MAKE THE MOST OF MIGRATION

Sponsored By Honeywell
**Tackle System Obsolescence**

A well-planned and executed control system migration improves plant availability and reliability, while increasing production flexibility.

**DISTRIBUTED CONTROL** Systems (DCS), at some point, require upgrading to ensure reliable operation and to leverage the latest technology. A well-planned and executed evolution to a modern control system improves plant availability and reliability, and can also provide more flexible production platforms. Flexibility is the key for companies seeking to make the most of business opportunities. This article will introduce the basics of “obsolescence planning” that can be applied to most situations.

**OBSOLESCENCE CONCERNS**

Obsolescence can come in several forms. A control system can suffer from technical obsolescence (missing yields), functional obsolescence (missing opportunities) or supply obsolescence (risk for continued operation). Maintenance costs may be rising, with spare parts becoming scarce and expensive. Obsolescence is a viable reason for an upgrade when there’s increasing risk of control equipment failure shutting down a critical process.

Obsolescence or pending obsolescence may be a contributing factor in limitations of legacy systems, preventing the plant from:

- Taking advantage of an emerging business opportunity,
- Supporting today’s open networks cost-effectively,
- Utilizing plant asset management applications and production management solutions.

Security issues are another critical concern associated with obsolescence. Some plants maintain their older DCS in hopes of avoiding cyber threats — thus gaining a false sense of security. However, legacy systems are subject to stress for which they were not designed, creating significant security vulnerabilities. The presence of obsolete software products embedded in the system is another potential liability.

Regardless of whether a DCS is state-of-the-art or vintage, sites must adopt a security strategy relying on “defense in depth.” This strategy is included in the IEC 61511 standard, which stipulates that every layer of protection (including both control and safety systems) should be unambiguously independent. Some of the reasons for this basic requirement are to avoid common cause faults, minimize systematic errors, and provide security against unintentional access.

In the 1970s, the DCS revolutionized plant-wide operations, performance and asset utilization in the process industries. Four decades later, leading control system suppliers are once again redefining industrial automation with enterprise-wide solutions designed to unify people with process, business requirements and asset management.

**PLAN A SUCCESSFUL EVOLUTION STRATEGY**

Properly planned and implemented, control system evolutions enable end-users to migrate legacy control platforms at their own pace, allowing new controllers to be added at any time and integrated with existing controllers. It also permits migration of subsystems and function blocks to new controllers whenever the user decides.

As areas of obsolescence are identified, a phased approach can facilitate the evolution to the logical and preferred replacement. As part of obsolescence planning for an existing system, evolution goals and objectives should be defined. A structured, organized approach to system evolution enhances the benefits of technology upgrades and preserves the rich intellectual property contained in legacy systems.

Migrating at your own pace positions you to manage your operational budget in a very competitive marketplace. This process allows for transitional training of operations, maintenance and engineering while delivering continued production. This evolution strategy is the inverse of the “rip and replace” method.

**DO YOUR HOMEWORK**

As part of good engineering and project management practices, plants should take the following steps during obsolescence planning:

- Determine the best time to upgrade based on your production targets.
- Determine your evolutionary path with projects that meet specific business objectives.
- Define a path for the smooth transition of your operations, maintenance and engineering workflows.
- Make beneficial decisions in your planning by looking for opportunities to improve your operations with new capabilities.
- Consider where you can protect your intellectual investments in your legacy control system.
- Use a proven approach with comprehensive checklists.
- Develop detailed cutover plans.
- Define intermediate operability and training plans.

Planning for control system evolution is the key to success. An effective plan will protect your existing intellectual property, while supporting the plants you wish to manage with the obsolescence plan.

Prepare to be surprised. There may be assets you thought were no longer in use!

Map assets to near-term and longer term actions. Partner with your preferred vendor representative to map out your path. This information will help to identify assets that you have installed and which ones are near-term candidates for action. You will begin to see the foundation for a timeline in addressing obsolescence.

Prioritize your obsolescence vulnerabilities. By
prioritizing, you will be able to formulate a phased mitigation approach, starting with your most critical obsolescence issues.

Determine how to address each obsolescence vulnerability. There will likely be different resolution options for each identified vulnerability. Perhaps an upgrade kit or other appropriate solution is available. For some vulnerabilities, it may be clear that reasonable solutions could be developed in an appropriate timeframe. And, for some, you may recognize a need for urgent action.

Document your obsolescence plan and update regularly. Verify that you have included appropriate steps from the “Do your homework” outlined above.

Addressing evolution from the perspectives of technical, functional, and supply obsolescence allows you to address issues logically, in a phased approach, in order to minimize the impact on your operations. Many control system vendors like Honeywell can provide information and guidance as your obsolescence plan is developed and maintained.

HONEYWELL PROCESS SOLUTIONS helps industrial customers worldwide operate safe, reliable, efficient, sustainable and more profitable facilities. For more than 35 years the company has continuously evolved its process automation control from legacy control systems to today’s innovations. For more information, visit Honeywell Process Solutions.

How to Deal with System Obsolescence

Process industry panelists discuss migration challenges

By Keith Larson, Publisher

“RIP AND replace is a last resort. It means you’ve either not been keeping up with technology or relationships with your supplier have broken down.” Paul Stewart was suitably blunt in his dismissal of wholesale replacement as a viable means of dealing with obsolete control systems.

At the November 2012 Honeywell Users Group EMEA meeting in Istanbul, Stewart, of Marathon Oil in the U.K., joined Paul Anderson of Saudi Aramco, Mahdi Akbar of EQUATE Petrochemical, Keith Landells of BP, and Andy Coward of Honeywell Process Solutions to discuss how the process industries are dealing with the large number of process control systems that are approaching the end of their useful lives. David Humphrey of the ARC Advisory Group moderated the panel.

FUNCTIONALITY SELDOM A DRIVER

While a phased approach to migrating from older systems to newer technology is preferred, the panelists agreed it’s often difficult to determine just when and how to make that switch. “Some of the really old systems are still very reliable,” noted BP’s Keith Landells. “That’s part of the problem.”

“Engineers want the latest and greatest, but management is looking at costs,” added Saudi Aramco’s Jim Anderson. “Very seldom is the driver enhanced functionality. Many of our current systems were installed in the 1980s and 1990s to replace single loop controllers and are reaching the end of their useful lives,” he said. “But it all comes down to whether we can continue to operate reliably and safely. Can we continue to get the parts, the training? The savings you get by delaying a capital expenditure is significant.”

Obsolescence and reliability — not new functionality — are the key modernization drivers, agreed Stewart. “It’s really hard with electronics, with systems that have been operating for 20-30 years. How long can they reasonably be expected to run? We take advantage of added features and functionalities when we upgrade, but it’s not the reason.”

COTS COMPLICATIONS

A double-edged sword inherent in today’s process control systems is the pervasive use of commercial off-the-shelf (COTS) computing technology. And while leveraging commercial IT developments makes possible a broad swath of advanced functionality, maintaining an automation infrastructure for 20 or more years based on component technologies
intended to be superseded in three years, presents a significant and ongoing issue, the panelists said. For its part, Honeywell Process Solutions has committed to providing its customers with an evolutionary path forward from its extensive installed base of older systems, even as it pioneers new advances in control system technology, according to Andy Coward of Honeywell. “Keeping up with the pace of COTS technology is a real challenge. Some customers want the latest technologies, and some want to wait until new releases are stable,” Coward said. “We have to respond to a wide range of customer desires, even within the same company, between IT and control system groups. We work with our key suppliers like Microsoft to make sure we’re ready to meet those needs.”

Virtualization is but the latest COTS technology to be appropriated from the commercial IT space and is having a significant impact on how many control system applications are deployed and maintained. “Anything that simplifies the system is a good thing,” said BP’s Lansell, “and separating the hardware from the software is one.” And while virtualization has proven effective in consolidating and separating hardware maintenance from the upkeep of operating systems and applications, Mahdi Akbar of EQUATE Petrochemical expressed concern that the virtualization environment might one day present its own maintenance demands. “Will the virtualization platform become just another issue, added Lansell. “We know change is coming — especially with the use of IT technology,” he confessed. “We need to be prepared for it.”

PEOPLE ISSUES

While system migration and modernization presents undeniable technical challenges, neglect the human aspects at your own peril, the panelists said. “Training and work processes, hardware and software: they all play into the feasibility of an online migration,” said Honeywell’s Coward. Up front, it’s important to do role and complexity assessments so that the new displays support what operators need to do, he adds. “It’s not usability – it’s managing change.”

As Martho on’s Stewart put it, “The only way people can learn is by doing it, and we do the best we can.”

“Just as getting up, moving around, walking, biking and sensible weightlifting can get people’s blood moving, release endorphins and fuel a sense of well-being, there’s a broad load of innovative tools and methods that can do the same for supporting, migrating and reviving distributed control systems and their overall applications — and help them overcome the problems of obsolete equipment and persistent downtime, and reach new levels of efficiency, safety and sustainability. Of course, most process applications go years or decades without replacing many controls and other equipment, but there comes a time when maintenance and repairs must give way to technical advances and more capable components and systems.

For instance, Valero Energy Corp.’s (www.valero.com) refinery in Benicia, Calif., recently completed a major upgrade and rearrangement of its control systems, control room and networking infrastructure with help from Honeywell Process Solutions (HPS, www.honeywellprocess.com). The refinery was built by Exxon Mobil in the late 1960s and originally used an IBM 1800 system for process control, but later replaced these mainframe computers with Honeywell’s TDC 2000 and TDC 3000 systems with extended controllers on Data Hiways for base regulatory control and application modules for system control. The refinery added a local control network (LCN) as its yard node count grew, but later replaced it with a total plant network (TPN) bridge to maintain the performance of this large system. High-performance process managers (HPMs) were added in 2004. And Valero began planning in 2006 to remove its TPN Bridges by 2010. The company also wanted to improve its native Windows (NW) interfaces and reduce the possible scope of failure by dividing its system into manageable clusters.

“TPN Bridge support was going away, and, though our big LCN was working OK, a refinery-wide reliability study in 2003 reported that using it was out of step with the industry. The study pointed out that multiple smaller LCNs were more common in the refining industry,” says Denise Plaskett, Valero’s principal applications engineer for control systems. “So the best solution for us was to remove the TPN Bridge and add Honeywell’s Experion PKS on top, allowing distributed system architecture (DSA) communications between clusters to keep our system whole.” Plaskett adds that some of the main challenges to renovating with Experion included:

• Limited space in the refinery’s centralized control room;
• Seven-week shift cycles that made it hard to get operators in to help with design and training plans;
• A traditionally do-it-yourself Control Systems group that needed external support for this renovation, even as it continued to support day-to-day refinery operations; and
• Timing issues that required all integration and cutover to the new system be done on-line, while working around unit turnarounds over a multi-year time period.

REASONING THE NEED

Of course, Valero’s Benicia plant is just one of many on the quest to renovate its controls, and though each has many unique characteristics, they also share

Restoration Possible

Many new tools and innovative methods support and breathe new life into aging distributed control systems

by Jim Montague, Control

YOUTH MAY be wasted on the young, but there’s no reason you and your control systems and process applications can’t regain and maintain some youthful strength and couple it with your veteran experience and know-how. Just as getting up, moving around, walking, biking and sensible weightlifting can get people’s blood moving, release endorphins and fuel a sense of well-being, there’s a broad load of innovative tools and methods that can do the same for supporting, migrating and reviving distributed control systems and their overall applications — and help them overcome the problems of obsolete equipment and persistent downtime, and reach new levels of efficiency, safety and sustainability. Of course, most process applications go years or decades without replacing many controls and other equipment, but there comes a time when maintenance and repairs must give way to technical advances and more capable components and systems.

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Beginning with 44 nodes, the system grew to more than 60 nodes over the next 20 years. The refinery added a local control network (LCN) as its node count grew, but later replaced it with a total plant network (TPN) bridge to maintain the performance of this large system. High-performance process managers (HPMs) were added in 2004. And Valero began planning in 2006 to remove its TPN Bridges by 2010. The company also wanted to improve its native Windows (NW) interfaces and reduce the possible scope of failure by dividing its system into manageable clusters.

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Figure 2. Rip and replace is a fast resort. “Marathon Oil’s Paul Stewart on the need for control system suppliers to provide a phased upgrade path that allows users to gradually replace obsolete control systems with current technology.”

This article originally appeared in Chemical Processing’s sister publication, Control.
### Maverick Automation Survey: DCS Results

**Present Level of Automation Activity**

<table>
<thead>
<tr>
<th>Using panel board controls</th>
<th>GTEC: 15.7%</th>
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</thead>
<tbody>
<tr>
<td>Operating with legacy automation system</td>
<td>35.7%</td>
</tr>
<tr>
<td>Operating with updated or new automation system</td>
<td>33.5%</td>
</tr>
<tr>
<td>Integrating plant controls data into enterprise system</td>
<td>33.5%</td>
</tr>
<tr>
<td>Fully integrated throughout our enterprise</td>
<td>7.3%</td>
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<tr>
<td>Biggest Constraint on Automation at Facility</td>
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<tr>
<td>Budget</td>
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<td>Plant capital expenditure priorities</td>
<td>28.5%</td>
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<tr>
<td>Resources</td>
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<tr>
<td>Integration of technology platforms</td>
<td>8.7%</td>
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<tr>
<td>Maintaining legacy systems</td>
<td>8.6%</td>
</tr>
<tr>
<td>Project steering</td>
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<tr>
<td>IT infrastructure limits</td>
<td>0%</td>
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<tr>
<td>Investment Plans in Next 24 Months</td>
<td>47%</td>
</tr>
<tr>
<td>Plant expansion using new automation system</td>
<td>37.8%</td>
</tr>
<tr>
<td>Add remote support for information and control systems</td>
<td>33%</td>
</tr>
<tr>
<td>Integrate controls into enterprise systems</td>
<td>33.5%</td>
</tr>
<tr>
<td>Legacy automation system migration</td>
<td>8.5%</td>
</tr>
<tr>
<td>Separation</td>
<td>33%</td>
</tr>
<tr>
<td>Panel board controls migration</td>
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</tr>
<tr>
<td>None of the above</td>
<td>11.9%</td>
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| LIVING WITH LEGACY, SEEKING TO MIGRATE |

- **About one third report they’re planning to migrate legacy automation systems in the next two years.**
- Many common challenges and can use many of the same solutions.
- In fact, a new automation survey by system integrator Maverick Technologies LLC (www.mavtechglobal.com) in Columbia, Ill., included responses from 175 technical support, asset maintenance and project planning and execution personnel about their DCS applications and efforts (Figure 1).
- More than half of the respondents (53.5%) report they’re operating with new or updated automation systems, but more than a third each are running legacy automation (35.7%) or integrating control data into their enterprise (33.5%).
- They add the biggest constraints on automation in their plants include budget (28%); capital expenditure priorities (26.5%); resources (19.5%); integration of platforms (9.7%); maintaining legacy systems (8.6%); and planning (7%).
- To improve their applications, close to half of the respondents plan to expand with new automation systems (47%) within the next 24 months, while about a third each plan to add remote support for data and controls (37.8%); integrate controls with their enterprise/business systems (33.5%); and/or migrate their legacy automation systems (33%).

**Investment Plans in Next 24 Months**

- **Plant expansion using new automation system**: 47%
- **Add remote support for information and control systems**: 37.8%
- **Integrate controls into enterprise systems**: 33.5%
- **Legacy automation system migration**: 8.5%
- **Separation**: 33%
- **Panel board controls migration**: 8%
- **None of the above**: 11.9%

**LIVING WITH LEGACY, SEEKING TO MIGRATE**

- “The DCS was replaced while part of the plant was shut down for planned maintenance, so the timing would change depending on how the maintenance work progressed,” says Erfan Gafar, deputy senior vice president of Pertamina’s project engineering department. “Despite repeated schedule changes, switchover was completed as originally planned without delays.”
- Likewise, the Langkawi cement plant in Ke- dah, Malaysia, has two production lines producing 3.3 million tons of clinker per year. The facility is one of three operated by Lafarge Malayan Cement (LMC; www.lafagemalaysiaent.com), and its Line 2 was run by an aging Polysius DCS for which spare parts were no longer easily available.
- So beginning in 2007, Lafarge planned and undertook a four-phase, five-year revamping of the line’s controls with help from ABB Malaysia and its associated Operation Center in India (ENOPC). The third phase shifted key process areas of Line 2 to ABB’s 800xA control system in June 2011, and the final phase was completed in June 2012 (Figure 2). This new DCS included with 11 AC 800M controllers for 14,000 I/O points, integration of existing 5 AC 800M controllers for 6000 I/O points, and seven operator workstations.

**To upgrade the plant’s safety capabilities at the same time, Lafarge also planned to renovate the line’s electrical systems and installed visible safety instrumented systems (SISs) that comply with IEC 61508 and IEC 61511. “Our operators now have full control over energy and raw material consumption with 800xA and can keep vital processes running without interruption,” says Mohamad Fadzil Ramli, Lafarge’s methods manager. “For instance, with a fully integrated control system, the average temperatures in the kiln can be adjusted for minimum energy requirements. When an operator combines process knowledge with 800xA energy consumption can be reduced by 10%.”**
some months that we operate with zero down-
time,” says Hill.

In addition, PlantPAx also helped GTEC install
a new production line for grain-neutral spirits. “We
just tied in the new I/O, downloaded the necessary
programming to the FactoryTalk View SE software
and ControlLogix controllers, and double-checked
the I/O points for each valve and input,” says Marvin
Coker, BCI’s senior project engineer. As a result,
GTEC has expanded its production capacity by 75%,
and is now able to manufacture 35 million gallons of
industrial and beverage-quality ethanol per year.

**EDUCATE AND EXECUTE**

Meanwhile, Plaskett reports the Benicia’s refinery’s
migration to Experion began with I/O realignment,
including an “A cluster,” covering the refinery’s up-
stream instruments and controls, and a “B cluster,”
covering its blending and other operations.

“More than 2000 points were moved and re-
built,” says Plaskett. “With movement of I/O comes
deleting and rebuilding of points, meaning inter-
nal IDs changed, and all references needed to be
cleaned up. With only one LCN in the beginning,
DOC 4000 Express worked fairly well to allow us
to identify and cleanup references. However, we also
used—and I would advise doing it—a homogenous
cross-reference (XREF) utility based on the Find
Names utility, which allowed us to find even indi-
ection references that we also use at Benicia. We
also learned it’s easiest to do this before Experion
is placed on top because priming for the Experion
layer is also required.”

Following some in-depth training and hands-on
practice, the Benicia refinery’s engineers and opera-
tors set up a testing system to explore the relation-
ship between their LCN and Experion to gain more
application-specific knowledge. In addition, because
a critical part of any Experion system is the configu-
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bugs and downtime, predict final volumes,
and provide device-layer and area-level bookings to
leveraging one, overall information server. This would allow
Komati to measure and optimize throughput, evalu-
ate stoppages and downtime, predict final volumes,
and provide device-layer and area-level bookings to
Tib’s reporting layer. However, this plan required
renovating and/or integrating new Quantum PLCs,
legacy Provox and DeltaV DCSs, LIMS database,
and SAP enterprise resource planning (ERP) systems
into one data and reporting point. As a result, Tib
and system integrator Control Systems Integration
(CSI, www.controlsi.co.za) implemented Arches
a System Platform and Wonderware InTouch
SCADA/HMI, historian and MES Performance
software from Invensys Operations Management
South Africa (http://om.invensys.co.za). The plant
also adopted A-netSave change management soft-
ware from MDT Software (www.mdtsoft.com) and
Top Server OPC solution from Software Toolbox
(www.softwaretoolbox.com) to connect the PLCs to
Komati’s new systems.

The project was completed in phases with
first-phase implementation during a three-month,
off-crop season in January to April 2011, which was
enough time to remove the old Provox DCS and re-
place it with the new, integrated system on Komati’s
Extraction Line 2. “All the other systems remained
the same, and System Platform was built on top of
the existing systems to facilitate integration,” says
Samantha Rabe, CSI’s systems engineer. “Overall
equipment effectiveness (OEE), LIMS, Provox and
DeltaV data were integrated into System Platform to
show KPIs on the InTouch dual-screen displays.”

Peter van Tonder, Tib Komati’s instrumen-
tation engineer, reports, “We’re now able to manage
WHY AND HOW TO UPGRADE A DCS

In his white paper, “Upgrading Your DCS: Why You May Need to Do It Sooner Than You Think,” Chad Harper of system integrator Maverick Technologies (www.mavtechglobal.com) lays out some reasons for migrating distributed control systems, and describes how to approach it.

Signs Your DCS Needs Upgrading

- Staff resources supporting the existing DCS are close to retirement.
- Vendor plans to end support for the product.
- Control problems are causing unplanned outages and increased downtime.
- Latest technologies are not compatible with your DCS.
- Spare parts and technical support are becoming hard to find.

WHY NOT TO WAIT TOO LONG TO UPGRADE

- Present staff don’t know your legacy DCS.
- Old DCSs only allow for configuration of certain types of controls.
- Cost of maintaining an old system will outweigh the cost of migration.

Approaching a DCS Upgrade

Because upgrading a DCS can be a monumental and expensive revamp, it’s important to evaluate whether it makes more sense to upgrade rather than reactive.

Approaching A DCS Upgrade

- Upgrade HMIs first. Most newer DCS HMIs can be configured on universal stations (USs) or used NW on ESTs. The operator could go back to the console and operate the refinery. This satisfied our space limitation challenge.
- Old DCSs only allow for configuration of certain types of controls.
- Cost of maintaining an old system will outweigh the cost of migration.

Approaching a DCS Upgrade

- Upgrade HMIs first. Most newer DCS HMIs can be configured on top of legacy control systems. This can be done on a running plant with little impact to production. By upgrading the HMI first, you ensure that operators know the new technology before the complete system is installed. Changes in presentation and interaction are previewed and tested.
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DCS Migration: Failure Is Not an Option

And doing nothing is not a solution

by Matt Sigmon

RECENTLY, I watched the movie, Apollo 13, again, this time with my four children who had never seen the cinematic classic. I’ve personally seen it too many times to count; it’s one of my favorites—primarily because it’s based on actual events. Perhaps my favorite scene in the movie is the one where Gene Kranz (played by Ed Harris), NASA flight director of the Apollo missions, confronted the harsh reality that three American astronauts were trapped inside the crippled command and lunar modules, unlikely to reach their destination and needing a difficult, if not impossible, rescue. Back at Mission Control, Kranz and those around him confronted the likelihood of mission failure and loss of three lives. But Kranz was a rock of sanity and determination. As the movie depicts, it was in this moment and faced with a mountain of pressure that Kranz uttered the words, “Failure is not an option!”

Interestingly, however, Kranz never actually uttered that phrase during the Apollo 13 mission. Rather, it was written by screenplay writers after interviewing former flight controller Jerry Bostick. As the story goes, while interviewing Bostick for the movie, writers Al Reinart and Bill Broyles asked, “Weren’t there times when everybody, or at least a few people, just panicked?” Bostick answered, “No, when bad things happened, we just calmly laid out all the options, failure was not one of them. We never panicked, and we never gave up on finding a solution.” Reinart and Broyles so liked that sentiment they coined it as, “Failure is not an option,” and gave it to Kranz in the screenplay.

Admittedly, most controls engineers will never be confronted with such a life-and-death dilemma, yet we do face problems that demand the same determined ethic. Perhaps the most critical challenge facing the automation industry is that of aging control systems. Most of the control systems installed at most refineries and other process facilities are more than a quarter-century old. Further, it is an occasion for process owners of older control systems, it is not the only issue that needs to be addressed. In 2016, President Kennedy issued a great challenge to the American people and to a specific team of engineers, scientists, pilots and others. It took more than a challenge for the goal to be achieved. It took years of planning, research, effort and continued refining of the solutions and designs. The team did not quit after the Apollo 1 tragedy, and neither did it quit when faced the impending disaster of Apollo 13. Failure was not, and should not, be an option.

The objective should not be to simply replace and replicate, but to secure it. The sooner you take the first couple of steps, the sooner you can get funding approved, and begin implementing a holistic plan that addresses not only the obsolescence of your existing systems, but also helps you drive process improvement.

LEADERS, FOLLOWERS AND LAGGARDS

Aberdeen Group, (www.aberdeen.com), a major consultancy that works in manufacturing, distributes companies into Leaders, who set the pace and implement new strategies. Followers, who do what leaders do, but later; and Laggards, who don’t do what Leaders or Followers do until it’s nearly too late or already too late for them to continue to be competitive without major change. The issue of DCS upgrades and 21st-century competitiveness clearly lends itself to Aberdeen’s method. For industrial manufacturers with a significant DCS installed base, the problem is daunting, and they face the real challenges of limited resources and capital. The Leaders are proactive in facing these problems and challenges, having already begun implementing migration strategies and plans. This includes Front End Loading (FEL) studies, capital and commissioning planning, and actual execution of migration projects. Most Leaders use modern collabora- tive tools and outsiders, such as vendors and especially control system integrators, as effective, long-term team members.

Many others haven’t been so proactive, yet these Followers are now beginning to embark on similar endeavors. They are starting and completing evaluations; developing preliminary estimates and schedules; and laying out roadmaps for their migrations. Some in this second category are further along than others, but all face similar challenges, including vendor selection, funding approval, and figuring out how to migrate thousands of I/O and application programs to a new system with little or no downtime.

Finally, a number of manufacturers, the Laggards, are in reactive mode and have done little or nothing to plan for or begin migrating their obsolete systems. In a recent discussion, one controls engineer told me his management’s approach will not begin replacing their old DCS until equipment fail- ures that can’t be remedied with parts refurbished on-site cause process downtime. Failure should not be an option, yet for some industrial manufacturers it’s a very real possibility, particularly those in the third category. With no plan, no funding approved and no migration work completed, they potentially face production downtime, loss of efficiency and diminished market presence. And without an effective, proactive plan, they’ll likely struggle to survive. If you haven’t thoroughly evaluated your options and spend too much when they finally begin the migration process.

Even so, there’s time and opportunity to plan for success, implement the right solution and more your organization for- ward. How? The following key steps should be put into practice post-haste.

First, start planning now. Don’t delay any longer. In 1961, President Kennedy issued a great challenge to the American people and to a specific team of engineers, scientists, pilots and others. It took more than a challenge for the goal to be achieved. It took years of planning, research, effort and continued refining of the solutions and designs. The team did not quit after the Apollo 1 tragedy, and neither did it quit when faced the impending disaster of Apollo 13. Failure was not, and should not, be an option.

Plan the work and work the plan, and start planning now. Incorporate all the stakeholders in the design team, and de- mand the assistance of vendors and control system integra- tors at the very front end of the project.

Second, remember that you must develop the project in light of the business goals of the enterprise and the place of the plant in the company’s overall financial strategy. Funding for migration projects will likely not come easily or quickly, and you will need a strategy and plan in order to secure it. The sooner you take the first couple of steps, the sooner you can get funding approved, and begin imple- menting a holistic plan that addresses not only the obso- lescence of your existing systems, but also helps you drive process improvement.

Third, get the right people on your team and challenge them to deliver. Remind them failure (e.g., downtime, loss of production, etc.) is not an option, and success is achievable. You likely can’t go this alone, and you’ll need a team that possesses the right aptitude and attitude for success. Look for partners and team members that understand your needs and goals and will be mutually committed to your mission’s suc- cess. Be careful of biases and excuses—they’ll lead you down the wrong road or hold you back. Seek out those who are ob- jective and experienced. They can be found in your supplier community, in the control system integrator community, and among your plant operators and maintenance staff.

And fourth, but not last, as you face challenges, set- backs and delays, go back to your plan, revise your solutions and keep moving forward. Stagnation and apathy will result in missed opportunities and possibly failure. As the Apollo 13 mission taught us, never panic and never give up on finding the right solution. Lay out the options, consider them objectively and develop a migration and funding plan that meets your objectives and results in success.®
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