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PROGRESS

UNINTERRUPTED

How offline controls development and testing are changing the face of automation



EMULATE3D

by ROCKWELL AUTOMATION

► BEGIN





Welcome to the age of the **Dynamic Digital Twin**

SAVE TIME. REDUCE COSTS. RAISE PRODUCTIVITY.

Automation projects have historically been among the most expensive, labor intensive and stressful initiatives that a business can undertake. The challenges associated with choosing the right components, evaluating resource types and quantities, scheduling testing windows around existing production demands, and the difficulty of predicting how a complex system will react under a broad set of operating conditions are just a few of the problems companies must address in a traditional design/build/test environment.

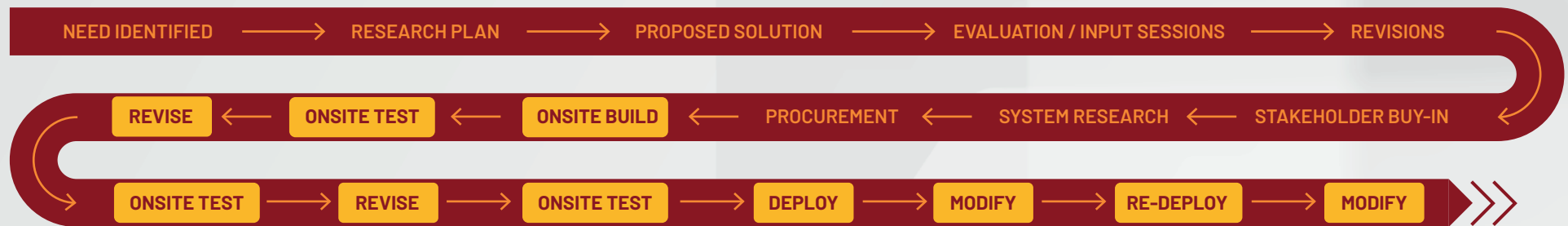
Fortunately, emerging digital technologies have allowed forward-looking businesses to design, test, and refine control systems offline using a Trusted® Dynamic Digital Twin. Virtual Commissioning takes logical controls testing off the project's critical path, provides a safe and controlled environment, reduces on-site time from weeks to days, and makes it easier to integrate stakeholder input at every stage of the project's lifecycle.

- **Streamline planning and testing**
- **Save time and money**
- **Improve quality and productivity**

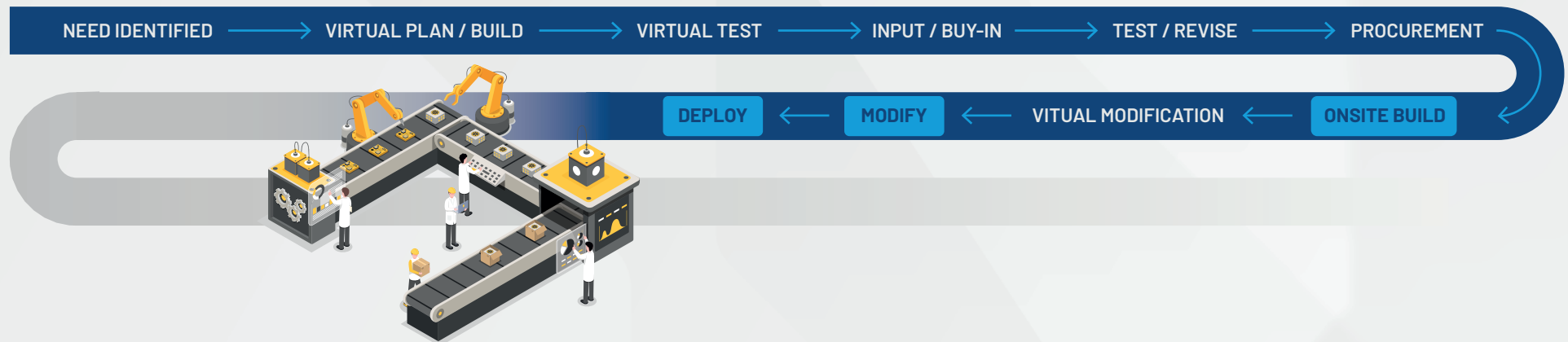
IDEATE. TEST. CREATE.

The new model for eliminating roadblocks before they're built into your system.

The traditional on-site approach to testing and debugging control systems is marked by frustration, unproductivity and inefficiencies that negatively impact the line:



Virtual Commissioning allows your team to develop a robust and agile solution offline, working in parallel with the system build and installation.



THE BUILDING BLOCKS OF UNIMPEDED PRODUCTIVITY

As you – and hundreds of enterprises around the globe – are beginning to see, Virtual Commissioning represents a true paradigm shift in the way automation projects are executed. All company's challenges and objectives are unique, so it's critical to partner with a software platform that can meet your specific needs.

Broadly speaking, your software may be asked to perform well in three primary functional areas: Emulation, Simulation, and Demonstration.

EMULATION

An emulation model is connected to a real control system: it is a reliable replacement for the planned physical system, complete with virtual loads, sensors, and motors, which enable users to test and, debug the actual controls, offline

SIMULATION

Simulation models are standalone and therefore contain all their operational logic. They are typically used as experiments to develop the overall business logic response to various inputs, and to accurately dimension resources and buffer sizes. They normally run faster than real time.

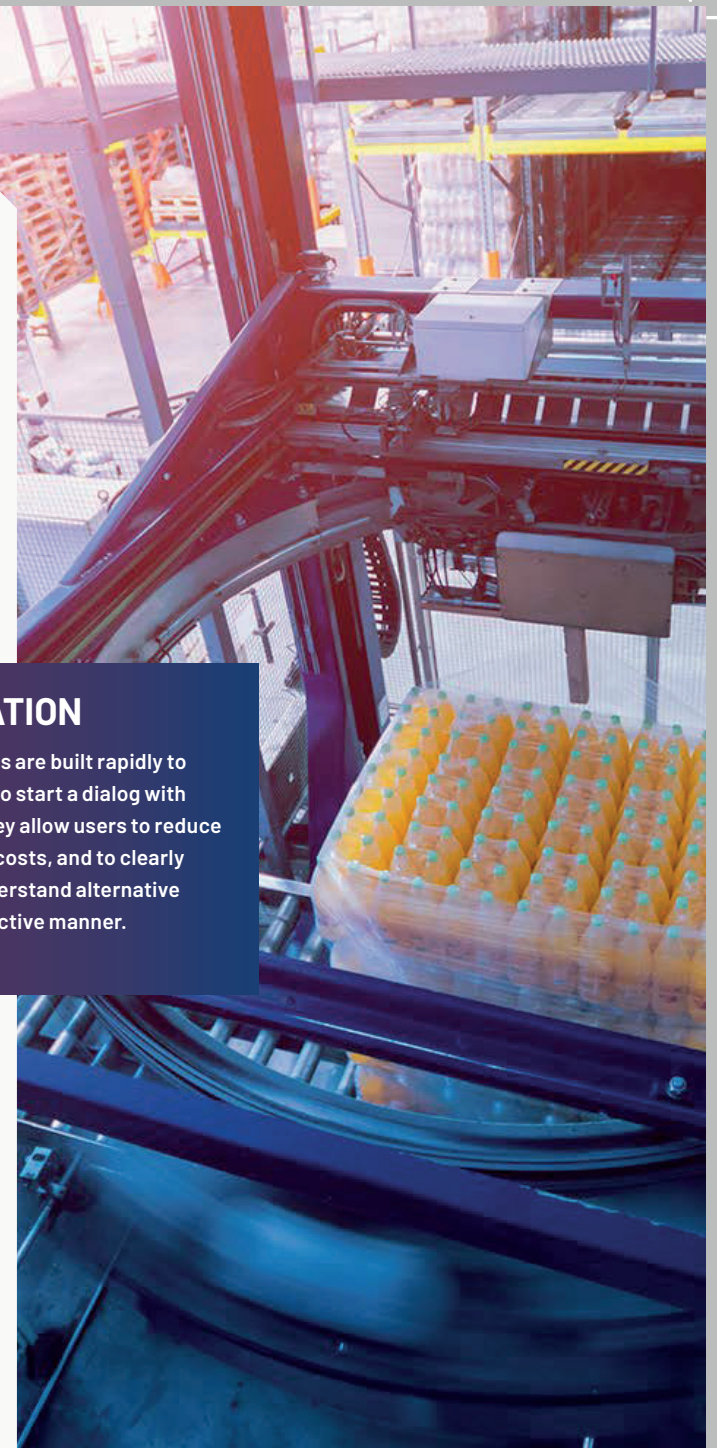
DEMONSTRATION

Demonstration models are built rapidly to enable stakeholders to start a dialog with system providers. They allow users to reduce physical prototyping costs, and to clearly demonstrate and understand alternative options in a cost-effective manner.

A further consideration is the degree to which your virtual design can be seamlessly deployed by your machine build team. Is your model clear, intuitive, and easily transferable to the real world?

Finally, can your model be shared via VR/AR/MR technologies? Each stakeholder and contributor will bring another set of tools and experiences to the project. Allowing everyone to view all aspects of the proposed solution in real time will maximize the value of their inputs before hard costs are incurred.

www.demo3d.com/machine_builders



VIRTUAL COMMISSIONING: A FOUNDATIONAL STEP ON YOUR DIGITAL TRANSFORMATION JOURNEY

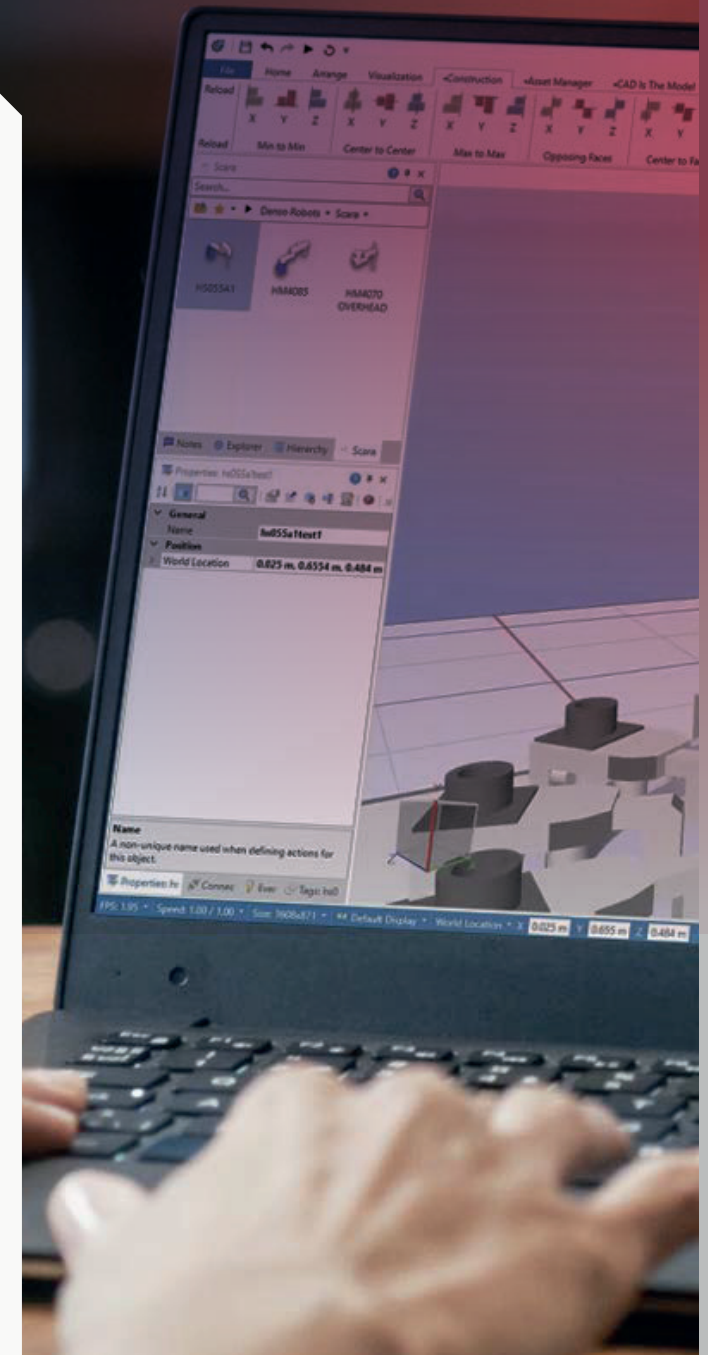
The speed at which marketplace conditions and consumer demands are shifting presents a constantly evolving set of challenges to the modern enterprise. To meet these challenges head-on – and turn them into opportunities – companies are leveraging digital technologies that were unimaginable just a few short years ago.

It's no surprise that offline controls testing has emerged to play an important role in the larger digital transformation strategy* of so many visionary organizations. When executed properly, using a flexible and intuitive software solution, Virtual Commissioning perfectly demonstrates how innovative technology can collapse the concept-to-revenue cycle.

The argument for creating a Digital Twin for PLC design and testing is simple enough: without emulation/simulation software, optimization cannot begin until the system is nearly completely built. This "old school" model leads to unpredictable test outcomes that require expensive and time-consuming fixes to machines and controls that have already been assembled. Schedules are delayed, productivity suffers, and costs mount.

By adopting emulation and simulation technologies, a forward-looking enterprise can break the chains of legacy inefficiencies and establish a strong beach-head from which Digital Transformation can be launched.

*<https://www2.deloitte.com/rs/en/pages/strategy-operations/articles/brief-roadmap-for-digital-transformation-leveraging-business-architecture-to-achieve-superb-results.html>



COMPLEXITY, CONQUERED



The animating principle behind Virtual Commissioning is easy to grasp: Remove much of the design and testing process from the critical path, and adverse impacts to production continuity will be greatly reduced.

But this game-changing strategic approach only yields tangible benefits if your chosen Intelligent Process Automation platform can satisfactorily answer three functional questions:

1. IS IT EASY TO IMPLEMENT?

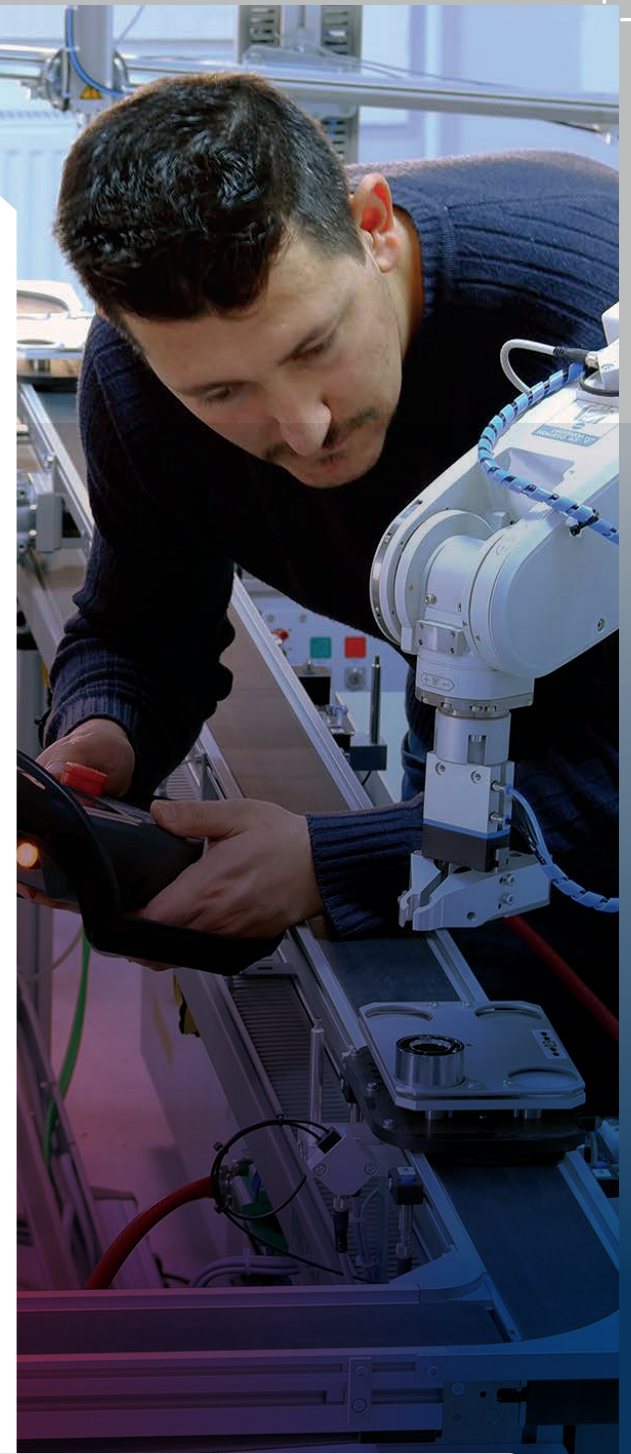
An organization's existing systems are baked into how business is done, and changing their workflow is challenging. Your design and development software must be able to seamlessly integrate with those systems to maximize ROI.

2. IS IT EASY TO USE?

The goal of your automation initiative should be to allow employees to use simple, intuitive "drag-and-drop" low-code interfaces to create and run models, then generate and interpret useful data from the models without requiring specialists.

3. IS IT FLEXIBLE AND AGILE?

Every use-case of Intelligent Process Automation presents a unique set of challenges that inevitably change over time. Your virtual commissioning software must be customizable enough to meet various requirements, and offer a deep catalog of plug'n play APIs from which to choose to respond rapidly to new requirements as they arise.





SEE THE FUTURE OF PRODUCTIVITY ...IN 3D

Not so long ago, CAD represented the cutting **FactoryTalk® Analytics™ Edge** of production engineering technology. Today, **Augmented Reality, Virtual Reality, and Mixed Reality** combine to create an **Extended Reality (XR)** experience that digitally transforms “what-if” concept into concrete walk-through.

The benefits of these new technologies allow teams to collaborate remotely, in real time, from anywhere and on a moment’s notice. XR makes creating, testing, and creating more efficient and less costly, while knitting together input from geographically and departmentally distributed stakeholders who have historically been less holistically involved in the development process.

REVOLUTIONIZING INDUSTRIES, ONE COMPANY AT A TIME

The transformative power of Emulate3D™ technology is not for everyone as not all businesses must adapt rapidly and efficiently to change, and not all systems are at least semi-automatic. But if you happen to be in the business of fulfillment, manufacturing, warehousing or machine building, then Virtual Commissioning represents a vital competitive tool for eliminating interruptions to your vision of progress.

Here are just a few examples of how robust and agile emulation/simulation technology has helped create meaningful ROI for world-class companies:



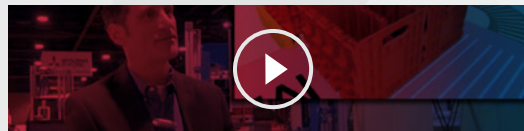
"EMULATE3D...WORKS EXTREMELY WELL, BOTH IN PERSON AND OVER THE WEB."

Joe Depaso,
Sr. Engineer – Intralox
(Global leader in Activated Roller Belt technology)



"WE USE EMULATE3D ...TO ACHIEVE COST SAVINGS IN FIELD TIME BY TESTING THE PLC CODE IN-HOUSE."

Greg Swisher,
Sr. Controls Engineer – Daifuku Webb
(Worldwide materials handling leader)



"WORKING WITH EMULATE3D HAS BEEN LIKE AN EXTENSION OF OUR OWN ORGANIZATION."

Joe Joice,
Vice President – United Sortation Solution
(A Honeywell Intelligrated company)



"OUR CUSTOMERS ARE VERY IMPRESSED WITH THE OUTCOME."

Duane Glass,
President – Carter Control Systems
(Warehouse Automation Solutions)





Are you ready to transform possibility into profit?

The first step is easy: visit us [here](#) to design a free demo, and to speak with an Emulate3D expert about how we can help you realize Progress, Uninterrupted.



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