

# The Web and Automation

By Douglas Millward

Most manufacturing companies today use computers and networks. Whether on the shop floor controlling and scheduling production, or actually controlling and monitoring the process the spread of technology is all pervasive.

However, in the IT world, communications technology has moved on. The model for most office systems today is the Internet, as witnessed by the spread of intranets in most companies today. How will this impact the shop floor, and what considerations must be taken into account to make the most of this latest advance?

## ***What is the Internet Model?***

The Internet model is a client-server model. Servers deliver the information and clients display it. There are a number of servers, such as Web servers, mail servers, LDAP servers, Database servers and so on. All of these can find applications on the plant floor to a greater or lesser extent. There are also a number of clients available, providing functionality that matches the respective servers. Internet Explorer and Eudora are examples of web and mail clients respectively. In an office environment a computer can be dedicated as a server, possibly a web server, mail server, or both. The local office network clients can then connect to the server and retrieve information. Typical uses in an office may be keeping a central office contact list, internal email or as a central shareable storage resource. The main question here is, can this model be applied to the shop floor?

## ***The Web on the Floor***

A quick survey of automation equipment manufacturers reveals that they seem to think that web technology has a future in plant automation. Many of the largest manufacturers, including Siemens, Schneider and Allen Bradley either currently offer, or plan to offer, equipment with embedded web servers. Among such devices are control equipment such as programmable logic controllers (PLC's). This would mean that information stored in the PLC could be broadcast using web technology to web clients such as browsers scattered around the plant, or even the world!

There are pros and cons to this solution. Some pros are:

- Cost - by using a web server to distribute plant data the cost of operator SCADA stations is eliminated. As these can run into several thousands of dollars, the saving is considerable
- Training - because most people are familiar with using web browsers, or can easily learn, operator training is significantly reduced. The cost of training a team of operators to use a proprietary SCADA system should not be underestimated.
- Configuration - many proprietary SCADA systems still need arcane configuration tools, or even programming expertise, to build graphic pages. Web pages are built using HTML, which is easily learned, and furthermore many commercial WYSIWYG tools exist to help users build pages.

### **On the other hand, some cons are:**

- HTML in its basic form is a display language. On its own it cannot effect changes to a plant or device database. However the use of technology such as CGI, ASP, PHP or JSP enable the user to make changes to a database. Unfortunately, these technologies are more suited to a PC or server class processor and storage environment rather than the limited processing power and storage of a plant controller that, in all honesty, has far more important tasks to carry out - such as controlling the plant! However all is not lost: new protocols such as webDAV allow 2-way communication between browser and server - allowing users to write changes to the database inside the device.
- HTML does not support active graphics natively. This means that traditional modes such as moving tank indicators are not possible. However several add-ins are available, and the multimedia assets of a simple java plug-in could easily produce the same, if not a superior effect.
- Security - any system that is not completely closed to outside influence offers the possibility of ingress by malevolent outsiders - such ingress is colloquially referred to as cracking or incorrectly as hacking. This means that sufficient protective measures need to be taken to protect the control network and control devices. Generally this entails the use of firewalls, authentication and secure servers and links.

For most installations, the plant engineer will take into consideration the respective pros and cons and come to a balanced decision as to whether this technology will make the process more efficient and will result in cost benefits and or savings.

## **Applications**

### **Foremost Farms USA ( from the Oracle Web site:)**

'During the past few years, Foremost Farms USA, a dairy cooperative owned by 5,000 midwestern dairy farmers, expanded considerably due to a successfully executed strategy of growth and acquisition. Growth by acquisition is an effective strategy that can rocket a company to the top. During this time, Foremost defined their strategic systems plan to serve the company into the future. In order to meet their needs, Foremost selected the Oracle Process Manufacturing (OPM) and Oracle Financials applications for its best practice solutions.

"Foremost was built by a number of mergers and acquisitions and every new group had a different way of doing business, much of it on paper or spreadsheets," says Wayne Gjersvig, director of operations, Ingredient Division, Foremost Farms USA. "Our primary goal was to install a new and standardized way of doing business at Foremost." '

'During this period of exceptionally rapid growth predicated on merger/acquisition activity, Foremost recognized that to successfully compete, it needed to invest in a standardized IT architecture and applications solution. To this purpose, Price Waterhouse, together with a Foremost executive steering team, recommended implementation of a standardized and integrated manufacturing order management and financial suite. After an extensive evaluation whittled the candidates down to QAD and Oracle, Foremost chose Oracle OPM - Oracle Process Manufacturing.'

The use of Oracle technology has meant that Foremost can centralise their administration, but distribute their control and reporting via the internet. In their own words:

"In place of a decentralized set of disparate procedures, we now have standard and consistent procedures, documents and reports," Mark Graupman, Corporate Controller, says. "We now have access to information across the cooperative, much of which was never available before. In fact, plant operational information that took a week or two to assemble is now available on a daily basis."

### **Management reporting is easier too. Wayne Gjersvig, director of operations, says:**

"OPM provides us with a very good view of our inventory, something which eluded us in the past. With 27 plants on board, visibility is critical. With OPM, we now can better control our inventories and be more responsive to customers."

To learn more about the technologies discussed above, sign up for one of IDC Technologies practical training workshops. The most relevant ones are Web Based SCADA and Computer and Network security, amongst others. For more details, contact [idc@idc-online.com](mailto:idc@idc-online.com)