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How to Work with a System Integrator

Success of an automation project relies on more than selecting a good integrator. Before the first screw is turned multiple issues must be resolved—good communication facilitates integration.

Vance VanDoren, CONTROL ENGINEERING

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System integrators earn their keep by solving their clients automation problems. They provide the time, talents, and technology required to turn a plan into a completed project. But no matter how skilled they may be at designing, implementing, and testing industrial automation systems, integrators can do nothing of value until they know what their clients expect.

Conversely, end-users must know what they need and what a system integrator can do for them before they can choose the right integrator for the job. Even more issues must be explored once the final selection is made and the project begins.

KEY WORDS

- System integrators
- System analysis or design
- Control engineers
- Control architectures

Sidebars:
Integrator questions for end-users

Experienced end-users know exactly what questions to ask and how to proceed when starting yet another system integration project.

For first-timers, however, its not so simple. For their benefit, *Control Engineering* has compiled the following list of questions frequently asked by end-users and put them to a panel of system integrators representing a variety of automation specialties from process control to robotics and material handling. The first question is perhaps the most obvious.

Why should I pick you rather than one of your competitors for this job?

Although there are any number of criteria that could apply to the selection of one integrator over another, panel members cited four principal factors to consider when making that choice professional, technological, application, and industry competency.

Mahesh Seth, president at Digital Interface Systems (Benton Harbor, Mich.) defines **professional competency** as a "well-defined set of business processes and methodologies to successfully implement integration projects and **technological competency** as the foundation hardware/software products which may be used in the project. Successful SIs maintain a knowledgeable and experienced staff in products from multiple vendors."

Dr. Seth also defines **application competency** "as the specific application areas like SCADA, batch management, quality, product tracking, etc. that comes from different industries, and represents the horizontal knowledge that the SI possesses." On the other hand, "**industry competency** comes from executing multiple projects for multiple customers in the same industry."

According to Dr. Seth, successful integrators must demonstrate professional competency plus at least two of the other three. Several other panel members put technological competency at the top of the list of qualifications for which an end-user should look.

Technical independence is also an important consideration, says Dik LeDoux a senior consultant at ICON (Lafayette, La.). "You should choose our company because our focus is on finding the best overall solution to your needs, not trying to sell a product we represent."

This answer raises the next question.

Can you use my favorite vendor's equipment or will you be using just your own products?

None of the panel members insisted that they would be able to use only their own products for an integration project. Even the product vendors that formerly sold their services along with their proprietary equipment expressed a willingness to use whatever products are best for the job.

In fact, many equipment vendors have made an effort in recent years to design products that can be readily integrated with third-party products. The Foxboro Company (Foxboro, Mass.) is a case in point. "Our open systems approach can leverage components from Foxboro, our automation partners, and other third parties," says Mike Caliel, Foxboro's vp of North American operations. He goes on to note that this approach allows the system integrators at Foxboro to "assume full responsibility for integrating the third-party systems, software, and applications into a complete Foxboro automation solution."

Most of the smaller integrators on the panel indicated that they have no products to sell anyway. They may have their favorite brands, but "typically we use whatever the client requires," says Christina Repucci, a technical sales associate at Dateppli (Midland, Mich.). "We like the opportunity to recommend more competitive solutions. However, using the customers requested equipment is often the most competitive."

What experience do you have with facilities like mine?

This issue also bears on the selection process. End-users would prefer to contract their projects to system integrators that have completed identical projects. However, no two projects are exactly alike. "We always try to relate the customer's application to other projects that we have completed," says Denis Caye, president of Automated Motion (Independence, Mo.). "Even though our projects may be somewhat different, we can still compare them with regards to technical complexity, dollar amounts, personnel, etc."

Les Souter, an applications engineer for Sigma Controls (Perkasie, Pa.) gives specific examples of how an integrator without direct experience in a particular field may or may not be suitable for the job. "Controlling pumps in a sewage station is similar to controlling pumps in a storm water system. Controlling a pharmaceutical batch process, however, is a whole different ball game." It's up to the end-user to decide if an integrator's related experience is sufficiently similar to be useful.

Demonstrating related experience is not an issue for some integrators. Praxis Instruments (Houston, Tex.), for example, won't even take jobs outside of its specialty area. Sales representative Ardis Bartle notes that "Praxis focuses its system integration efforts in *only* supplying applications in the oil/gas business. Because of our focusing efforts, we can manage the challenges that all projects will face."

Other system integrators focus their attention entirely on food, pharmaceutical, wastewater, automotive, and other single-industry projects that are sufficiently numerous to support such specialization. On the other hand, notes Peter Ratcliffe, president of RPT Motion (Dorval, Quebec, Canada), "Sometimes new blood or perspective allows major gains. We are in the business of solving and automating processes, and the methods used in the solution are far more important than the past experience with a specific facility."

What do I have to do to specify exactly what I want?

"This is the most important question to be asked, but rarely is," says Ed Elliott, president of Industrial Systems Design (Johnson City, Tenn.). He goes on to note that some sort of a design document describing the present system and the proposed improvements is essential at the very outset of the project. "We try to convince the client to engage our services early. We have often written the requirements document for the customer and then had to competitively bid on it. Whether we write it or not, we will review the design document with the client to insure we understand his requirements before proceeding with the implementation."

Roland Heersink, director of business development at Honeywell Hi-Spec Solutions (Phoenix, Ariz.) agrees. "The single most important factor in system integration projects is having a clearly articulated goal for the project to deliver. This often involves a review of existing components and functionality, as well as a clear strategy to meet future needs. System and network architectures need to be clearly defined as to application objectives and user requirements."

Many of the panel members noted that end-users may or may not know what they need or how to specify their requirements on paper. "In those instances, the client needs to dedicate a team leader who can advise and support the system integrator's team," explains Patrick Gallagher, vice president of operations at MSA Process Automation Solutions and Services (Pittsburgh, Pa.). "The client team leader is tasked with getting the correct client personnel to answer questions and with leading a review of the system integrators design documents. If the integrator is not providing a design document, the client should get a new system integrator."

What is this project going to cost me?

Chris Sorensen, vice president of marketing and sales at HSQ Technology (South San Francisco, Calif.) offered the most succinct answer to this question: "More than you hope and less than you fear." He explains that "hiring a competent, experienced integrator may cost a little more up front, but will pay off in terms of dependable execution of the project, reliable operation, and quality of support."

Most of the panel members were intentionally vague on this point. Some noted that they could provide services on a time-and-material basis. Most, however, preferred to quote a fixed price for the entire job, but as Ray Bachelor, president of Bachelor Controls (Sabetha, Kan.) puts it, "Only after we have a clear definition of scope or a functional specification."

Steve Munn, a systems engineer at Arkansas Industrial Computing (Sherwood, Ariz.), echoes this sentiment. "We don't shoot cost figures from the hip because when we quote a price we stand by it. We take the time to research and estimate our costs before offering the client a quote in writing. We had up-front pricing long before Mr. Goodwrench." In short, there is no short answer to the question of cost.

How long will this project take?

The same caution was evident in the panel's answers to this question. Most indicated that it all depends on what has to get done. "How long a project takes depends on the level of involvement and commitment to the project that the client is willing to make," says Dave Freeland, control systems division manager at PSI (Walnut Creek, Calif.). "We look for opportunities to reduce schedule, but only consistent with good design."

Tony Kaczmarek, vp at Kors Engineering (West Bloomfield, Mich.) also notes that progress often depends on where the project starts. "If the facilities have the equipment in place and that equipment is functional, integration can be rapidly executed."

However, that's not always the case. According to Bob Link, president of CIM Associates (Ruckersville, Va.), "Our staff has spent countless hours on-site waiting for other mechanical or electrical contractors to finish their work because someone latched on to a start-up schedule that was based on ill-conceived or verbal time estimates."

Other panel members were more optimistic about using their experience to lay out a workable timetable. "So many weeks after the P.O. [purchase order], I can have this, this, and this done. The only thing left to determine is when day one occurs," says Sam Hoff, president of Patti Engineering (Rochester Hills, Mich.).

Diane Harris, a chemical engineer at Control System Services (Lake Charles, La.), tempers her optimism with a healthy dose of pragmatism. "I give it my best guess and as an optimist, I force myself to double the amount of time I estimate for the job."

Clearly, scheduling a project is not an exact science. Changes to the timetable are virtually inevitable, and that brings up the next question.

Is it possible to update my plans as we go? How?

Richard Meeker, president of Process Control Solutions (Tallahassee, Fla.), spoke for many of the panel members with his answer to this question: "There should always be a mutually agreed upon method for handling changes on the fly. How formalized this is depends upon the quality of the relationship between the client and supplier. Clients have a right to expect flexibility from their suppliers, and suppliers have a right to insist on terms for handling changes."

Panel members also agreed that if changes are necessary, the sooner they're made, the better. Doug French, manager of Lockwood Greene's Control Systems Dept. (Spartanburg, S.C.) notes that "It is always better to finalize a project plan at an early phase, then execute the plan to completion. Substantial changes during a project present a risk of substantial rework and corresponding unplanned costs. If plans must change, then change impact reviews should be conducted to explicitly

identify any resulting costs. The goal should be to flush out major changes early on and thereby prevent changes later on in the project when the cost of change is higher."

Should changes be avoided altogether? Bill Noderer, a partner at Micro Specialty Systems (Bethlehem, Pa.) thinks not. "I always reserve the option of being smarter tomorrow than I was today" and says his clients should too. However, says Mac Hashemian, the director of operations at Xyntek (Yardley, Pa.), "as long as we do a good job of expectation management up front about what were going to do, changes are rarely substantial. In fact, 98% of the time there will be less than 10% additional expense for changes."

What will I gain from this project?

This question elicited the widest variety of answers from panel members. Some were able to list specific benefits that automation brings to a production system such as better quality control, reduced product variability, lower operating costs, shorter downtime, more accurate data, less maintenance, higher productivity, reduced human intervention, and greater production flexibility.

However, several of the panel members replied with a question of their own: "What do you *want to gain* from this project?" These panel members insist that the end-users must know what they want to accomplish before an integrator can help them accomplish it.

CIM Associates Mr. Link put it succinctly by observing, "If a client asks this question, he is either not serious about process automation or he has not done his homework."

HSQ's Chris Sorensen put his answer like this, "You will gain from any system deployment what you expect, *if* you have defined your requirements properly. Otherwise, you will be disappointed to the degree that your specifications don't truly reflect your requirements. Share your objectives with us, and we can help you to understand where your requirements fall short of specifying a solution that will meet those objectives."

For more questions that integrators frequently ask their clients, see "Integrator questions for end-users," in this article. h

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Source: Control Engineering

Integrator questions for end-users

Interviews that end-users conduct during the selection process and initial planning meetings generally involve a mutual exchange of information. Several members on a *Control Engineering* panel of system integrators suggested that the end-user come prepared to ask questions and to answer questions like these:

- **Goals**—What problems are you trying to solve? What are your business goals? What are your technological goals?
- **Process**—How does your process work? What operations are you trying to automate?
- **Level**—At what level do you require assistance: plant floor, information management, stand-alone islands of automation?
- **Involvement**—How much of the job do you want us to handle: design, implementation, project management?
- **Experiences**—Have you undertaken automation projects before? If so, what worked and what didn't?
- **Project details**—Will there be other contractors involved in the project? What time constraints will they be working under?
- **Most commonly asked question**—What else are you expecting?

Source: Control Engineering