Explorer compliance tools. Create Visual Basic or VBA based applications that work with built in OPC 2.0 OLE Automation.

DataSpy is fully compliant with the Data Access OPC 1.0a and OPC 2.0 as well as the OPC 1.0 Alarm and Events OPC Foundation Standard. Plug and play with any OPC compatible HMI, SCADA, control or any OPC application. *DataSpy* is based on COM/DCOM technology and supports local, Intranet or Internet operation. Use the *OPC DataSpy* to perform diagnostics, troubleshooting or performance tuning locally or remotely.

DataSpy comes complete with OPC Explorer type look and feel for integrated real-time monitoring of OPC tags. Also included is powerful OPC Universal Tag Browser for connecting to any OPC Server and associated tags over the Internet and Intranet.
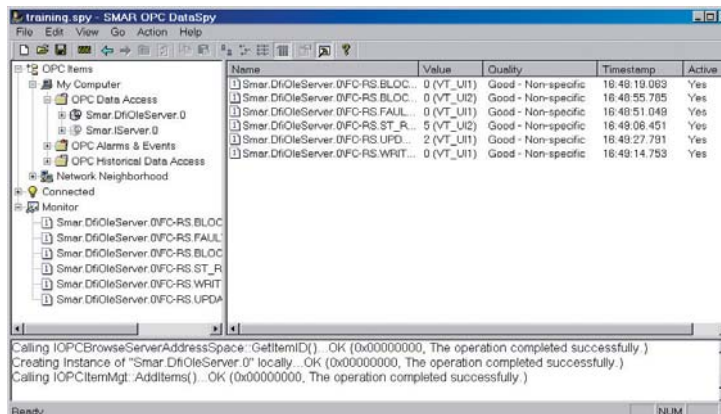
OPC/OLE performance tuning

Tweak OLEX is a standard module. This function helps you configure and optimize the OPC Settings used by the Smar OLExpress for your particular application. The status of the servers can be periodically checked and the statistics are refreshed at the specified interval when you switch to the Runtime mode. This tool is included in the ProcessView suite of applications.

Internet transport

GenBroker OPC over TCP/IP technology provides users with a simple method to configure OPC communications for Intranet and Internet. *GenBroker* is useful for embedded devices wanting to connect their OPC data across the network (Intranet/Internet) without worrying about DCOM, firewalls, and other data setup issues.

Now, OPC Client applications can be instantly Web enabled using this new DCOM replacement technology.

Security

Security Server is a security database that allows you to centrally manage security. The Smar ProcessView *Security System* provides restricted access to ProcessView functions based on the concept of a logged in user. A Security System Administrator configures the system by adding users and assigning them specific ProcessView privileges. Each ProcessView application may supply a static list of functions to be secured.

Create custom groups and assign users to these groups (users can be assigned to more than one group). Each user can be configured to access specific components, during a specific period of time. Passwords with several different access levels may be configured freely for security.
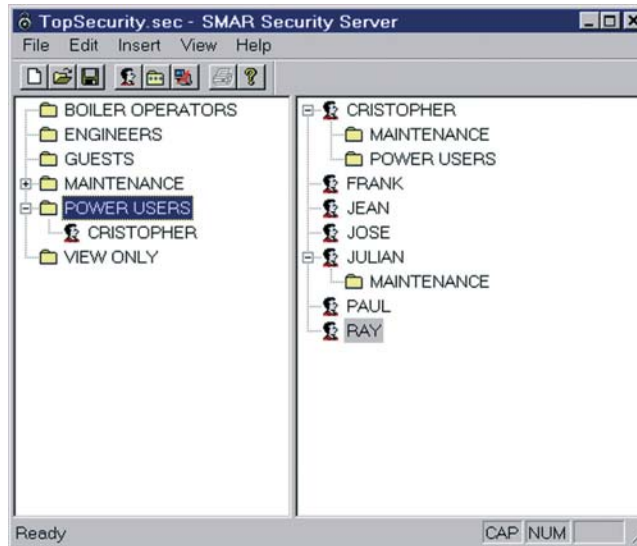
Screen management

The purpose of the *Screen Manager* is to provide the user with the ability to manage the screen space on single or multiple monitors by selecting pre-defined screen layouts.

License Monitor

Since the number of applications available for use depends on the number of available Client Units, it is necessary for you to be able to view the number of Client Units in use and the number of Client Units available. Along with the ProcessView installation, the *License Monitor* is installed to allow you to view the use of purchased Client Units. The *License Monitor* displays the start and current time of use and (when in demo mode) when the demo is over.

Third-party software and server integration

Contact Smar for applications for loop analisys and tuning, Advanced Process Control (APC), batch management, dynamic process modeling and simulation, inferential measurement, Statistical Process Control (SPC), Manufacturing Execution System (MES), Enterprise Resource Planning (ERP), integration with existing systems and other hardware etc. Smar has strategic relationships with many suppliers for these applications and a wide range of implementations from implementations in a wide range of industries around the world.

**Technical
Specifications**

System   Requirements

- Windows NT 4.0 Server Service Pack 6 or Windows 2000 Service Pack 2
- Pentium 1.5 MHz
- 512 MB RAM
- 300 MB Free Disk Space
- Monitor 1280x1024
- 8x Speed CD-ROM
- Internet Explorer 5.0 or higher

smar
www.smar.com

Specifications and information are subject to change without notice.
Up-to-date address information is available on our website.

web: www.smar.com/contactus.asp

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