Guest Feature: Selecting The Right HMI Vendor

by Gary Labadie, Marketing Manager, Pro-face America

How do you go about choosing the right HMI vendor for your operations? It’s a great question that bares discussion. An HMI vendor is a critical information visualization supplier that greatly impacts and influences a process plant, an OEM, and system integrator operations. An HMI vendor can be one of two things, a supplier or a partner. An HMI supplier is managed through the corporate vendor management policies. An HMI partner not only provides the product but also provides assistance or guidance in HMI application development, training, and tools to help you take advantage of technology that reduce overall factory costs. The HMI vendor you select will greatly impact your overall total cost of ownership for not only the HMI but your process and machines as well. To get started, we must first identify the needs and wants of your own internal operations that will be used to align company operations requirements with a best fit HMI vendor that provides the right mix of product and service offering.

Identifying needs and wants

Table 1 below identifies features that large process plants desire for plant standardization. The serviceability features tend to be of higher interest to OEMs and System Integrators. This table is just a sample of general critical needs and wants for an application. Each application or factory would create their own list and assign a number 0-10 (10 being critical) for each need/want. Once the needs/wants are established and ranked, then the general HMI vendor selection can begin. The supplier must be rated on how well they meet the criteria and how it impacts the application. Table 1: Identifying Needs and Rating an HMI vendor

Application Need/Wants	Description	Application Importance (0-10)		Rate Supplier
Connectivity	HMI has the right set of drivers to eliminate the need for expensive PLC I/O cards and extensive PLC code development	10		5
Data Capability	HMI includes logging, sharing and data uploading functions to remote servers for reporting	7		10
Remote Monitoring	Tools are readily available to access, remotely monitor your process	Don't Care		10
Remote Serviceability	Available tools to remotely service, troubleshoot, and control the HMI	10		2

Environment and certifications	HMI is designed for the environment it will be installed in. (Heat, Chemical, wash down, dust, shock, vibe etc.)	10		10
HMI Application Upgrade	Convenient methods exist to upgrade the HMI application in the field. (upgrades performs over Ethernet, USB key, CF card, without PC, etc.)	5		0
System Maintenance	HMI includes visualization tools to support process or machine maintenance (plays maintenance Video, event recording, view machine manuals, etc.)	8		10
Product Migration	Impact to Operations when current product is discontinue. (Vendor's cut out compatibility history)	10		10

In Table 1, we can see which needs are critical and how the supplier is ranked against those needs. The Impact column is used to identify compromise to the application if this supplier is chosen. For example, if we compromise on the HMI vendor’s connectivity weakness, then secondary costs will be incurred by using a PLC with I/O card to make the application work. A time and dollar amount could be added here. In contrast, this vendor has a strong product migration rating which will surely reduce retrofit costs down the road. Study the table and carefully consider the cost and time impact of each item. It’s easy to say, “We have a workaround on connectivity” until you put a time and cost number in place. Then a true picture is formed.

Connectivity drives costs down

Connectivity can be broken down into hardware connectivity and software connectivity. Hardware connectivity brings value in higher performance, more reliability and tighter control of a machine or process. Software connectivity significantly reduces the data sharing licensing cost per unit that many factories are paying today. Extensive hardware connectivity value through an HMI is realized by reducing the PLC communication burden. Not everything needs to run through the PLC. Non-critical control elements such as Motion, drives and bar code scanners can easily be managed by the HMI. This allows the PLC to be optimized for critical control, less use of specialty I/O cards, and less cumbersome logic code development. The result can be seen in increase performance plus best-in-class choice of peripheral components that are not limited to drivers offered by the PLC. Software connectivity is really data connectivity and can literally put thousands of dollars in reduced SCADA licensing right back into a company’s profits. HMIs should include software connectivity tools that require no licensing fee per HMI unit to share data from any device it is connected to with the existing factory’s ERP, MES, or SCADA systems. There is limited need to spend even a thousand dollars per HMI

to perform this function. A quick cost example: A facility with 50 units using a thousand dollar SCADA license for each one would save $50K in license costs without impact to operations. This savings goes right to the corporate bottom line.

Application Flexibility: Upgrading in the field

Applications change over time. This means your HMI application must be updated to match the growing needs of the application. The HMI software is plenty flexible. The problem comes in once the HMI is installed or shipped somewhere remotely. How are you going to upgrade these remote sites? You don't want to carry a PC to the site, nor do you want to give anyone the full HMI development source file. Not all HMI suppliers provide easy field upgrades. However there are a handful of suppliers that offer some great methods to update an HMI in the field. A few upgrade methods one should look for are:

1. Compact flash card: Uploads new application into HMI
2. USB memory card: Similar to compact flash method
3. Ethernet: Remotely connect and download application within the facility
4. Internet: Update the HMI using the internet to eliminate on-site servicing
5. Transfer utility: A software utility that doesn't require the full HMI software to update the

HMI application

This field upgrade capability is not easily found on a hardware datasheet. There are a lot of costs involved in field upgrades that are associated with service and maintaining equipment once installed. This is important to consider *before* choosing the vendor or product. The more that can be done remotely using upgrade tools, the more travel time and money will be saved.

Internal Operations Considerations

Services provided by an HMI supplier are an important consideration. A few basic items to research are:

1. Is local on-site support available?
2. Does the supplier have technical support specialists in their field and product knowledge or do they provide only basic product support?
3. How fast can the supplier service a unit in for repair or does a spare unit need to be purchased?
4. What is the quality of the HMI development software and how do they handle software upgrades?
5. What tools does the supplier provide today that you may not implement short term in your facility but most likely will become a need in the future?

Investigate and ask these questions and then consider the overall impact to your company's operations. If your operation is centralized to a few large sites then

strive for HMI standardization. Look for a supplier with a large selection of product sizes, open versus dedicated HMI technology and supported by a minimal number of software packages that will provide consistency and operation familiarity throughout each facility. Are the operations spread out throughout the world? Global sites require global HMI vendors. There is no question about it. The need for service and support in local languages must be handled by a supplier familiar with the different cultures and methods. Global support is well worth the investment in the supplier. Consider the value of having units serviced and repaired locally versus the cost to have them exported and serviced abroad.

Vendor or Partner: How can you tell?

Is there really a difference between the two? Yes! From the simplest of perspectives, selecting a vendor over a partner is typically occurs when price is the driving factor. In this case, the HMI product is perceived to have no real value over any other supplier that could be chosen. The HMI is likely to be compared to the lowest supplier in the market because value has not been identified. Hence, a company ends up with a variety of HMI's that tax the support personnel with maintaining a variety of HMI software and tools, shifting and hiding the majority of cost burden to maintenance crews. Eventually this will create the need for plant standardization. A good way to decide what category (vendor or partner) a company fits into is to look at their product history and compatibility from generation to generation. A vendor can be thought of as a company that comes out with new product lines to replace older models but may have no compatibility with the installed base of products. This is a product centric company driven by costs and speed to market. The concerns and impact to their customers rank low on their product needs chart. A partner would be a supplier who comes out with a new product line and has complete compatibility to their installed base. This is a customer centric supplier driven by loyalty to its customers and desire to maintain a long partnership. This is the ideal supplier who saves company's thousands of dollars yearly but difficult for companies to add a true value to because the value is built right into the product. This is where table 1 will come in handy.

Question the supplier: Do you design your own HMI (partner possibility) or private label (vendor only)?

Summary

Scratch the surface of your HMI vendor. HMIs cannot be compared simply by reviewing hardware technical specifications of each product. One has to look at the company, product history and services it offers. Additionally look at ongoing value the company may add to the product after the sales such as drivers, new features, and software advancements. Expect to pay a little more for the right HMI supplier, but the ongoing value received after the sale is well worth the initial costs.

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