SOLIDWORKS INNOVATION DAY 2020

Empowering Design Innovation

Penang

1st October 2019

8:30am – 5:00pm

Equatorial Hotel

Co-Organiser:

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Supporting Partner:

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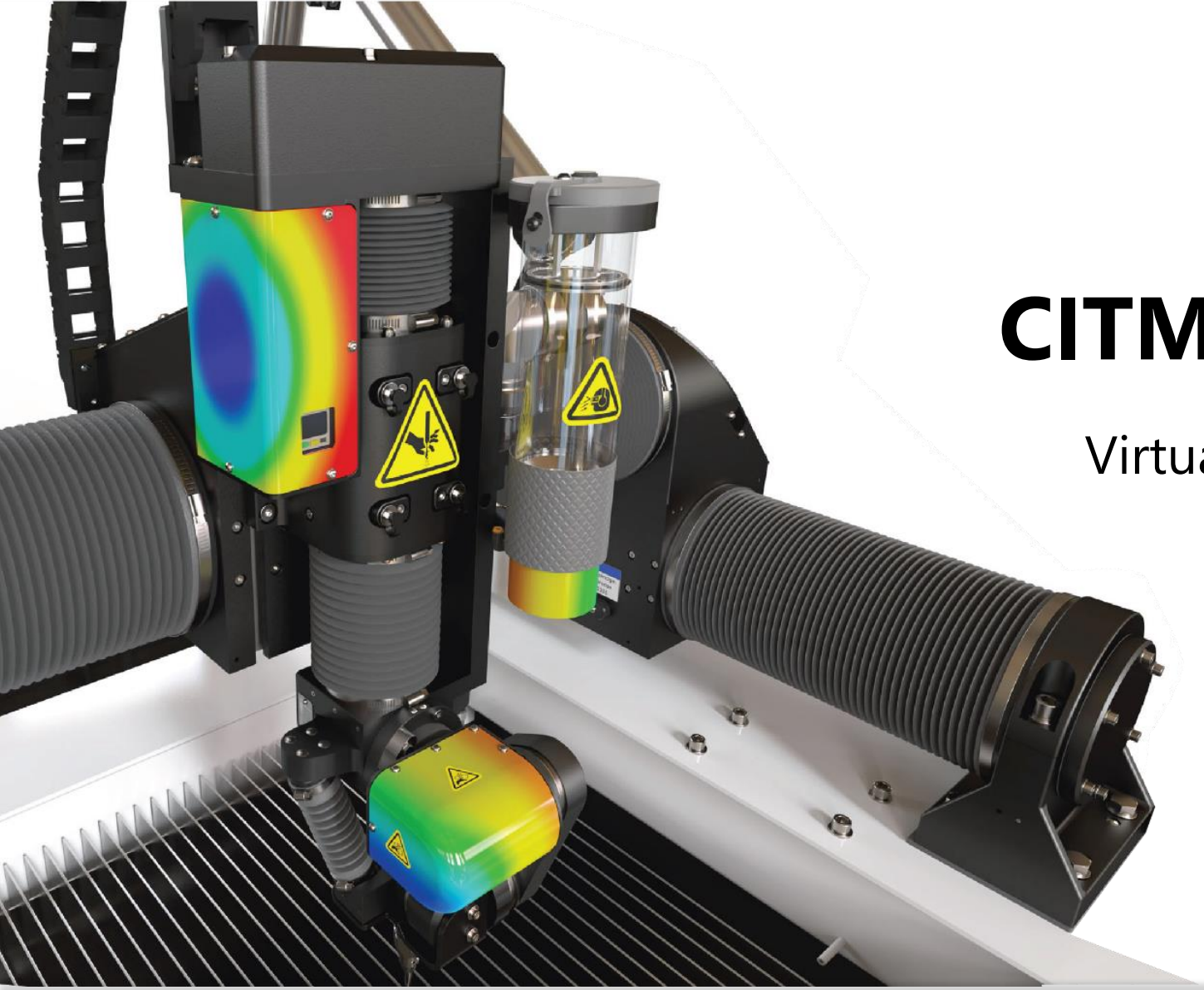

CITM: CAD Is The Model

Virtual Commissioning & Virtual Reality Using Emulate3D & SOLIDWORKS

Alec Poulton

SOLIDWORKS INNOVATION DAY 2020 | Empowering Design Innovation

GLENVERN ASSOCIATES

Agenda

1 Who is Emulate3D?

What is CITM Controls Testing?

2 How does it help me, and how can I implement it?

3 What does Virtual Reality bring me?

4 Benefits
Competitive Advantages
Differentiation

1. Who is Emulate3D?

Emulate3D is an industry leading technology company and developer of the cutting edge Demo3D, Sim3D and Emulate3D Controls Testing software products.

Emulate3D began operation in 2005 and is recognized as a market leader for world class visualization, simulation and emulation software across the automation industry.

The software technology has a proven track record across an extensive range of industry sectors including

- Automation & Materials handling
- Diverse Manufacturing process's.
- Machine builders
- Robotics
- Automotive
- Logistics & Warehousing
- Airports & Baggage Handling

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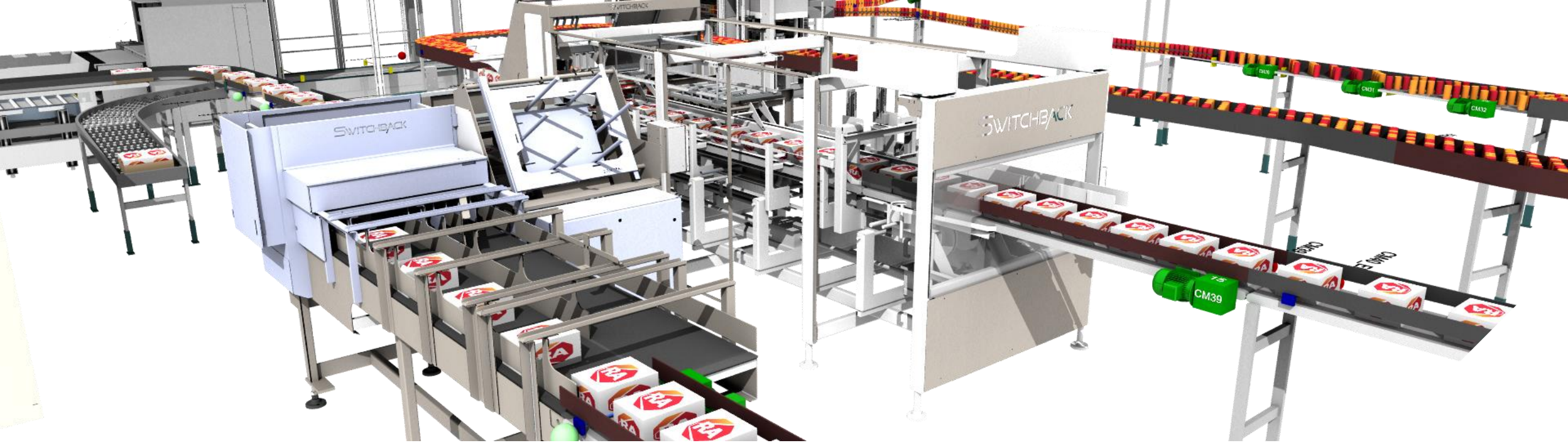
Emulate3D is a SOLIDWORKS Authorised Development Partner



1. What is Emulate3D CITM Controls Testing?

The Dynamic Digital Twin of a machine or system used as an off-line method to test and debug the control system under realistic operating conditions

Virtual Commissioning Models Built Directly in Your CAD Environment

Emulate3D for Machine Builders helps you create controls testing models of a wide range of machine types, directly within SOLIDWORKS. Debug and refine the kinematic sequences and timing of your designs in a virtual environment, and make changes to them faster than is possible with physical prototypes.

Create your machine or mechanical system in CAD, mark up the various kinematic and control elements, then connect the control and activation elements to the PLC IO and run the emulation model.

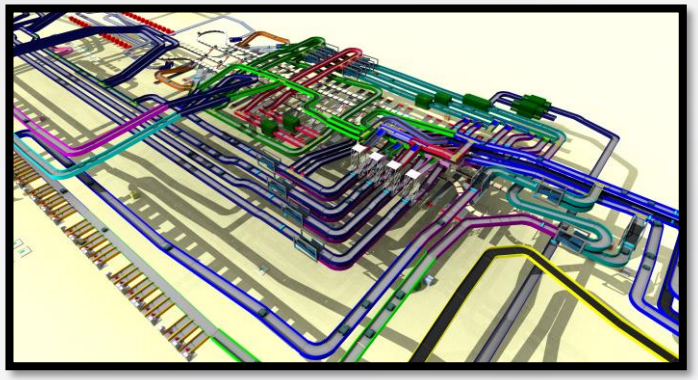
By combining mechanical CAD information with real control system logic you can create a valuable testbed in the form of a Dynamic Digital Twin.

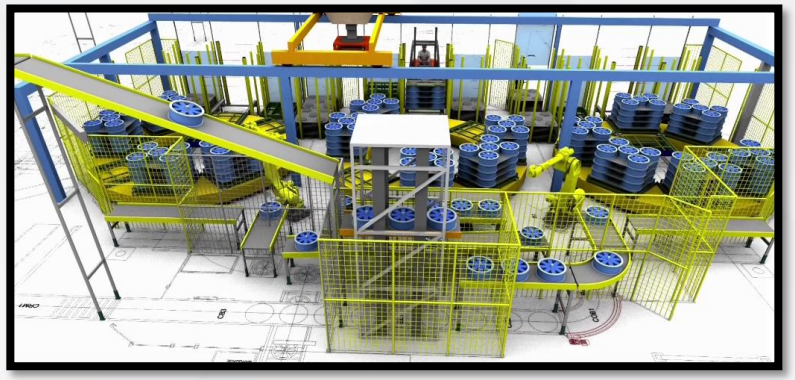
Emulation brings together the 3 truths of automation systems

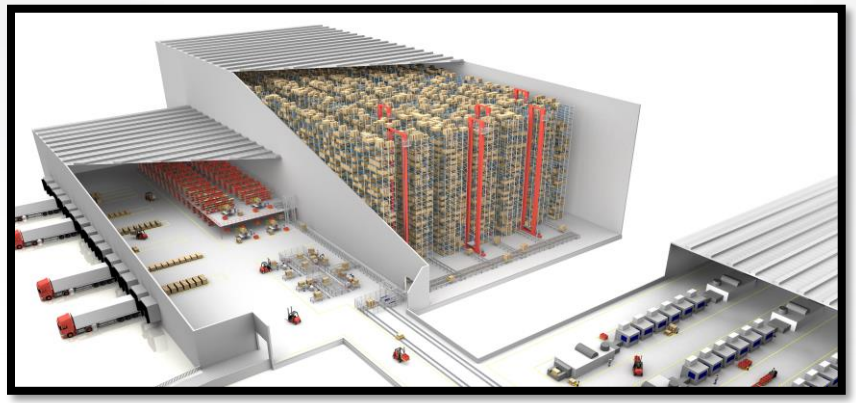
- The physical or mechanical truth – SOLIDWORKS CAD
- The logical truth – PLC Controls
- The transient elements - Loads, products, baggage

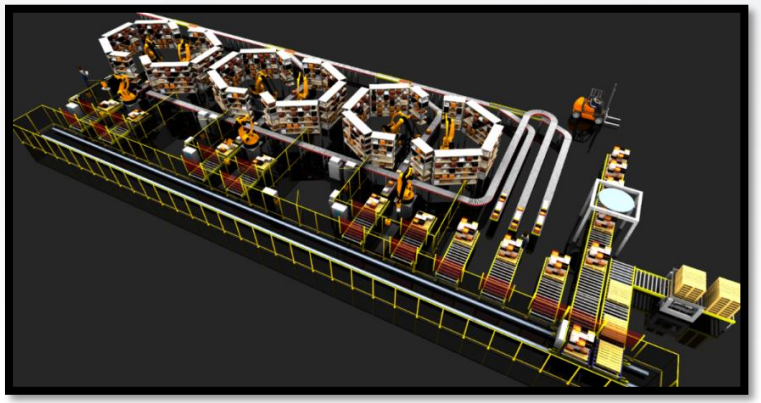
Typical Application Areas

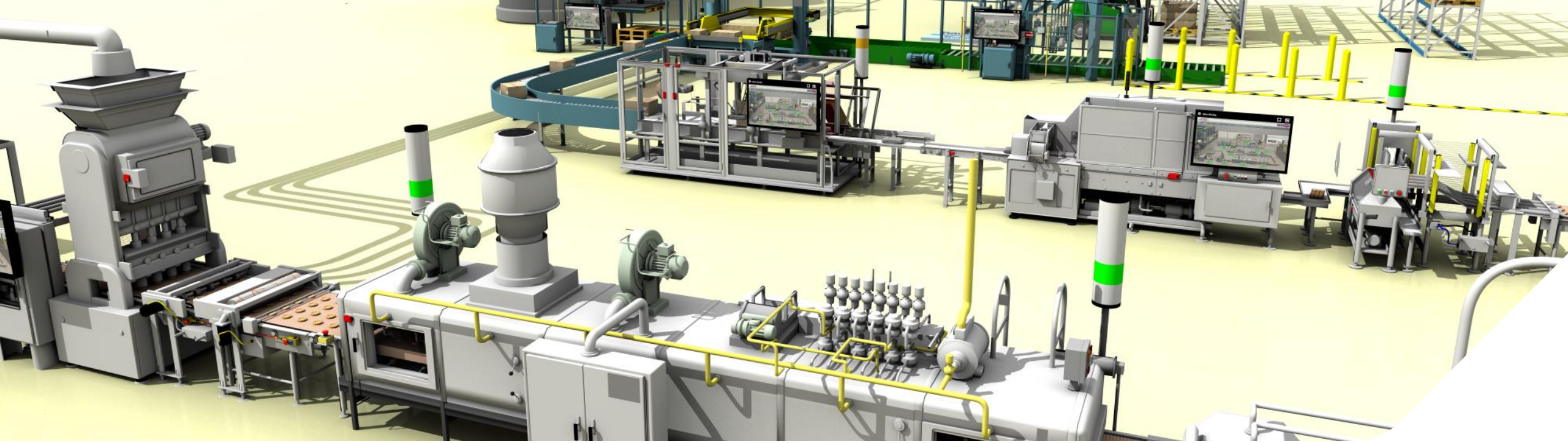
- Anything mechanical that may be automated!
- Machines, Manufacturing systems, packaging equipment, robotics
- Sorting and distribution centers, warehouses, factories
- Airport baggage handling systems







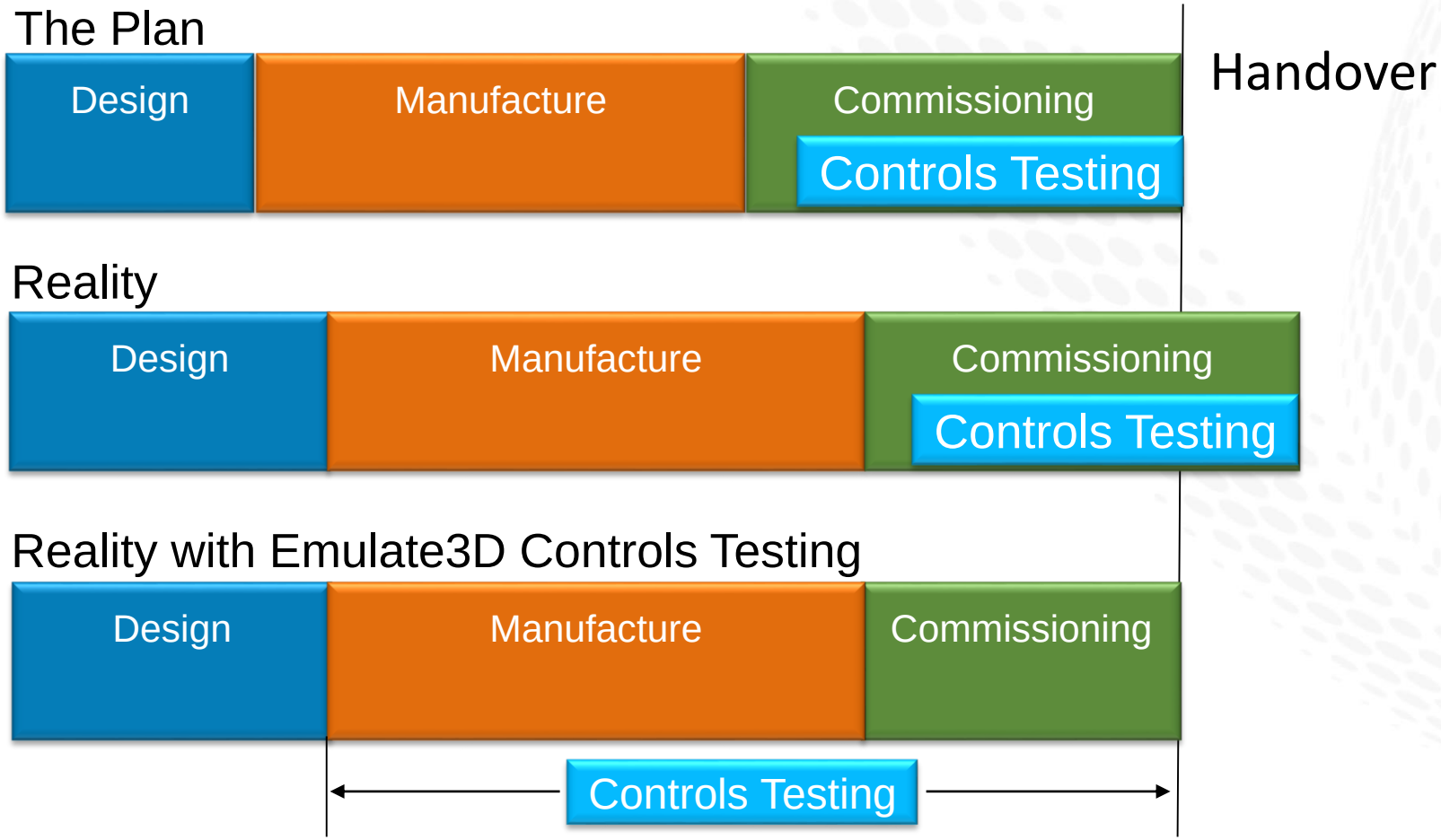




2. How can Emulate3D CITM help me? How can I implement it?

- **Save Time & Money at commissioning**
- Start controls testing earlier in the project timeline
- Test with fully reproduceable load sequences
- Reduce on-site debugging time, reduce duration variability
- Produce more fully-tested and robust solutions
- Train operators safely on normal operations and fault recovery sequences

Take controls testing off the project's critical path



Emulation enables low-cost, offline controls verification

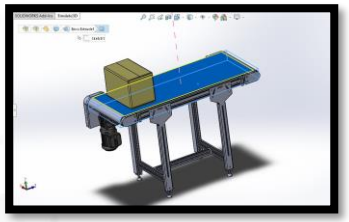
- Takes logical controls testing off the project's critical path
- Start controls testing earlier, and safely
- Carry out more exhaustive testing
- Create repeatable test schedules
- Carry out controls testing off-site
- Saves time and money at commissioning

How do I build a CITM Controls Testing Model?

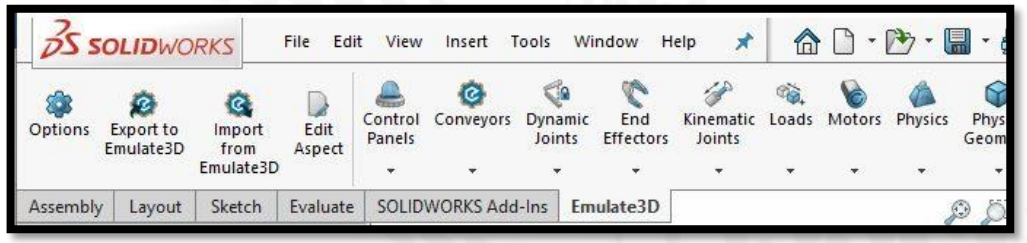
In 3 simple steps!

CAD is the Model is designed to be a process that fits easily with your existing workflow – it is additive rather than intrusive.

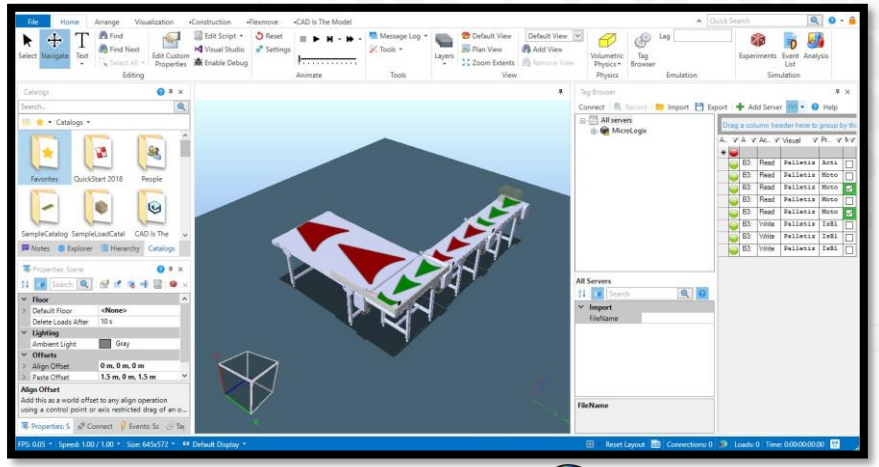
Step 1: Create your mechanical system in SOLIDWORKS CAD



Step 2: Switch to the Emulate3D add-in ribbon and mark up your CAD using the ribbon elements created for your application. The process of marking up CAD elements enables them to be recognised automatically as control or activation elements in the Emulate3D runtime environment, and behave appropriately.



Step 3: Export to Emulate3D and connect directly to a PLC



PalletizerDemo.SLDASM

Search SOLIDWORKS Help

Options | Export to Demo3D | Edit Aspect | Rigid Body | Server Name | Button | Collision Sensor | Conveyor | Physics Geometry | Load Source | Dynamic Joints | Kinematic Joints

Assembly | Layout | Sketch | Evaluate | SOLIDWORKS Add-Ins | Demo3D

- PalletizerDemo
  - History
  - Sensors
  - Annotations
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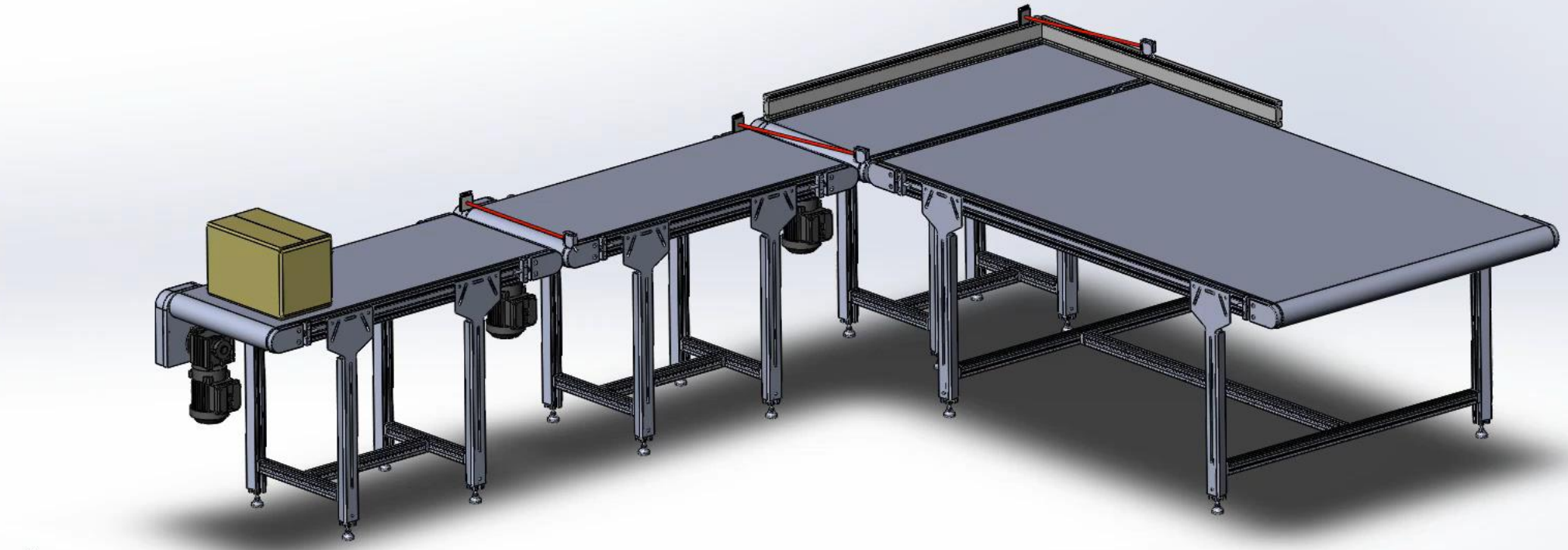
    - Top Plane



Model | Motion Study 1

SOLIDWORKS Premium 2018 x64 Edition

Under Defined | Editing Assembly | Custom

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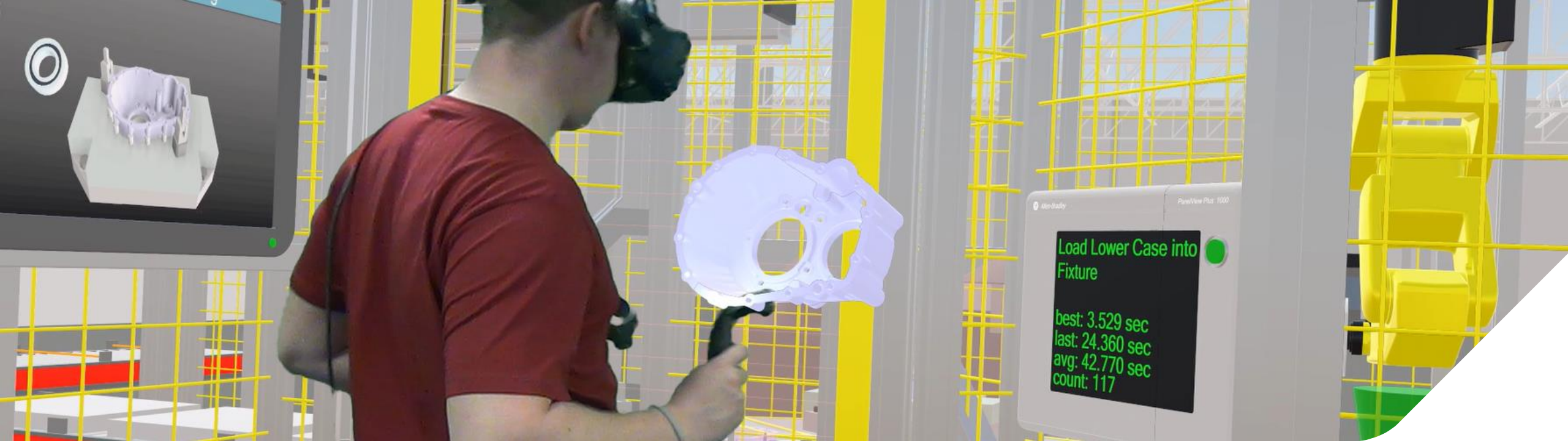


3. What does Virtual Reality bring me?

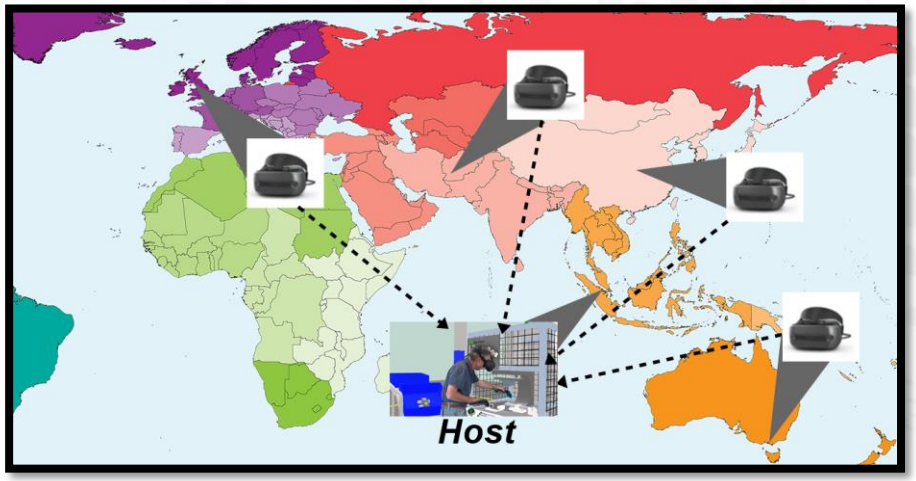
In a realistic physics-based runtime environment, Virtual Reality provides an authentic-feel experience for demonstration, development, and training.

- Accelerate project development cycles
- Train operators safely and at low cost
- Communicate solutions effectively and remotely


Assembly Complete!
EMULATE3D
Allen-Bradley
Touch
cycle
best:
last:
avg:
count:

How does Virtual Reality really help?

- Virtual Reality direct from SOLIDWORKS
- See your changes to CAD instantly within an interactive environment
- Effective way to verify your design solution
- Powerful sales tool & excellent method of communication
- Fewer or no physical prototypes
- Present the running system to others within the model
- Full-scale ergonomic verification & operator training
- Emulation controlled by in-VR browser-based HMI
- Local and/or remote attendees



** …and Augmented Reality, and Mixed Reality…*

4. Benefits Competitive Advantages & Differentiation

CAD is The Model (CITM) packages the power of the Emulate3D framework into a user-friendly SOLIDWORKS ribbon designed for companies who design and test automated products.

- CITM brings emulation functionality to SOLIDWORKS machine builders
- Convenient and familiar build environment
- Accommodates user workflow

CAD is The Model – Emulation for Machine Builders

- CAD is the machine builder's familiar environment
- Create customer-specific ribbons to create emulation elements
- Export to Emulate3D runtime license to connect and run
- CAD modifications can be accommodated without breakage
- CAD contains the meta-data including tag information

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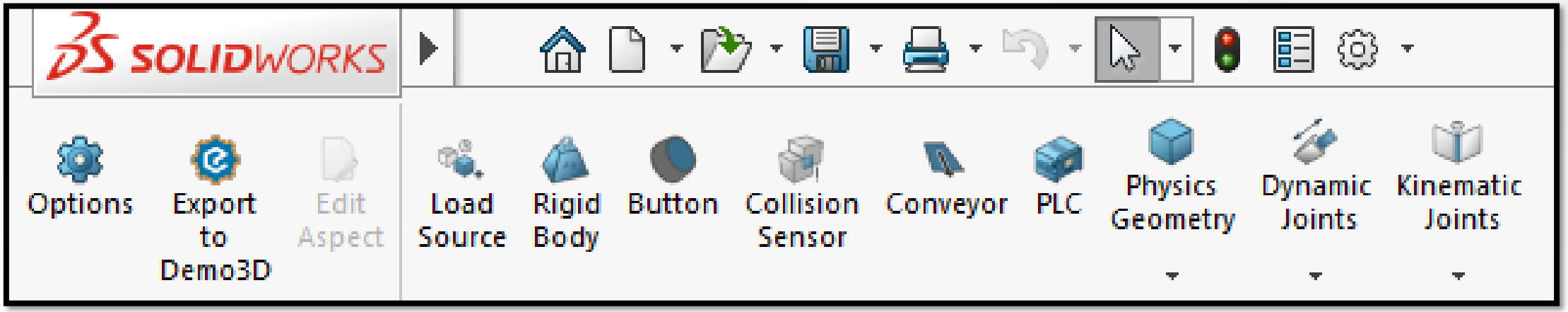
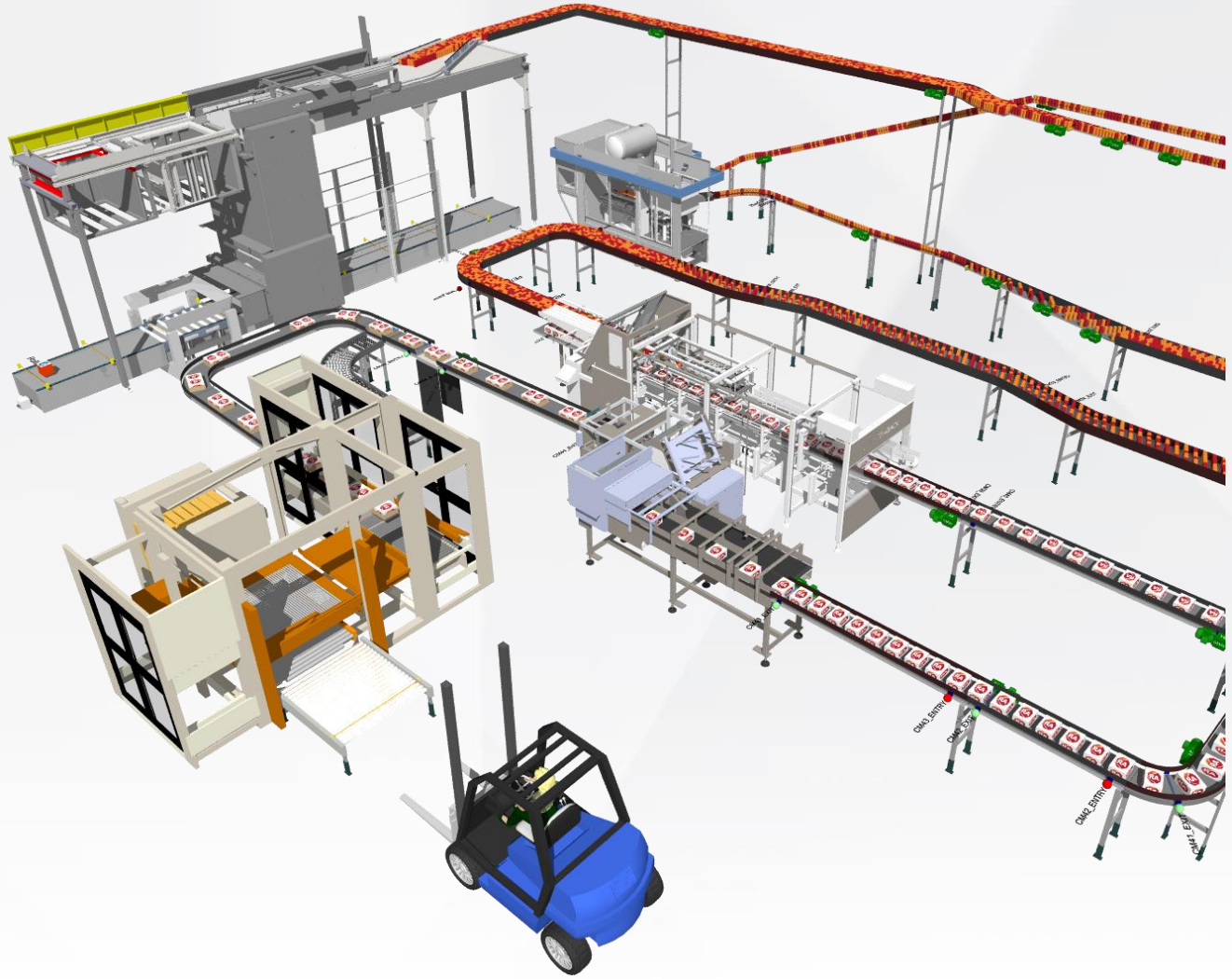


Benefits of virtual prototyping using Emulate3D CITM

- Save Time and Money!
- Flexible, fast & easy to use!
- Existing SOLIDWORKS CAD can be used immediately
- Faster automation project development
- Thorough logic sequence and timing verification
- Eliminate or reduce costly physical prototypes
- Effective and non-disruptive user training
- Globally recognised software technology



Emulate3D Controls Testing for Machine Builders

Industry testimonial

DAIFUKU WEBB
JERVIS B. WEBB COMPANY

".. Test PLC code before it goes to the field"

".. Utilised Emulate3D to obtain huge cost savings"

".. 3 month on-site commissioning period condensed down to 3 weeks"

".. love working with the product…. Enjoy the versatility and quality…"

".. Support has been excellent and installations go much smoother"

Greg Swisher, Senior Controls Engineer

Produce better automation systems with Emulate3D

Learn how to create and get value from Dynamic Digital Twins. Reduce your automation system investment risk and develop better solutions, faster.

- Ask for an online demonstration centered around your business
- Follow an online workshop to understand how it all works for you
- Build and run virtual commissioning models with expert support
- Call **0409 197 853** to schedule a demonstration