



INTRODUCTION TO LEGACY MIGRATION >>>>



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WHY LEGACY MIGRATION MATTERS

“Legacy Migration” may sound like an odd term, but if your production facility is not familiar with this practice, then it could spell disaster – and soon. Other buzz words that apply are “PLC migration” and “DCS migration”, but they all fall under the larger, more general term “Legacy Migration,” so we’ll start with that one.

Because the associated consequences are so severe, we can all be grateful that the concept of Legacy Migration is very simple. Legacy migration is a process in which obsolete control system hardware and software are upgraded to maintain the current standards – simply, the current technology – so that you can continue to run your facility.

Just as you identify the need to keep your cell phone technology current, you must be aware of your facility control system’s need – its brain and central nervous system – to be current.



To put it into universal terms, I’ll use a cell phone as an analogy. Consider the computing system that runs your facility to be akin to one of the first generation smart phones, like a Blackberry. At the time, it was very powerful and could do more than any other system. However, as time passed, competitive technology caught up with the first Blackberry, then soon passed. Now, it would be exceptionally difficult for an owner of a first generation Blackberry

to receive replacement or repair services. As the operating systems upgrade, the hardware becomes incompatible with the current technology, leaving the owner high and dry.



DEFINING PLC AND DCS

Previously, I mentioned two other key terms that I'd like to explain: "PLC" and "DCS". Since migration is more complicated than picking up a new model at the store, it would help to know that both of these terms refer to specific types of migration.

DCS MIGRATION

Distributed Control System Migration, or DCS Migration, is roughly 75% of the entire migration market. What makes DCS migration different from PLC migration is that DCS has higher **availability** by way of redundant processors, communication paths, and other critical operating parameters. A DCS Migration is also very tightly integrated with the operator interface (or Human Machine Interface) as most control systems share the same database between their processor and HMI.



"Availability" refers to a system's accessibility during the migration process. The more available the system is, the less likely that it will be shut down or hampered during the migration process.

When performing a DCS migration, Cross Company will go piece-by-piece to make sure that the computer system (and your facility!) will remain operational.

As if DCS migration didn't already have some good perks, this migration process also supports five programming languages based on a universal programming language standard called IEC61131:

- Structured Text (ST)
- Sequential Function Chart (SFC)
- Ladder Diagram (LD)
- Function Block Diagram (FBD)
- Instruction List (IL)

PLC MIGRATION

Programmable Logic Controller Migration, or PLC Migration, typically has less uptime availability than a DCS migration. PLC only supports 1-2 programming languages, and is typically used for less sophisticated systems.

UNDERSTANDING THE DIFFERENCE BETWEEN “AS-BUILT” AND “AS-IS”

An As-Built system change requires that your system be completely redesigned and rebuilt in order to make the required changes to meet your production goals.

An As-Is system change requires only a current system interrogation and migration, without a hardware upgrade.



When conducting your system analysis, we will use As-Built or As-Is documentation to assess the difference between where your system currently is and where it needs to be in order to meet your production needs over the next 20 years.

ADAPT OR DIE

It is not like me to use such harsh wording, but in the case of Legacy Migration, it is imperative that the message be received. If you are still asking the question, “Why should I migrate my control system?” then I’ll answer. If you do not consider migrating a legacy control system, then suffer the consequences of increased downtime, loss of production, and dramatically increased production costs. To put it bluntly, if you do not migrate your existing system, it will eventually fail and your production will shut down.



“The goal of migration is to lower your risk of control system failure, then to extend the life of your existing system.

Technology will continue to evolve and make current systems obsolete. Only by migrating your control system can your facility remain current.”

COST JUSTIFICATION TO LEGACY MIGRATION

If you’re not totally convinced that Legacy Migration will eventually be necessary, then let’s talk dollars. How much would it cost for your facility to unexpectedly come to a complete halt? How much money would your facility lose in production costs? How about in man hours? How about emotional and mental costs associated to the emergency work stoppage?

Typically, when a control system fails, the facility will be down for two or more days. You do the math.

CONSIDERATIONS PRIOR TO LEGACY MIGRATION

Migration is for everyone, but the need might not be immediate. If you are concerned about your control system's health, then there are steps to take in order to determine when your migration should occur.

DETERMINE IF YOUR MIGRATION NEED IS IMMEDIATE

1. Diagnose your system's current status through an internal review, or a trusted 3rd party, to identify your vulnerabilities.
2. Calculate your costs for facility downtime in the event of a failure.
3. Evaluate the two together and determine whether your risk is high.

If you have an in-house engineering support staff, the support team is a prime stakeholder and is very interested in keeping your control system up to date (facility failure is a big hassle for them). Make sure to include them in your internal review.

In most cases involving facilities without in-house engineering support staff, there is no awareness of the potential risk and no expertise on hand to evaluate the system.

Have you ever failed a car inspection and not known there was a problem? This is similar, but much more severe!



In both cases, it is often difficult to convince management that control system failure is a large risk. This is why using an experienced, external, and trusted company to audit your control system is a great idea. Companies with credibility, a strong track record, and clout can spur decision makers into action and save your facility.

CONSIDER CROSS COMPANY

So why would you consider using Cross Company for your legacy migration project? We have a broad knowledge base about the existing control systems employed by almost every production facility in the United States. We are constantly on the cutting edge of new and advanced technology and we will use this expertise to migrate your system as **efficiently and pain free as possible**. And our customer service sets us apart from any other migration specialist you'll find!

HONEST, UPFRONT COSTS

Before drafting a migration plan, Cross will perform an on-site review of your facility's control system to evaluate the system's vulnerabilities. The inspector is always a degreed engineer that's familiar with your particular control system, and the service typically costs around \$6,000.



“Cross Company has extensive experience with almost all types of control systems.”

Cross will interrogate your system, which involves connecting with the controller, reviewing the graphic structure, and evaluating the network layout. Our engineer will interview the maintenance and operations staff to get key insight into the system's unique vulnerabilities based on your facility's specific use and demands.

Over 60% of facilities presented with this service end up selecting Cross Company and moving on with the migration.



After presented with the vulnerabilities and risk assessment, the facility can make a better judgment call on whether or not to proceed with a migration.

WORLD-CLASS CUSTOMER SERVICE

In the field of Legacy Migration, our credibility, trustworthiness, and reliability are key to our company success. Without a great reputation for our customer support and our quality of work, we would not have survived very long. The true advantage to using Cross is that we customize our solutions to each customer, provide 24/7 support, and employ a top team of problem solvers and expert analysts. To illustrate this, here's a recent case study:

We had an adhesive manufacturer call us at 4:00pm on a Thursday. Their plant was shut down and they were losing production time. A legacy component had failed and they could not get a replacement (we had been warning them to migrate for over a year!). Within two hours, we had a couple of our team members ready to visit on-site the following morning – including our travel time. Fortunately for this manufacturer, we had a replacement for their legacy component. We were able to download their control system configuration and reset their system. Once we replaced the part, their entire plant came back online.

This is a great example of how our team provides exceptional customer service, day or night, seven days a week. Thankfully, this manufacturer finally heeded our warnings and decided to take action by immediately migrating their control system!

WHAT IF MY CONTROL SYSTEM IS NEW (ISH)?

If your facility – or its control system – is fairly new, then we can help you plan for your inevitable future migration needs. This will prevent a lot of unnecessary production loss headaches, as well as eliminating the need for squeezing emergency migration into the budget.

It is rare that companies will plan their migration path in a forward thinking position. Usually, Legacy Migration is a reactionary

process. We are trying to educate production facilities to be proactive in their migration planning, rather than reactive because they were unaware of the risk.

Technology will always evolve at a quick pace and support or repair service can dry up quickly as the software and hardware companies change direction. Our team typically will lay out a 5-10 year plan, depending on the state of a facility's existing control system. However, if during the analysis, the control system is determined to be near-obsolete, then the migration plan will shorten to 2-3 years out.

“The 5-10 year plan is a proactive approach to Legacy Migration because the control system is new, but the facility is aware of the inevitable need for an upgrade.

The 2-3 year plan is a reactive approach due to a facility's discovery that their control system is closer to failure than previously thought.



Thankfully, in this case, there is still enough time to plan a migration!”

PROACTIVE OR REACTIVE, JUST ACT

The number one goal of this whitepaper piece was to provide education about Legacy Migration and to spur action. Whether I have brought up the nagging suspicion that your control system is nearing the end of its life-cycle, or have opened some eyes to the need to plan for the future, we hope that this will be the catalyst that saves your facility's productivity!

Whether you're in a proactive or reactive position, it is imperative that each production facility should just plain act. Set up a Legacy Migration plan to migrate in the future, or migrate immediately to prevent total facility failure – the consequences of inaction are severe.

Downtime is a real downer, you know? And it costs a lot.



Process Control Integration

850 Discovery Lane | Knoxville, TN 37932

Phone. 865.671.7700 | Fax. 865.671.1920