

.Net: the Technology Behind the Application

There has been a lot of talk and hype concerning Microsoft .Net in recent years, and many end users are confused as to how .Net will affect the operation of their plants. Here we will look at an application very familiar to virtually all process control engineers and discuss how .Net will change the way it is developed and used.

Windows-based HMIs are ubiquitous in process plants worldwide. DCSs employ these HMIs to display and distribute process information. Firms such as Wonderware and Intellution have built entire companies around Windows-

Windows-based applications. According to Rodney Morrison, director of product management at SL, HMI vendors have recently taken advantage of the Windows DNA platform based on the Windows NT operating system to create open systems.

Morrison says that although DNA was powerful, companies still had to agree on numerous technical details to enable communications such as networking protocols, common data formats, device and application interfaces, integration methodologies, and B2B message formats. "Microsoft .Net eliminates many of the problems associated with system integration, both



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based HMI products. Virtually all of the control system majors offer standalone Windows-based HMIs.

Many of these products have a very similar look and feel despite the fact they were developed independently. This is

because many use the same underlying development system: SL-GMS, supplied by SL Corp. (www.sl.com).

SL-GMS provides many of the tools and technologies needed by HMI developers. Instead of developing Windows-based HMI products from scratch, most control system vendors start with a graphics development system such as SL-GMS. These vendors use such systems to create their HMI products because it saves them development time and effort.

.Net makes it easier for firms like SL to create graphic development systems. This in turn makes it easier for SL customers like ABB, Invensys, and Honeywell to develop their HMI products. .Net provides benefits to clients through better HMI products, even though the .Net technologies are embedded deep within the HMI and are not visible to the end user.

The entire concept of Microsoft .Net is confusing to most end users because .Net is not intended for their direct use. .Net is instead designed for use by software developers such as SL Corp. Any explanation of .Net is bound to confuse the average process control end user because the explanation will use a host of terms familiar to programmers and not necessarily familiar to process control engineers and technicians.

SL touts the benefits of .Net by telling its clients that SL-GMS is "enabled with classes, methods, properties, and events from within Microsoft Visual Studio .Net." In the process control world, this is one confusing phrase.

Instead of trying to explain and understand .Net, it is perhaps more useful (and much easier) to instead look at how products developed with .Net will differ from previous

within and across enterprise boundaries," says Morrison. "Much of .Net uses XML, the industry standard that enables information-rich data exchange."

HMIs gather data from many different sources such as OPC servers, SQL databases, and PLC and DCS controllers. HMIs then use this data to dynamically drive their process graphic displays. Much of the data collected by HMIs must also be distributed to different clients such as MES systems, ERP systems, and plant historians. These data must be distributed across company intranets and across the Internet.

.Net is designed to make these data gathering and distribution tasks much easier, especially across the Internet. The bottom line is .Net allows HMI companies to use and share data across many different applications without having to define and agree upon a host of technical details and minutia.

SL Corp. uses a Microsoft product called Visual Studio .Net. According to Morrison, Visual Studio .Net has many features that make it easier for his firm and its clients to develop HMI applications. Many of these features are arcane and comprehensible only to programmers, but for those interested, full details can be found in a SL white paper located at www.sl.com/sl_gms_pkg_netdev.html.

According to Morrison, end users of HMI products developed with .Net technologies will see easier deployment, higher security, and stable browser-based support across firewalls. He says the trend for enterprise solutions is to move from a strictly server-client paradigm (Windows NT) to a distributed-computing paradigm (.Net) composed of loosely coupled services that could reside on any smart device anywhere on a local network or on the Internet. .Net is optimized to allow easy creation of distributed-computing applications. ■

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