THE END USER'S SYSTEM INTEGRATOR SELECTION PROCESS

A comprehensive how-to guide for selecting the right system integrator

» Craig Salvalaggio

A HOW-TO GUIDE: THE END USER'S SYSTEM INTEGRATOR SELECTION PROCESS

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BASED ON PRESENTATION BY: CRAIG SALVALAGGIO | CHIEF OPERATING OFFICER

Based on a workshop given at Robotics Week hosted by RIA in September 2020

Whether you're an experienced automation user or considering automation for the first time, following a documented process when selecting a systems integrator partner will help you make a best-fit choice to ensure project success.

This informational article will provide you with:

- **Better insight into the end user decision-making process**
- **Key criteria on philosophy and strategy when approaching automation initiatives**
- **Better understanding of how to right-size the end user-system integrator relationship**
- **Qualifying criteria for selecting partners**

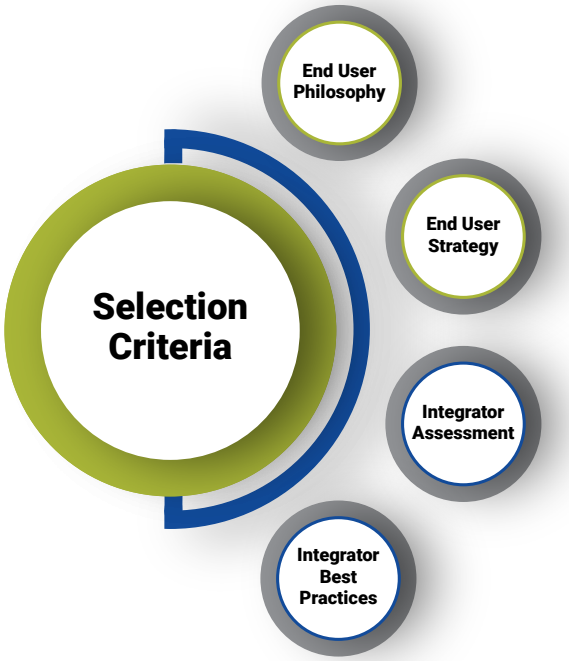

Figure 1

Figure 1 illustrates the recommended process for the selection of a system integrator. It is important for the end user to take a deep dive into both the company's corporate philosophy and the preferred strategy to be used for the system integration project. Defining the corporate philosophy answers many questions about the nature of the end user-system integrator relationship, clarifying where it falls along the spectrum of partner versus supplier. Determining the preferred system integration strategy requires the end user to assess its strengths related to project management and automation expertise, as well as the available bandwidth of the staff.

Concurrently, your potential system integrator partners should conduct their own internal assessment of strengths and enumerate their corporate best practices and certifications. Once those tasks are complete, the end user and system integrators' information is mapped out and matched into a set of comprehensive selection criteria.

DISRUPTIVE INNOVATION

The introduction of automation can be seen as disruptive innovation. "Disruptive innovation, a term of art coined by Clayton Christensen, describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors." With an understanding of this, managers can identify disruptive threats and work to overcome the internal resistance they often encounter in proposing innovative solutions. http://www.claytonchristensen.com/

END USER – WHAT IS YOUR PHILOSOPHY?

There are many categories to be evaluated when determining the end user's integration philosophy, from characterizing the relationship along the partner-vendor continuum to evaluating the current level of automation maturity and conducting corporate and facilities assessments within the organization.

Defining the Relationship – the Partner-Vendor Continuum

There is a fundamental difference between the notion that your system integrator is a partner with a vested interest in your success versus a supplier who could take a more adversarial or protective stance. Defining how the end user-system integrator relationship will function helps clarify each organization's goals and responsibilities.

Consider these questions when structuring your relationship with a system integrator:

- Culture – Is it a good fit with your organization?
- Long-haul – Is this a potential long-term relationship, or a one-and-done?
- Self-assessment – Do you have a clear understanding of your organization to help you choose a best-fit relationship with an integrator?
- Internal priorities – What are the organization's and stakeholders' priorities?
- Volume – What is your need for integration in the next one year? Five years? Ten years?
- International support – Do you need an integrator only in one geographic area, or are there regional or international needs as well?

Levels of Automation Maturity

There are three categories that most end users fall into when evaluating the level of automation maturity, see Figure 2. The highest level is self-sufficiency, where the end user has a dedicated group of automation engineers capable of designing and commissioning systems without outside involvement. The next level is when the end user has the staff to maintain the existing equipment but not enough internal resources to design and build new equipment. The final category is when end users have no automation expertise on staff and must outsource all tasks related to automated systems.

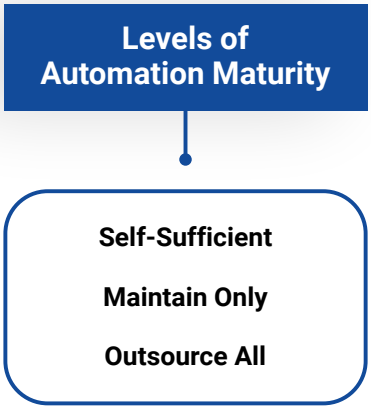

Figure2

Preparing Your Organization

Before embarking on a system integration project, the end user's philosophy should be very well defined as it relates to the project. Answers to the following questions should be clear to all involved:

Corporate:

- Will the project use internal engineering resources or partners for the technical aspects of the project?
- How will project management be handled? Will this be a function of the end user's PM staff, or will the system integrator be responsible for keeping the schedule?
- How will the functional and technical specifications be created? Who will develop them and what is the buy-off process for their adoption?

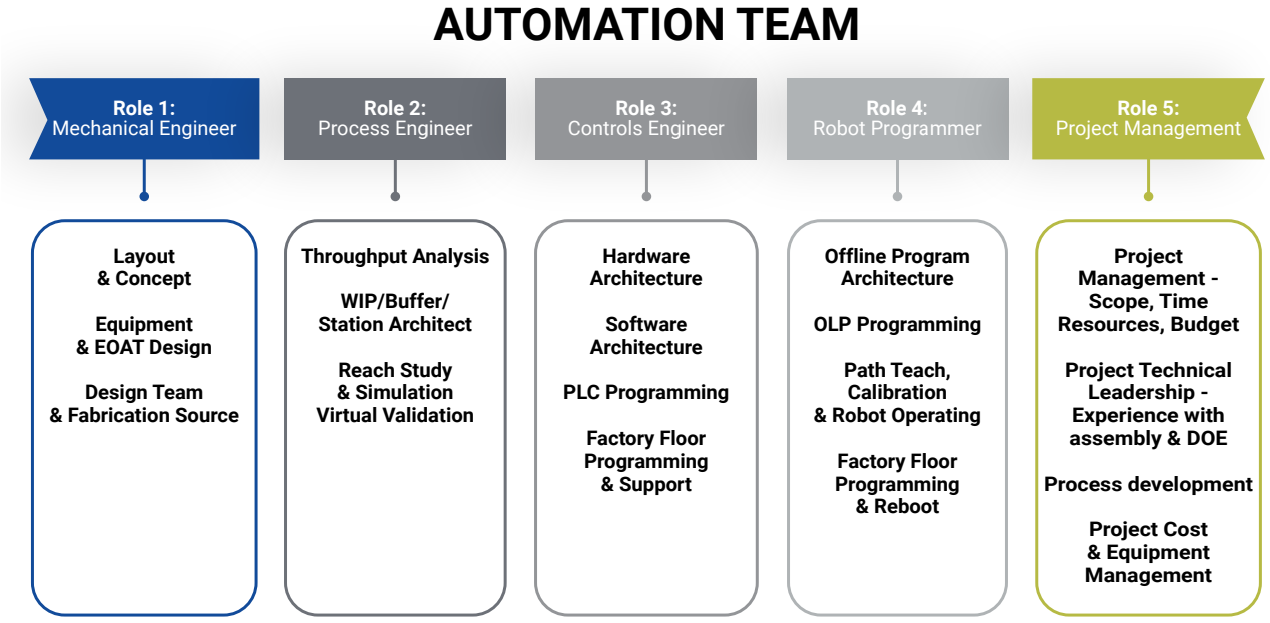

Figure 3

Facilities:

- Who will be the operational leadership?
- Who will be the technical leadership?
- What level of skilled labor is required?
- What training programs are mandatory?
  What additional programs are recommended?

Automation Team:

- Are the roles in Figure 3 adequately mapped out?

THE END USER – WHAT IS YOUR STRATEGY?

There are various tactical issues to be addressed when an end user conducts an internal assessment to determine the automation strategy.

Self-Integrate vs. Outside Integrator?

Once the end user philosophy information has been gathered as in the above section, the following questions should guide discussions on whether to keep the automation project in-house or hire a system integrator.

- What are your in-house capabilities?
- Do you have the time and resources?
- Do you have application experience?
- Are you up to date on the latest safety standards?

Process for System Integrator Selection

Once it's been determined that the project will not be executed with in-house resources and has gone out to bid, follow this procedure for the selection of a system integrator, keeping in mind the various types of SI business models, see Figure 4:

- Review all bids with internal stakeholders
- Compare the scope of work against the supplied bids
- Clarify ALL differences and bid language
- Complete the decision analysis process (must haves, needs, wants)
- Interview the integrator finalist (scope, cost, T&C, risk)
- Audit the integrator's facility
- Formally review information with internal stakeholders
- Select the integrator

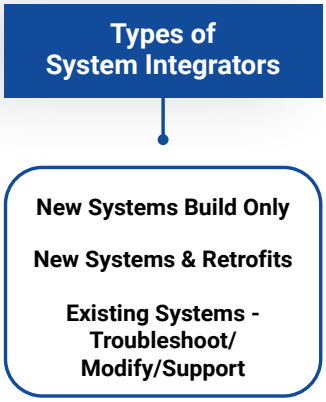

Figure 4

Program Leadership

A key component of every successful project is leadership. The project manager maintains the schedule throughout the various stages of the project, see Figure 5. The main responsibilities of project leadership are:

- Expectations at project kick off – execution team and project stakeholders
- Communication – establish a project cadence
- Schedule - establish a project schedule (milestones and stakeholder interaction points)
- Acceptance criteria – clearly define for ALL milestones within the project
- Design and installation

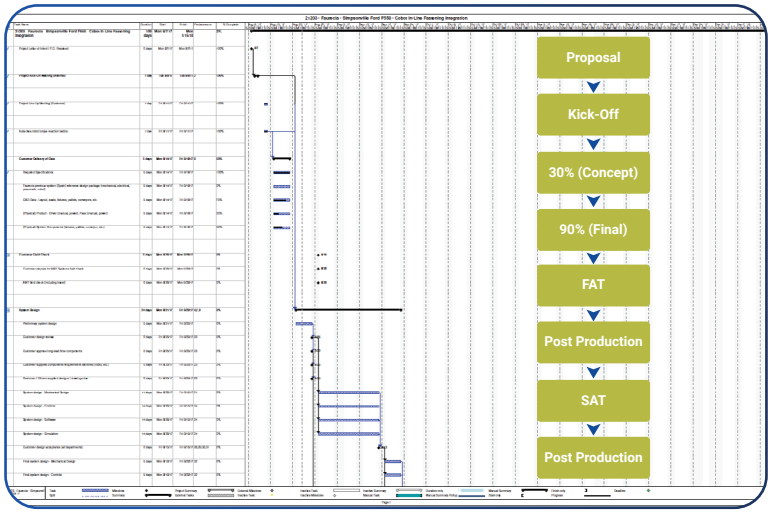

Figure 5

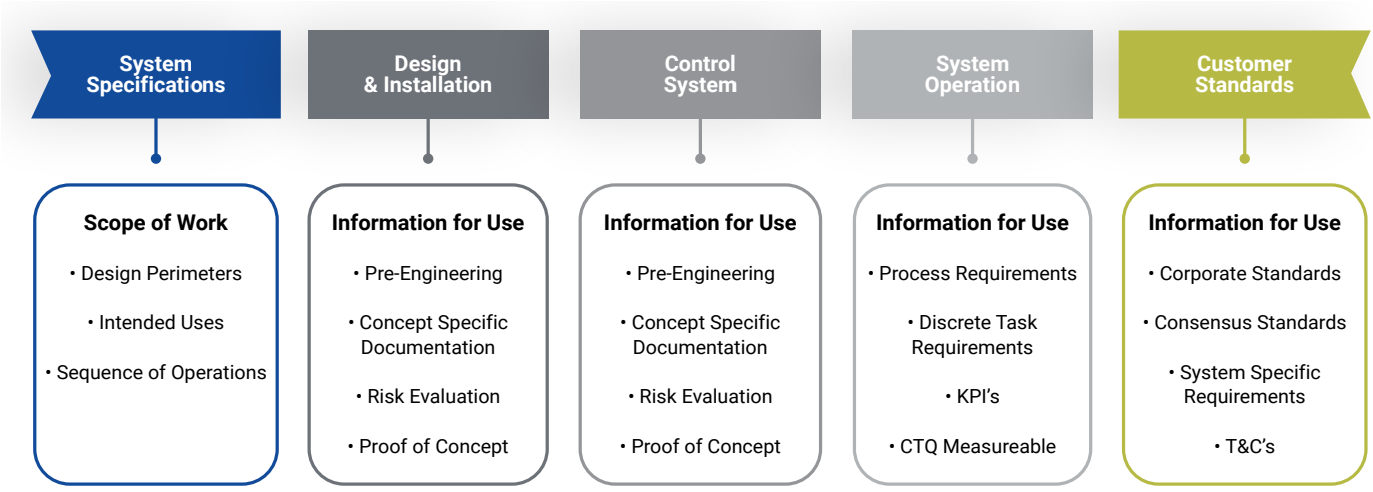

Figure 6

SYSTEM INTEGRATORS – WHERE DOES THE VALUE LIE?

System integrators may offer a variety of services, or specialize in one area. Some may only take on projects to design and build new systems, and others may incorporate retrofits and support of existing systems.

Is Systems Integration a Commodity?

For those who are new to the purchase of an automated system, the subtle distinctions may not immediately be apparent between system integration providers and the types of services they specialize in. Finding the best fit for your project requires a deep understanding of your needs as well as recognizing the important differences in the companies bidding on your project. Figure 6 details the steps in the design and commissioning of an automated system, as well as the type of information required at each stage.

Benefits of using a Systems Integrator

Recognize that your system integrator is providing a solution, not just products or components. The size of the integrator, their particular expertise, and the dollar value of the project all matter; there is no one-size-fits-all vendor for every type of project. Beyond those issues, there are differences between integrators in their knowledge of system safety design and risk management practices which can materially impact the end user's bottom line.

The general benefits of using a systems integrator are:

- Ground-up design encompassing both the architecture and process
- Tribal knowledge from a large team with a broad base of knowledge and experience
- One-stop shop for design, build, and support
- Guidance on choosing the right technology for the application
- Mobilize an engineering services group that can provide help
- Onsite support as needed
- Remote support and after-hours service

Figure 7

Earning Industry Credentials and RIA Certification

There are many benefits to having an organizational focus on earning industry-recognized credentials, see Figure 7. The Robotic Industries Association offers a rigorous RIA Certified Robot Integrator Program. Choosing an RIA-certified system integrator helps end users lower their project risk by selecting an SI that has achieved a high level of proficiency. Using an RIA-certified system integrator offers many benefits to end users such as:

- Proven industry leaders with a high level of achievement
- Demonstrated high level of proficiency to help mitigate risk – both business and safety
- Breadth and depth of knowledge – benchmarked against industry best practices
- Deep level of commitment and accountability
- Expertise in safety compliance and confidence with industry safety standards

Becoming an RIA-certified system integrator is a rigorous, multi-step process that begins with a prequalification interview conducted by another integrator. If the interview is satisfactory, the applicant then progresses to a comprehensive onsite audit, practical assessment of key personnel, and then technical evaluations for robot safety risk followed by an examination. Once the certification has been achieved, it must be maintained with biennial training and recertification. Figures 8 and 9 illustrate the depth of the assessment that is conducted during the RIA certification process.

CORPORATE ROBOTIC INTEGRATOR SCORE CARD

Robotic Industries Association

Integrator Company Name:	
Assessment Date:	
Proctor/ Auditor:	

ITEM	RATING	CRITERIA	Check off	Score	Weight	W+S
1		**ISO Certification Status**			0.02	0.00
	4	Achieved ISO/QS Certification				
	3	Achieved ISO 9001 Certification				
	2	Efforts to achieve ISO are underway and a target date set				
	1	No current plan to achieve ISO Certification				
	Evidence	**Show Compliance Certificate from ISO Auditor**				
2		**Long Term Integration Capabilities Plan**			0.05	0.00
	5	5 year plan shared with end-users that shows goals, action, responsibilities and due dates				
	4	3 year plan promoted to end-user				
	3	Annual plan promoted to end-user				
	2	Has a presentation used to describe service capabilities and procedures				
	1	Does not have long term service business plan				
	Evidence	**Company Web site, promotional materials, etc.**				
3		**Business Enterprise System Utilization**			0.01	0.00
	5	Has a Business Planning/Purchasing Software system designed to streamline management, manufacturing operations, supply chains, financials, customers, technology and business performance activities				
	4	Has a Business Planning/Purchasing Software system designed to streamline management and manufacturing operations				
	3	Has a Business Planning/Purchasing Software system that can track purchasing history and current inventory with min/max stocking level controls				
	2	Has a Business Planning/Purchasing Software system that can track purchasing history and current inventory				
	1	No Business Planning/Purchasing Software system				
	Evidence	**Internal Intranet System**				

Figure 8

Why Risk Assessments?

Note that in Figure 9, special attention is given to the safety risk assessment process. There are a wide variety of hazards associated with robotic equipment. A robot cell has many potential safety hazards, including the robot itself, its end of arm tooling (EOAT), and any other equipment that is in the cell. The robot also has different types of user interactions, including those with operators, programmers, maintenance staff, and more.

The RIA certified system integrator must provide technical leadership to the end user, which includes responsibility for ensuring the safety of the operators and equipment. Risk assessments are one of the tools used for making systems safer, and are mandatory for systems designed and built by an RIA Certified Robot Integrator.

8		**RIA Safety Risk Assessment**			**0.10**	**0.00**
SEE NOTE 4	**5**	Performs tasked based safety risk assessments per RIA-15.06, ISO 10218 or CSA Z434 on all installed robot projects in unison with and provides results to end-user as-well-as publishes the results in the tables for use.				
	4	Performs tasked based safety risk assessments per RIA-15.06, ISO 10218 04 CSA Z434 on all installed robot projects and publishes the results in tables for use.				
	Evidence	**Company Buy-Off Sheet**				
9		**After Hours Support Available 24/7**			**0.05**	**0.00**
	5	All customer service functions (troubleshooting assistance, service, parts, etc.) are available 24 hours per day, 7 days per week via a direct dial telephone number for no additional fee or contract				
	4	All customer service functions (troubleshooting assistance, service, parts, etc.) are available via a direct dial telephone during the work day, and no after hours support is available and/or a contract fee is required				
	3	Provides limited customer service support during the day and after hours, and depends upon a contracted company to provide service support functions				
	2	Provides no customer service support during after hours, and depends upon a contracted company to provide service support functions				
	1	Provides no customer service support during the day or after hours, and depends upon a contracted company to provide service support functions				
	Evidence	**Company Web Site or promotional materials**				

Figure 9 - RIA Risk Assessments

THE MATCH - SELECTION PROCESS

After the end user has developed an understanding of their organization's philosophy and preferred integration strategy and has deep-level understanding of the differentiating credentials of the system integrators bidding on the project, then it's time to evaluate the bidders using a standard checklist.

Selecting an Integrator – Criteria for Success

Figure 10 shows criteria that can be used to lower project risk by evaluating integrators in 14 key areas, which include ratings both in business/financial stability as well as technical merit.

- ☐ Long Term Integration Capabilities Plan
- ☐ Business Stability
- ☐ Proposal Process
- ☐ Size
- ☐ Engineering & Application Experience
- ☐ Engineering Capabilities
- ☐ Program Management
- ☐ Local vs. International Support
- ☐ Service & Technical Support
- ☐ Post-Delivery Support
- ☐ Spare Parts & Warranty
- ☐ Safety
- ☐ Training
- ☐ Customer Satisfaction Measurements

Figure 10

Best Practices

Throughout AMT's three decades of experience engineering automated systems, a set of best practices has been developed for creating a good match with end users/projects. In addition to evaluating all bidders with the above criteria, below is a list of tips to help end users avoid common pitfalls:

- Right-size your business with the project's technology and dollar value
- Stick with the process in Figure 11 and don't skip steps, especially in these areas:
    - Program management
    - Risk assessments
    - Communication
    - Buy-off criteria
- Educate yourself on safety standards and risk assessments
- FAT/SAT buyoff – always complete the final acceptance testing to ensure the system met the performance and safety requirements agreed to at the term of sale

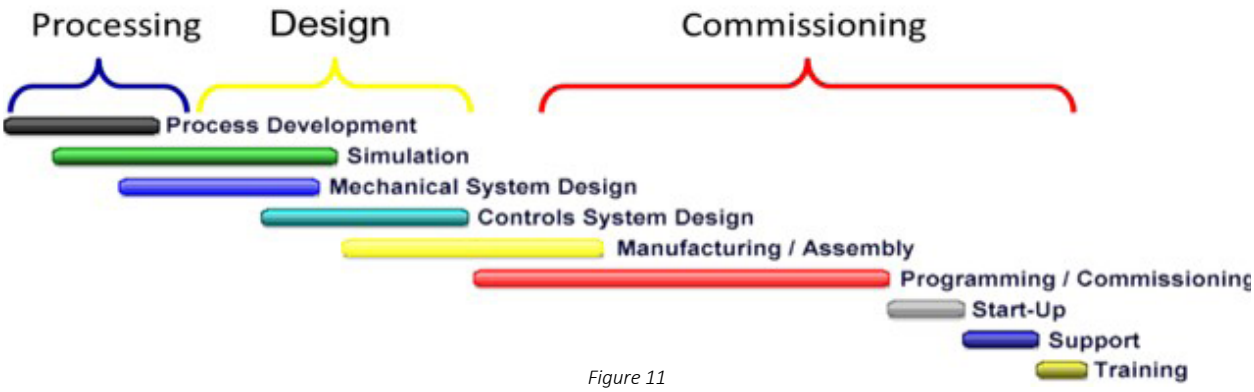

Figure 11

Summary

To help ensure project success and protect the financial well-being of the company, the end user should aggressively pursue their due diligence before choosing a system integrator and embarking on a system integration program. Additional considerations are the importance of creating an internal knowledge team, having a clear corporate direction on using internal automation competency or outside support, creating an equipment safety roadmap, and providing training at both the engineering and project management levels. Above all, having a culture of continuous improvement and consistency and robustness in internal tools, methods and business processes will help ensure that this project and those in the future enjoy a positive outcome.

For more information on choosing a system integrator or to discuss a project, please contact us.