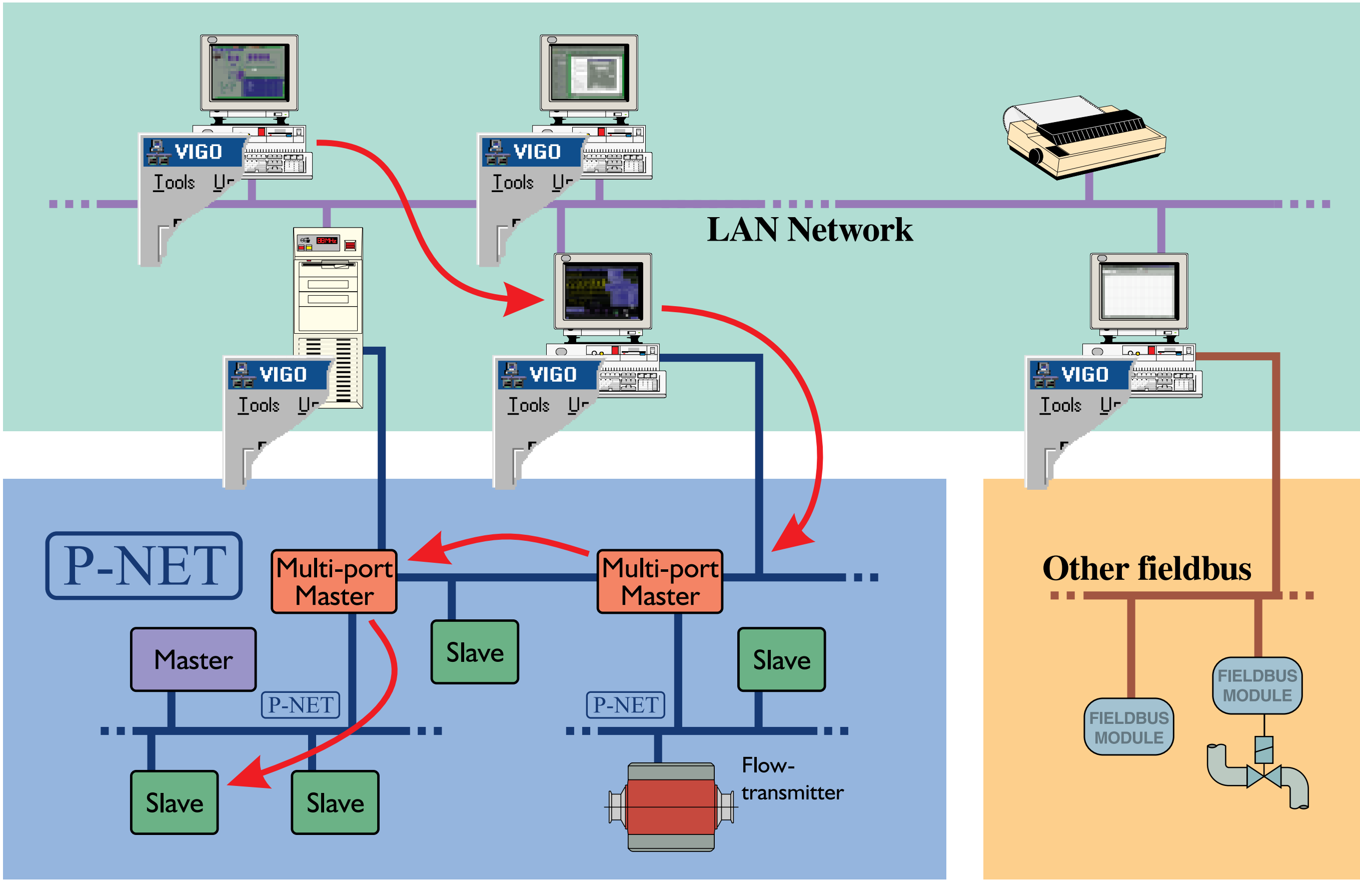
VIGO

The Fieldbus Management System for Windows®95/NT

General

VIGO is a Fieldbus Management System, installed on PC's, servers and workstations, which use the Microsoft Windows®95 or NT operating systems. VIGO is used in conjunction with process automation systems, where individual control units are distributed within a plant, and where one or more Fieldbuses are used for the data inter-communication. Whereas Windows is an operating system, which executes programmes, controls the keyboard and screen, manages the hard disc and contains tools for configuration and program execution, VIGO is also an "operating system", used to handle the various real-time tasks specific to a Fieldbus system.



Windows Application Interface

Windows enables data to be transferred internally between applications, e.g. between a spreadsheet and a word processor or a database. If PC's or workstations are linked together within a Local Area Network (LAN), transfer of data can also take place between applications via such a network. However, real-time data, such as that found within a fieldbus network is not directly supported.

VIGO enhances Windows, to enable real-time data from a distributed environment such as that found in an industrial processing plant, to be utilised within standard or purpose designed applications on a workstation. Thus an EXCEL spreadsheet can include real-time data from the plant, for logging or trending purposes. Alternatively, ACCESS can be used to log and produce reports on live events occurring within the external system.

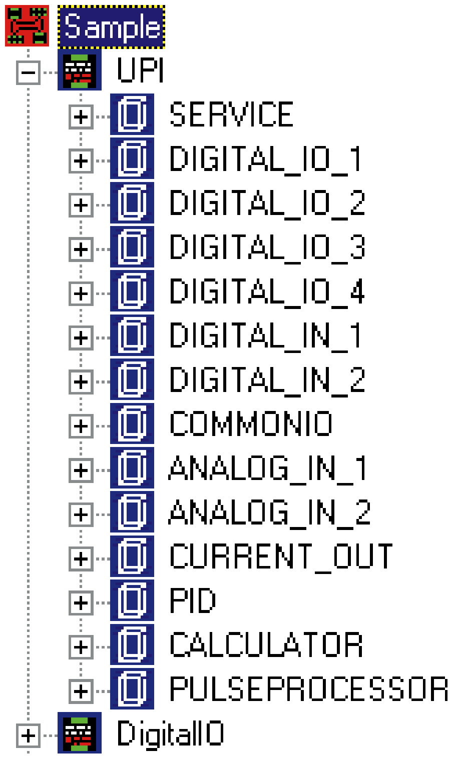
Although the use of standard applications can be extremely useful, to quickly display or capture fieldbus data (variables), a more specific application may often be required. In this case, standard object oriented software development languages can be used, such as Visual Basic, Delphi, C++ etc., to produce the required result using real-time data from the field.

OLE2 Server

All this is possible because one part of VIGO acts as an OLE2 Automation Server. This means that any standard or proprietary application which supports OLE (Object Linking & Embedding), such as SCADA systems, Asset Management and Maintenance Scheduling packages, can transparently send data to, or request data from a fieldbus, such as P-NET. Applications don't need to know how the real-time data is obtained. All that is necessary is for the application to refer to a chosen symbolic identifier such as "Furnace_1_Temperature", and VIGO will do the rest. Furthermore, identifiers need not just be single entities such as a temperature reading already processed into engineering units, but can be complete objects containing the properties of a measurement value, set point, scaling value, location, type, maintenance information, error information etc.

Manager Information Base

To do this, VIGO needs to hold information about all the variables that are to be used within a project and used in a workstation application. All this information is held within an internal database and is controlled by VIGO's Manager Information Base (MIB). The database associates an application identifier with an address on the fieldbus from where the variable can be obtained (or written to). This may also involve obtaining information on the route to take to obtain the data, it's data type and even the type of network being used. Some of this information has to be provided by the user when a new project is being set up, or a current project is being expanded.
This is performed using the MIB Editor.

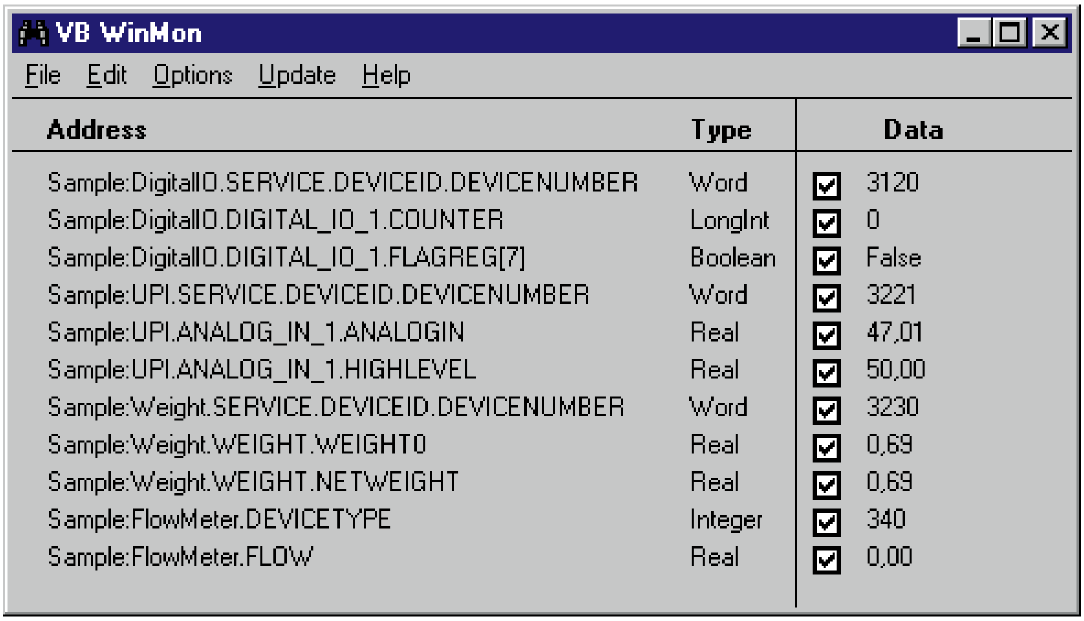


The MIB Editor is the user interface for the database and provides the facilities to define the elements within a project and to illustrate these in a meaningful way. In the same way that Windows provides a Device Manager and a File Manager to assess and modify how a workstation is set up, the Manager Information Base provides details of Devices (nodes) within the project. By selecting a device, as one would a folder to see the file contents, the MIB provides information on the available contents (channels and variables) within each device. Since VIGO is an object oriented system, each device type possesses a number of properties, such as device type or node address, which can be amended by the user using the MIB editor.

The similarity with Windows continues, in so far as the MIB holds a complete library of standardised devices and channels, which can be included in a project. Therefore, in a similar manner to choosing and installing a new CDROM or sound card device within a PC, the MIB editor is used to select the required devices, which can then be included and configured for use within a particular project.

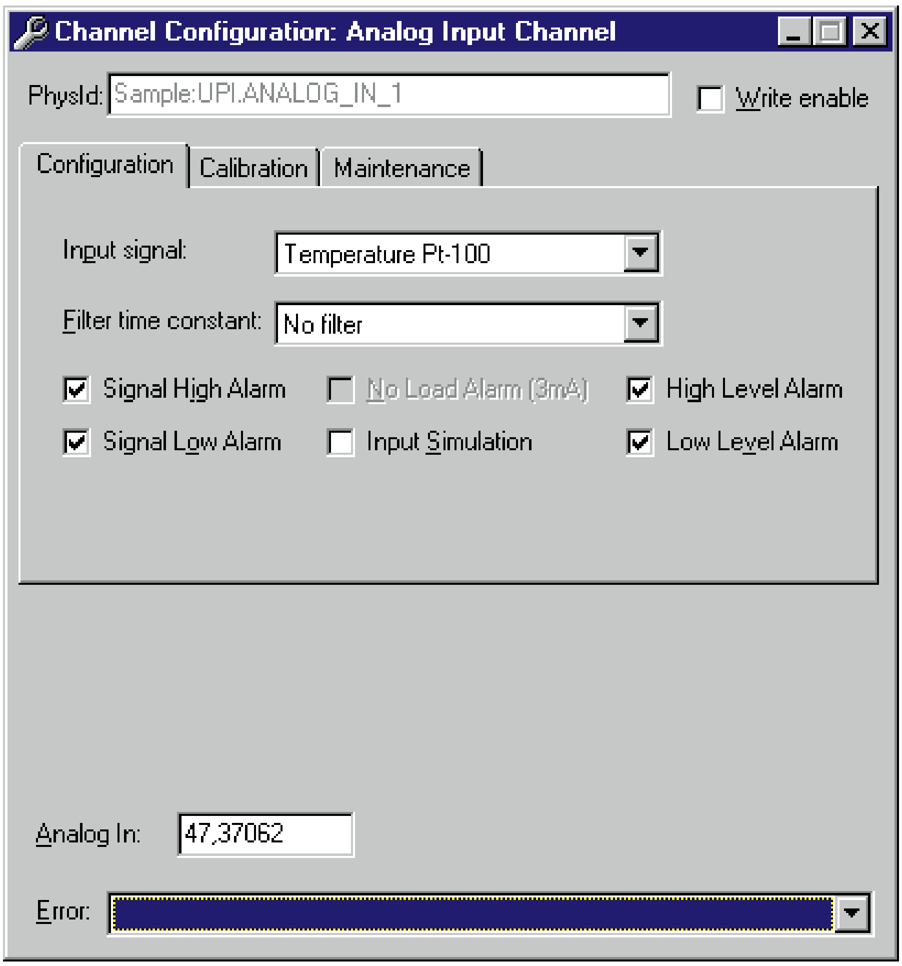
VIGO Tools

The MIB Editor, although probably the most important, can be regarded as one of a number of tools available, which uses the contents of the Database. Take for example Monitor, whereby using the illustrative structure of the project previously described, can select a variable, the value of which will immediately be displayed on the screen in real-time. These values can also be modified from the screen, assuming they are read/write variables. Any number of variables can be selected for display on a single or multiple screens, which can then be saved for later use.



Another associated tool provides an easy way to set or change the node address of any P-NET device. All that is required is to input the unique Serial No. of the device in question. Reference is then made to the MIB database for the required node address, which is then down loaded to that physical node.

Other tools include utilities to easily configure standardised channels such as digital and analogue I/O. Facilities are also available for down loading programs and taking a complete backup of a system.



Although a library of standardised devices and channels is included within the Database, there are often times when a specially written program has to be designed for one, or a number of distributed controllers within a project. During the design phase the contents of the MIB data for the project can be directly used during the global variable declaration stage. The MAP file generated during compilation of this program, which contains all the information about defined local controller variables and constants to be used, can also be utilised by the MIB in order that these can be included within the project illustration. This means that these can also be used for modification, monitoring and debugging, using the powerful features of VIGO.

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Plant Simulation

Since a complete description about a particular physical plant is held by, and can be accessed from the MIB, this enables a simulation of the operation of such a project, to be performed within the PC. A simulation program would define the functionality, using the devices available within the actual plant. This facility can be extremely useful when designing or commisioning large plants, or to see the effect of specific customised changes. The advantages in terms of enabling highly efficient training programmes to be devised, are also obvious.

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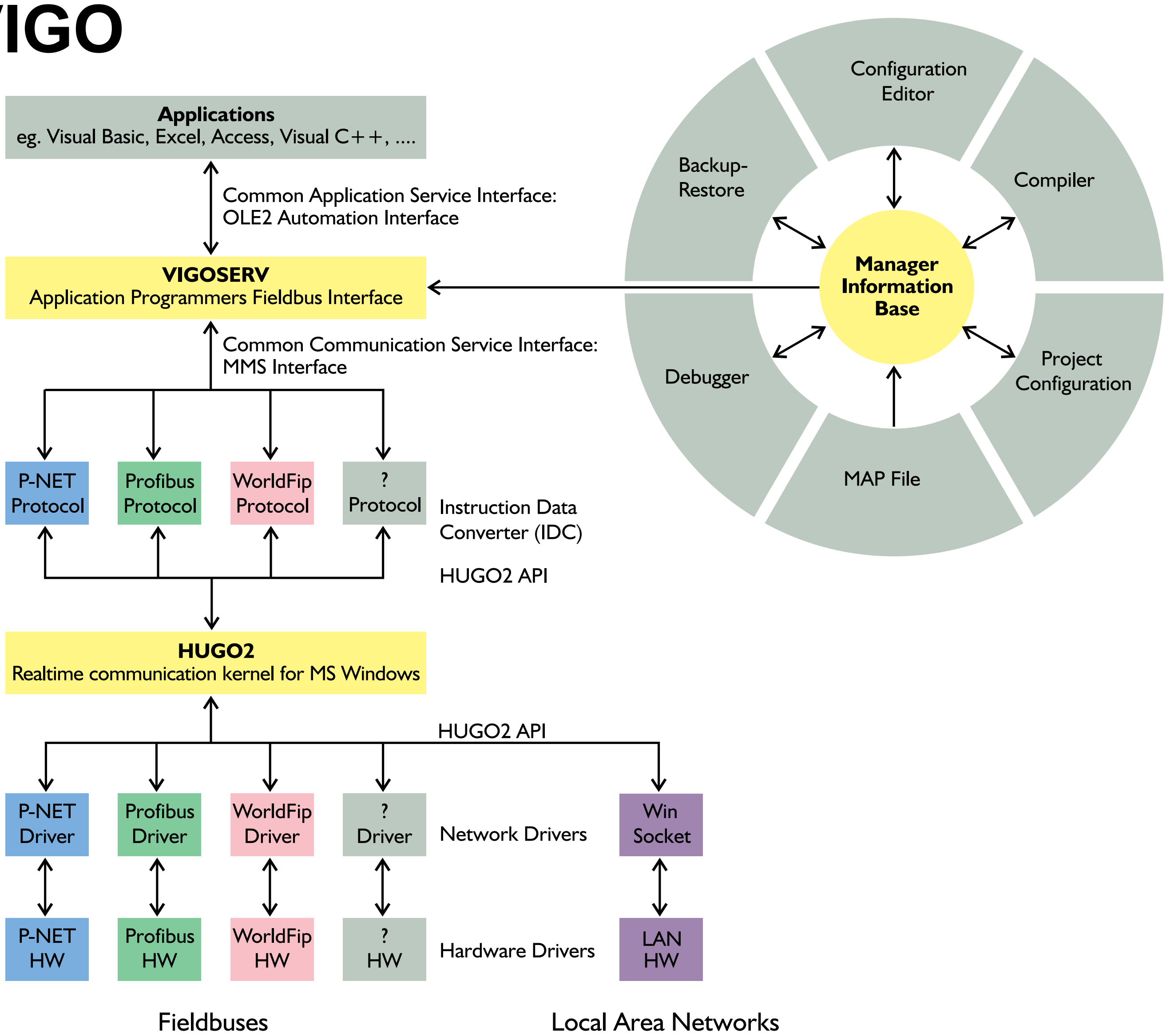

VIGO Structure

VIGO deals with communication between field devices and local PC applications and/or remote workstation applications via a variety of LAN protocols supported by Windows®95/NT. For the real-time fieldbus interfaces, VIGO is structured in an Open way, to enable a variety of fieldbus protocol drivers to be incorporated, and used in parallel. By necessity therefore, the real-time aspects of VIGO require that it's operation is as fast as possible. This is why it is a true 32 bit protected mode package, fully utilising the fast and safe data exchange features of OLE2 Automation.

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