

ADVANCED METHODS FOR SYSTEM MODERNIZATION

Rely on Advanced Migration Technologies (AMT) to leverage your workforce and control assets to keep your business moving forward.

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INTRODUCTION

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Honeywell's Advanced Migration technologies eliminates risk and makes migration an advantageous experience for customers.

As a leading automation technology supplier, Honeywell recognizes that a successful controls modernization strategy can help customers reduce total cost of ownership, increase production rates, meet regulatory guidelines, and manage risks, extend the life and performance of systems, and improve response to changing business demands.

SOLUTION FOR CONTROLS MODERNIZATION

Honeywell provides Advanced Migration Technologies for Experion® and Experion TotalPlant™ Solution (TPS) users who need to modernize their control system to the Experion R511.5 and R520.2 or later.



HOW HONEYWELL HELPS YOU MIGRATE

Honeywell provides an innovative Advanced Migration Technologies for Experion® and TotalPlant™ Solution (TPS) users who need to modernize their control system to the Experion R511.5 and R520.2 or later.

It changes the playing field for customers by eliminating potential risk and making migration an advantageous experience rather than a burdensome requirement. The service encompasses migration readiness, software migration, acceptance testing, and production system upgrading. Honeywell engineers perform the software migration and then invite the end user to test the new software release. This includes control configuration and custom graphics. The Configuration Acceptance Test is the customer's way of approving the new release prior to introducing it into their production system.

Taking advantage of the latest technology and enabling crucial assets to operate optimally.

Operating companies must find ways to keeping equipment up to date with minimum downtime. Only those organizations with a solid plan and a roadmap for ongoing technology upgrades can mitigate current risks and drive plant operations seamlessly without unnecessary disruptions

ROADMAP FOR TECHNOLOGY UPGRADES

Only those organizations with a solid plan for ongoing technology upgrades can mitigate current risks and ensure efficient plant operations without unnecessary disruptions.



For plant owners/operators, failure to address looming operational or system issues could lead to crucial assets being rendered inoperable.

THREATS TO RELIABILITY AND SAFETY

For plant owners/operators, failure to address operational or system issues could lead to crucial assets being rendered inoperable. Financial loss or possible unsafe operating conditions from an unplanned outage could far exceed the upgrade cost for a legacy investment.

Increasingly, plant owners are faced with:

- Managing operations with reduced onsite staff
- System components failures and significant downtime
- Limited access to onsite subject matter experts

Industrial sites around the world are challenged by aging infrastructure and equipment, which are simply no longer supported, with outdated control system proving particularly troublesome. Indeed, an end-

of-life operating system poses a serious threat to the performance, availability, and reliability of any industrial control system.

This type of failure leads to higher costs as plants mitigate the rising risk of operating disruptions, lost production, data breaches, and compliance failures. At worst, it can jeopardize continued safe operations. Some of the specific concerns plant owners/operators have about release migrations include:

- Loss of server redundancy for a long duration
- Loss of operator stations for an extended period of time
- Problems with graphics functionality after migration
- Operating system (OS) changes adding new security parameters related to break-in functionality (e.g., VB script, Active X, IR version, new domain, local user addition due to OS change etc.)

- Lack of skilled resource once migration is complete
- Reliability of SCADA communication following upgrades
- Compatibility of other Honeywell or non-Honeywell software

Today, an effective migration strategy can involve Honeywell Global Migration Support Centre (GMSC) experts, who perform the necessary upgrades on a 24x7 schedule and are always well-versed on the latest lessons learned. This type of migration can be accessed by technical support specialists along with local Honeywell staff and on-site customers—during a time that suits all parties—to enable the fastest migration possible.



Financial loss or possible unsafe operating conditions resulting from an unplanned outage could far exceed the upgrade cost for a legacy investment.

Operator Readiness and Adoption to the New System

Operators face difficulties when they have received the new version, or the new environment of the system and it may some time disturb their everyday practice. The product version upgrade is always a challenge for operators to adjust to the new interface.

Advanced Migration Technologies offer virtual FAT, a new way to preview the Experion system before deploying it on online production and also ensures smooth functionality of the assets and configurations.

Virtual FAT allows customers and operators to get a holistic preview of their Experion databases, controller configuration and HMI displays to get familiarized with the new and improved version of the Experion. Virtual FAT before deploying the latest Experion on production system can reduce any unforeseen issues and perceived readiness challenges.

ARE YOU “MIGRATION READY?”

It’s well proven that control system upgrades offer important advantages in terms of operator performance, safety, efficiency, cybersecurity, and

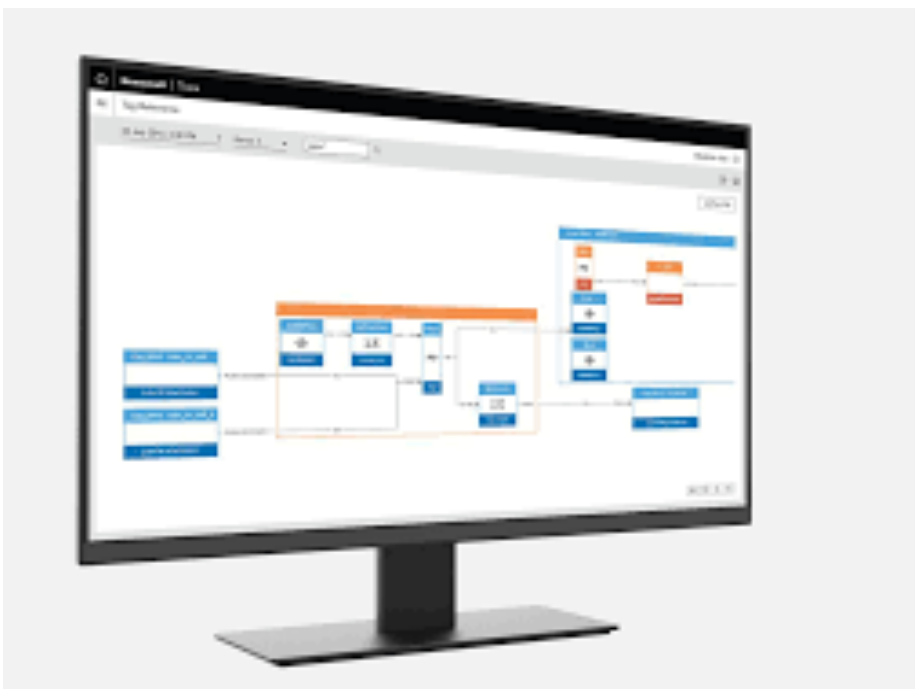
enhanced functionality. Users that migrate to a modern system can also integrate control, safety, and auxiliary systems. And, they can respond to new business opportunities, expand capacity, and make use of new applications and solutions for advanced process control, asset management and production management.

Before controls upgrades can begin, however, plant owners must ensure they are truly “migration ready.” Most legacy systems have grown intellectual property organically over the decades through thousands of manhours of engineering work. This process typically included a variety of workarounds and stop-gap measures to keep costs low and avoid unnecessary downtime. Unfortunately, documentation is often lacking, and many plant engineers do not know how the control system was actually constructed.

Furthermore, control systems are more complex than ever before, so there is limited information on how the different components need to interact. Providing end users with the ability to visualize the entire system in one view can increase their awareness, which, in turn, leads to better decision making. They can also do migrations

such that intellectual property is preserved, and the production system does not have to shut down.

Honeywell Trace documentation and change management software is intended to minimize errors due to changes in configurations, improve worker productivity, and simplify automation asset management by providing a single integrated view of complex system interactions. The software can be used to research tags that must be cutover during controller migrations and also makes it possible to identify connections within SCADA points. It provides critical data that lets users know why, when, and what actions were taken and how they compare to actions in the past. The precision and comprehensiveness of this change analysis can reduce several days of manual effort.



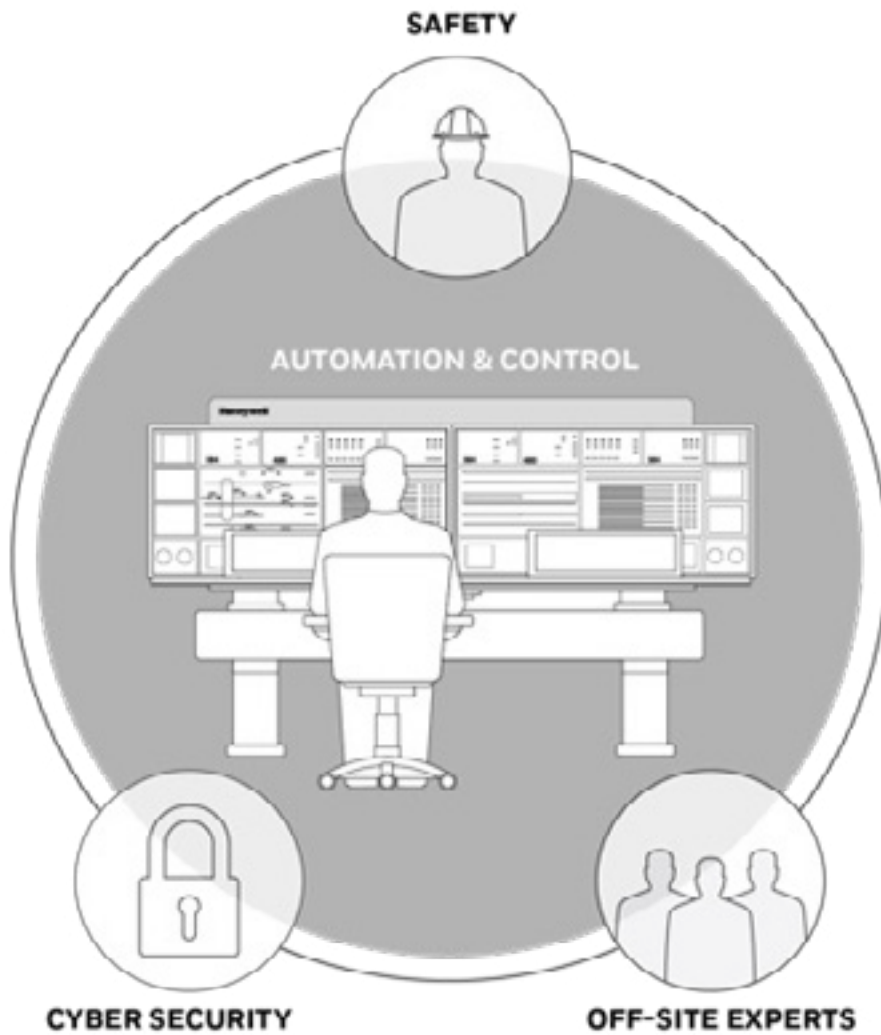
Honeywell Trace software can be used to research tags that must be cutover during controller migrations.

With greater demands on the plant workforce, there is a need for expert assistance to ensure performance and reliability.

A modern control system is an opportunity to bring people, the plant, and data together to drive better business performance. But in times of uncertainty and limited skills/experience, it is not easy to undertake system upgrades. Plant operators face the risk of downtime and the requirement to take systems offline and shut down the process while putting new technology in place, or the potential for longer-term disruption from unforeseen problems when the updated system is brought online.

STRATEGY TO IMPROVE PERFORMANCE

A modern control system is an opportunity to bring people, the plant, and data together to drive better operational and business performance.



Honeywell can help significantly reduce the requirement for project team members to spend time to handle system upgrades.

Honeywell recognizes the importance of a continuous evolution pathway to system modernization. Our global GMSC experts can efficiently address the risks and issues of technology upgrades real-time. This service enables customers to stay up to date more confidently and easily with the latest cybersecurity and Experion improvements.

DETERMINE EXISTING ASSETS

The first step in preparing for a controls migration is determining where all existing system assets reside. Project team members need an effective way to search for system parameters on a site-wide basis. There are a multitude of interconnections between the Distributed Control System (DCS) and various safety systems, Programmable Logic Controllers (PLCs) and other subsystems.

Likewise, the first step in Experion migration is to check for readiness of the cluster for migration and then extract useful information from the Experion database that needs to be migrated. Experion Migration Data Aggregator (EMDA) is a part of Advanced Migration Technologies' tool kit that can accomplish this process.

In the migration process, this tool helps to determine the migration readiness of the cluster. EMDA collects data from all the nodes without disruption to the plant operations and through secure means.

The data collected is compressed and encrypted using industry standard AES based encryption through a user defined encryption key.

UTILIZE EXPERT ASSISTANCE

Honeywell employs the Experion Migration Assistant (EMA) and data aggregator tool to collect relevant configuration items for review. The EMA provides a single location for all interactions between the customer and Honeywell for Experion migration. It allows 24/7 user updates and easy migration request generation for Honeywell's Global Migration Support Centre (GMSC) review and escalation to its Global Technical Assistance Center (GTAC). An intuitive dashboard shows the status of the migration project, and a single tool handles all pre-migration readiness data collection.

Experience has shown that Advanced Migration Technologies can significantly reduce cycle time, improve workflows, and minimize disruptions.

Honeywell's Advanced Migration Technologies reduces control system modernization time and effort in the field and improves the overall migration experience. The service also helps to mitigate risk while improving equipment reliability, increasing operational effectiveness, and reducing the total cost of ownership (TCO) of automation assets.



Customers can leverage Honeywell's migration support services -anytime, anywhere.

IMPACT ON YOUR BOTTOM LINE

Experience shows that Advanced Migration Technologies and GMSC engagement have reduced the end-to-end migration cycle for some customers by 50%.

Customer feedback includes appreciation for reduced migration effort and praise for easier and faster migrations. It also enables customers to take advantage of Honeywell's latest enhanced cybersecurity capabilities and control technology improvements. The specific advantages of Honeywell's Advanced Migration Technologies include:

Faster and Less Disruptive Migration

- Automated Data collection
- Less site activities
- Minimum Dual Primary Servers and Operator station unavailability time
- Lower total cost / time

Expert Migration

- GMSC Pole HUBs perform majority of migration work
- Integral Migration CoE and GTAC migration specialists

Easy Workflow, Status Tracking

- Using Experion Migration Assistant Portal

IMPROVED MIGRATION EXPERIENCE

Honeywell's Advanced Migration Technologies reduces control system modernization time and effort in the field and improves the overall migration experience.

Cyber Secured

- Fully cyber secure solution to protect your intellectual property
- State of the art infrastructure
- Comprehensive cyber certifications

Focused Documentation

- System specific migration instructions are set
- Simplified documents for easy reference and use

Continuous Innovation

- Take advantage of the latest technology
- Live migration dashboards available for any site

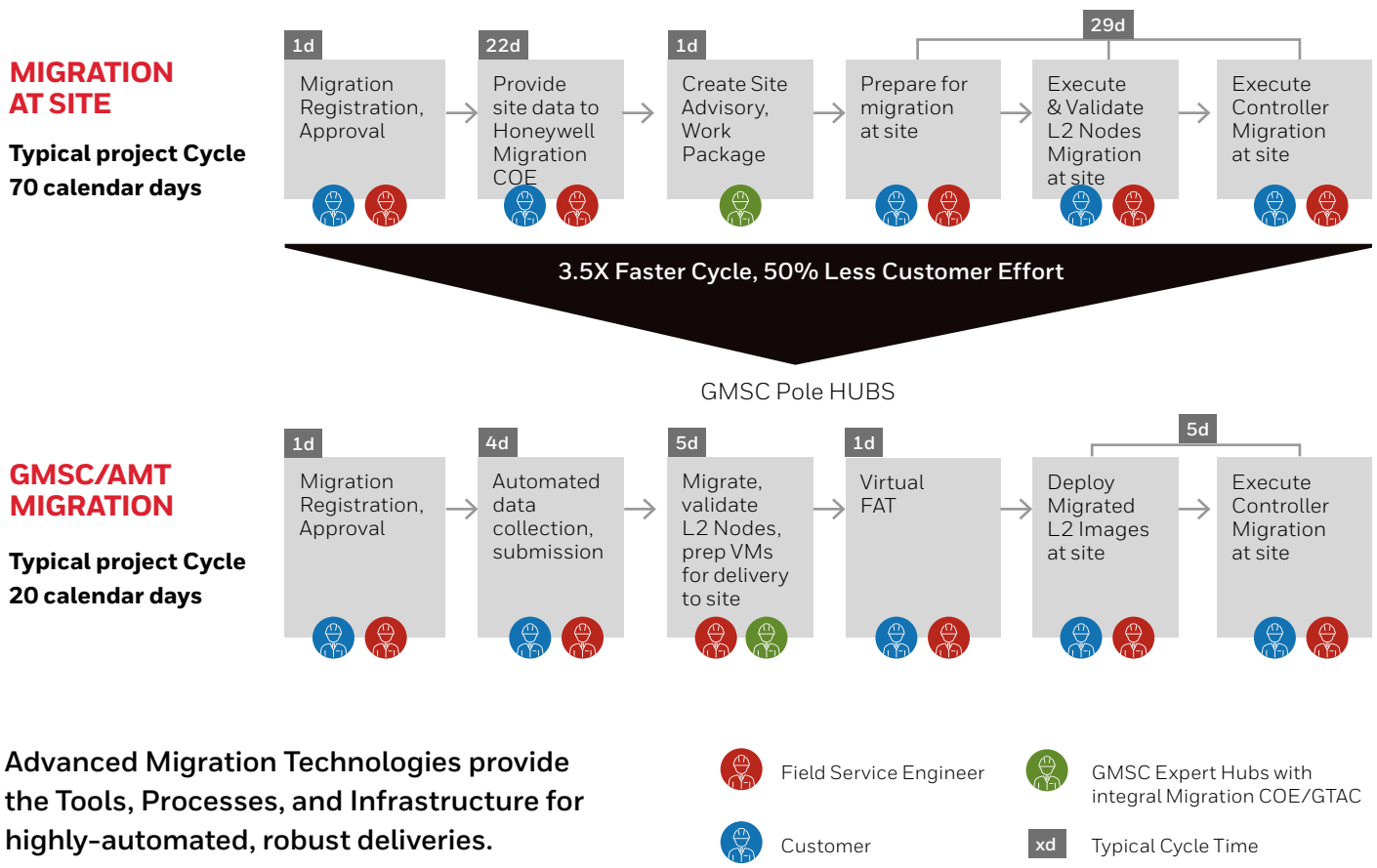
Reliable and Repeatable

- Every migration performed by GMSC certified experts
- Robust, rigorous, automated process ensures excellent quality

Virtual FAT

- Exercise system before implementation on production system
- Validate functionality

Manufacturers no longer have to delay their technology initiatives due to unforeseen disruptions to normal operations; beyond traditional on-process migration, the latest technology advancements allow them to perform system modernization like a simple update. They can also leverage value-added support services without putting their personnel or plant at risk.



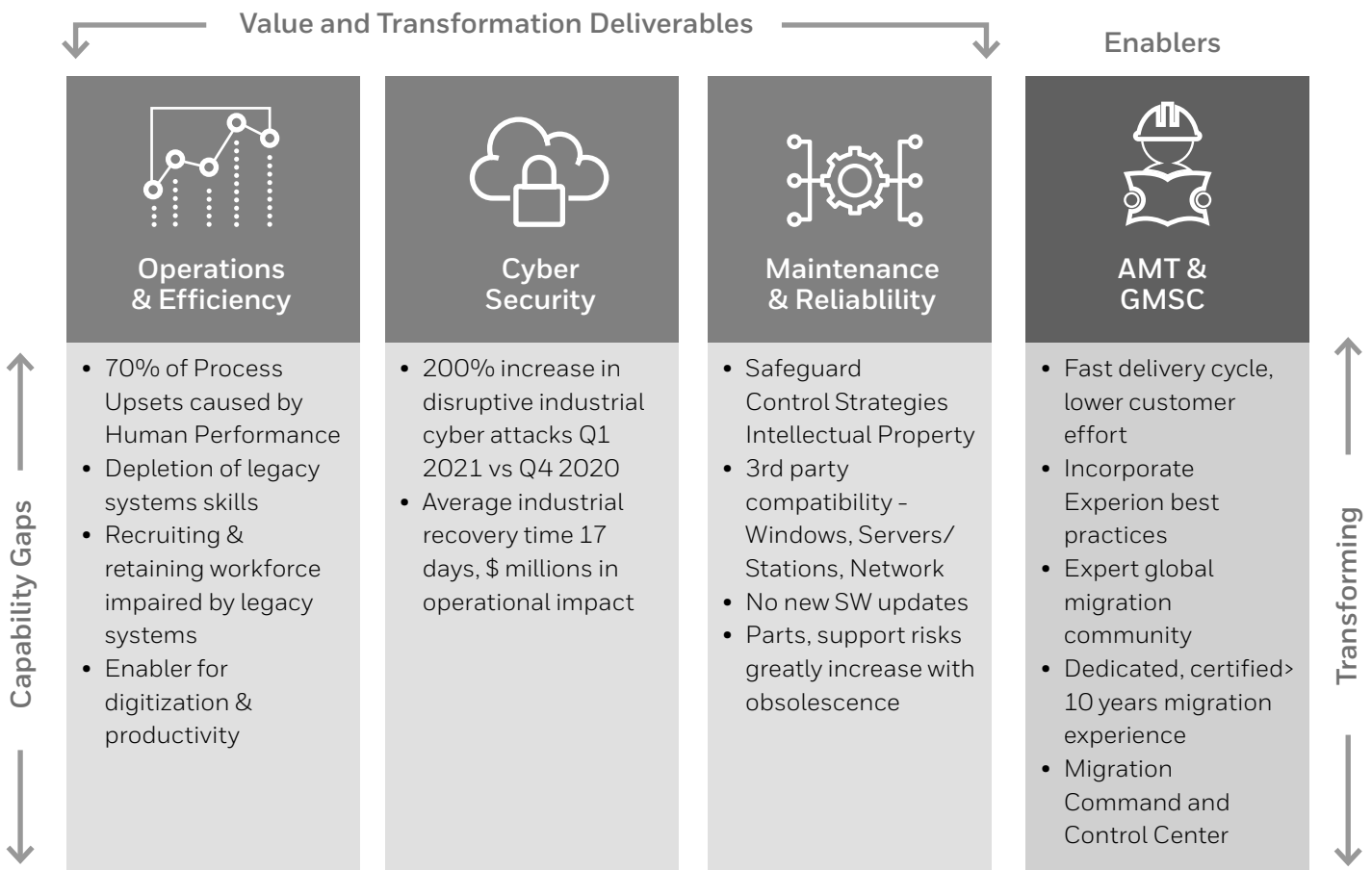
Traditional Migration vs. GMSC Migration using Advanced Migration Technologies.

Industrial organizations can rely on Honeywell's innovative technologies to keep their businesses moving forward.

With severe challenges making it harder run plants efficiently, profitably, and safely, industrial organizations can rely on innovative Advanced Migration Technologies to leverage their workforce and control assets to keep their businesses moving forward.

IMPROVED MIGRATION EXPERIENCE

Honeywell's Advanced Migration Technologies reduces control system modernization time and effort in the field and improves the overall migration experience.



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**THE
FUTURE
IS
WHAT
WE
MAKE IT**

Honeywell