The systems integration industry manages the deployment-to-operation lifecycle of complex IT solutions — providing a service to various markets to enable manufacturing processes and software to communicate.

Companies are increasingly turning to systems integrators that can create computing systems for their clients by combining software and hardware components from multiple vendors to make a whole system.

With the Covid vaccines becoming readily available — as the country continues to respond and recover from the pandemic — the systems integration market is expected to experience a CAGR of 5.6% during the period of 2021 through 2026.

Manufacturing companies are introducing flexible manufacturing systems (FMS), a production method designed to easily adapt to changes in the type and quantity of the product being manufactured. Machines and computerized systems can be configured to manufacture a variety of parts and handle changing levels of production.

EVERYTHING UNDER CONTROL

TRENDS & TALK FOR THE MANUFACTURING INDUSTRY

c3controls is pleased to present another issue in a series of informative articles that provide information on the latest advancements that affect the way manufacturers are designing and building machinery today.

Many industrial manufacturing companies are moving more of their industrial operations into automation — and as they do, systems integration is becoming increasingly more complex. Industrial manufacturers are incorporating more automation and robotics into production lines to increase production output and reduce labor, as well as to control energy usage and plant maintenance costs. Companies are seeking ways to increase communications across all of their manufacturing systems and manage many aspects of their diverse processes.

These manufacturers are overlaying predictive maintenance sensors and systems to ensure less downtime — in many instances adding software, machines and data tools from different suppliers. This increases complexity as users work to integrate disparate data system technology that was designed to be distinct data processing systems and normally do not exchange data or interact with other computer data processing systems.

In this issue of *EVERYTHING UNDER CONTROL*, c3controls will provide an overview of some of the new advancements in technology affecting the Systems Integrator Industry. We will touch on automation and robotics applications and discuss some of the software available that help to make the integration of new equipment successful.

Systems integrators and new technology trends for the industry

A systems integrator (SI) is an individual or a business that creates computing systems by combining software and hardware components from multiple vendors to fulfill the needs of their clients. In cloud computing (SaaS, PaaS, IaaS), a cloud integrator works like an SI — which is a service that helps their client negotiate the difficulties of cloud migration.

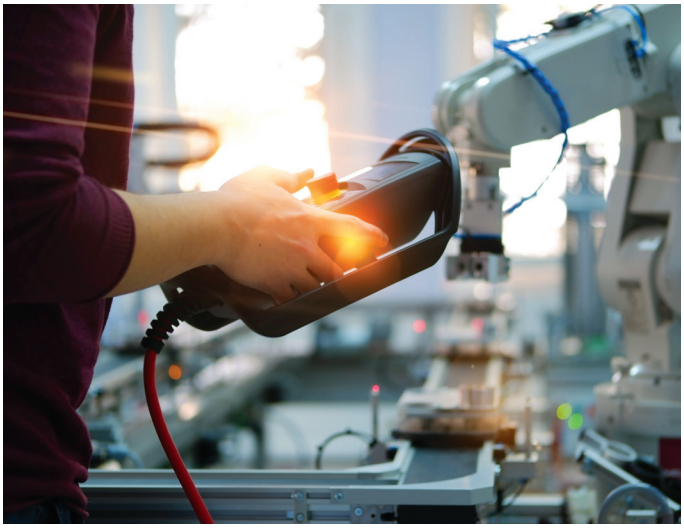
The systems integration industry manages the deployment-to-operation life cycle of complex IT solutions — providing a service which enables manufacturing processes and software to communicate in various markets, such as oil and gas, automotive, aerospace and defense, healthcare, chemical and petrochemical, power generation, and more.

New online services offer valuable tools for systems integration

While manufacturers are demanding more complex integration capabilities, the following online services will make systems integrators' jobs easier.

- Hypervisor (hypervisor, also known as a virtual machine monitor or VMM) is software that creates and runs virtual machines as guests within the cloud operational system. A hypervisor allows one host computer to support multiple guest virtual machines by sharing its resources, such as memory and processing — and can support large numbers of virtual machines with the ability to scale services up and down according to varying requirements.

- Platform as a Service (PaaS) is a category of cloud computing services that allows customers to provision, instantiate, run and manage a modular bundle comprising a computing platform and one or more applications. This can be accomplished without the complexity of building and maintaining the infrastructure typically associated with developing and launching the application(s) — and to allow developers to create, develop and package such software bundles.



- Software as a Service (SaaS) is a software distribution and licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. SaaS is sometimes referred to as "on-demand software." A service provider gives customers access through the internet to applications that are developed and owned by the provider. This service allows each user to access programs via the internet instead of having to install the software on the user's computer. Using SaaS gives users a greater degree of control and knowledge over their project and results in a more efficient and accurate system.

- Infrastructure as a Service (IaaS) is cloud computing services that allow companies to lease servers for computing and storage in the cloud. Users can run any application or operating system on these servers without any additional operating costs. The servers can provide high-level APIs (Application Programming Interface) that are used to dereference various low-level details of underlying network infrastructure like physical computing resources, location, data partitioning, scaling, security, backup, etc.

- The Internet of Things (IoT) solutions market is one that holds many opportunities for systems integrators because of their expertise in navigating the complex range of products and technology choices available in the market today. IoT solutions can guide companies through complex integrations into existing manufacturing systems that can add increased production capabilities and profitability to their clients' businesses. They can also assist in the concept, design and management of the deployment-to-operation life cycle of a new complex manufacturing solution.

- Flexible Manufacturing System (FMS) is a production method that has existed for many years and is now becoming new again. With today's digital technology designed to easily adapt to changes in the type and quantity of the product being manufactured, machines and computerized systems can be configured to manufacture a variety of parts and handle changing levels of production. An FMS can improve efficiency and reduce labor, lowering a company's production cost — and can be a key component of a make-to-order strategy that allows customers to customize the products they want.

- Remote access to plant management is a growing need in the industrial marketplace. With the onset of the coronavirus outbreak, industrial organizations around the globe are working to keep their employees and communities safe and healthy. They are also contending with the full range of effects to the economy, as well as to their supply chains and operations. With the loss of human assets due to the pandemic crisis and a workforce retiring, it has become clear that the concept of having everyone on-site is evolving.

A remote access operations strategy plays a crucial role in running complex manufacturing plants and relies on a modern automation infrastructure. Plant personnel can remotely manage daily production, maintenance, safety, technical services, training and more, as well as make improvements across multiple sites on numerous different devices. They can also track production targets, monitor asset health and even create scenarios to determine the effect of operational changes prior to implementation.

The Internet of Things (IoT) solutions market is one that holds many opportunities for systems integrators in navigating the complex range of products and technology choices available in the market today.

Advanced systems integration has improved efficiency for data privacy, human resource processes and functional safety

- Data privacy continues to be in demand across industries, but now there is an increased focus on stronger provisions for the security of company information. The two go hand-in-hand — and the difference is essentially just a shift in emphasis. Hackers are never far behind industry data protection developments, so companies are now investing more in maintaining as much protection as possible from cybercriminals.

- HR functionalities have long since gone into the cloud, with many applications available. Payroll has mostly continued on it's own, but this is now changing as well. Payroll functionalities are increasingly being integrated into HR platforms via a variety of connective interfaces. This logical progression has been a long time coming, but it is only recently that the right platforms and security features have been put in place to make it more feasible.

- Functional safety (FS) covers the implementation of safety-device related services to mitigate risks associated with manufacturing equipment and processes. This is always a concern for companies with complex manufacturing procedures, so they are increasingly including FS in their integrated systems. Machine safety systems have always been available, but they have evolved a great deal in the past decade. They are far more sophisticated, using components such as sensors and logic controls to better satisfy production demands and be remotely monitored.

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Electronic machine controls for over four decades

We are proud to have played an integral part in the operation and control of the many different types of automation and robotic manufacturing systems for the Systems Integration Industry.

We hope you have benefited from our latest issue of *EVERYTHING UNDER CONTROL* and have learned something you may not have known before. In future issues, we will provide you with information on the latest trends and advancements for a wide variety of industries that depend on c3controls products as an integral part of their machine controls.

Handling Customer Concerns

Quality at c3controls includes our comprehensive follow-up service after the sale. In order to respond promptly to customers, c3controls has a quality process in place which includes immediate return and replacement of the product to keep our customers' production up and running — as well as a comprehensive review of the product application to determine if the perceived issue is only present under certain conditions.

The goal of the quality process is to identify what specific issues the customer is experiencing with the product — including determining problems that are application specific and to prevent those issues from reoccurring in the future.

Advantage Pricing

We have complete control over our engineering and manufacturing processes, maintain lower overhead costs than our competitors, and offer our factory-direct business model. We offer customers a buying partnership that can save them up to 40% — and has helped our customers improve profitability and cash flow for more than 44 years.

Same-Day Shipping

At c3controls, we know how important it is to get your orders on time, every time. That's why we offer Guaranteed Same-Day Shipping on any order for standard catalog items received by 6:00pm ET. Our customers enjoy peace of mind knowing they will get what they need, when they need it. A promise that we know can help you reduce inventory and save money.

Limited Lifetime Warranty

While other companies claim to offer the highest quality products on the market, at c3controls we guarantee it. We can ensure high quality because we have total control over every aspect of the engineering and manufacturing processes.

Quality that meets your exact requirements

Using our decades of experience, c3controls continues to expand our culture of 'quality' to design products that meet our customers' challenges of today and tomorrow.

c3controls produces durable, well-designed electrical control products that meet global standards for quality and safety — and perform reliably even in the most punishing environments. Ranging from power and actuation to control logic to human machine interface to wiring/cable duct — c3controls offers products that perform the essential control functions that are at the heart of nearly every electrically operated machine and equipment.

For further details on our world-class products, call us today at 724.775.7926 or visit us at www.c3controls.com