Automation life cycle: A matter of evolution

By Mark Taft

Today's automation landscape, especially in North America, consists of a mix of aging, disparate, and loosely or non-connected systems. Therein lies the paradox. Manufacturers operating these mixed systems are under pressure to operate them more efficiently.

Manufacturers must continue to wring more value out of their existing investment to be able to compete effectively in the global marketplace.

Gone are the days of greenfield plant installations. The rip-and-replace mentality that was prevalent when the current control systems replaced prior generation technology simply cannot sustain cost justification today, either from a capital cost or production downtime perspective.

Rapidly changing technologies make the previous practice—installing a control system and "letting it run" untouched for 15 or 20 years—impractical today.

Options abound

Manufacturers operating automation systems today have more options to maximize the value of their existing systems than ever before. Through effective life-cycle planning, manufacturers can improve overall productivity by leveraging their existing automation investment, without discarding established control systems.

To steal a scenario from Darwin and maybe oversimplifying it a bit: Plants and animals have existed over millions of years, and they continue to evolve and adapt to new environments. Taking that concept and moving over to the manufacturing environment, evolution is simply the ability to incrementally add or replace technologies in an existing system in a step-wise fashion, over time, with minimal disturbance to the performance of the manufacturing operation or current work processes. This approach contrasts with system migrations that involve wholesale replacement of technologies requiring total re-development and implementation of underlying applications, adding risk, cost, and time. Several specific capabilities/ approaches are necessary to allow systems to successfully evolve:

The mindset that existing applications will be the foundation for future productivity improvement; this requires portability and reuse of applications

- Integration of new technology with that of the existing installed system
- Consistent “look and feel” of new operator environments
- New technology addition with minimal disruption to production
- Product life-cycle support that enables step-wise system upgrades over extended periods while having access to compatible hardware, software, and security updates
- Extension of the system user view to include all automation applications from a single operations environment

Manufacturers need to do a thorough inventory of their installed systems and other applications and then combine that with projected business requirements for incremental productivity gains and strategies to develop an evolution and support plan. They should:

- Identify and target the facilities at risk for production loss due to the age/condition of the equipment, as well as those with potential for increased production
- Detail a short-term (one-five year) plan that should undergo budgeting and implementation

A long-term plan, reviewed and revised annually should reflect changing business needs and allow for the implementation of new technology. This process identifies and budgets for specific projects.

Proactive automation system evolution planning and execution provides a balance of immediate and long-term benefits for system owners.

In one case, a chemical industry manufacturer incrementally added new technology in several planned phases, all while keeping its process up and running. Planning up front paid off; the change required zero downtime. That meant the manufacturer met all production commitments.

A well thought out and executed evolution plan is key for effective automation life-cycle management. It helps manufacturers plan and justify investments based their business goals, without the risk or production interruption of rip-and-replace.

About the author

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