JUNE / 16 . 06 . 25

DIGITAL TWINS IN PRACTICE: CHALLENGES, TRUTHS, AND PROGRESS

Dymation

Company Introduction

Holding group of 28 companies and more than 3700 people, expert in machineries across many industries.

Leader in Italy for advanced solutions and services for internal logistics.

Europe-wide system integrator specialized in intralogistics automation and innovative software solutions.

Dymation

Consulting

Automation

Digitalization

8+
Years into automation

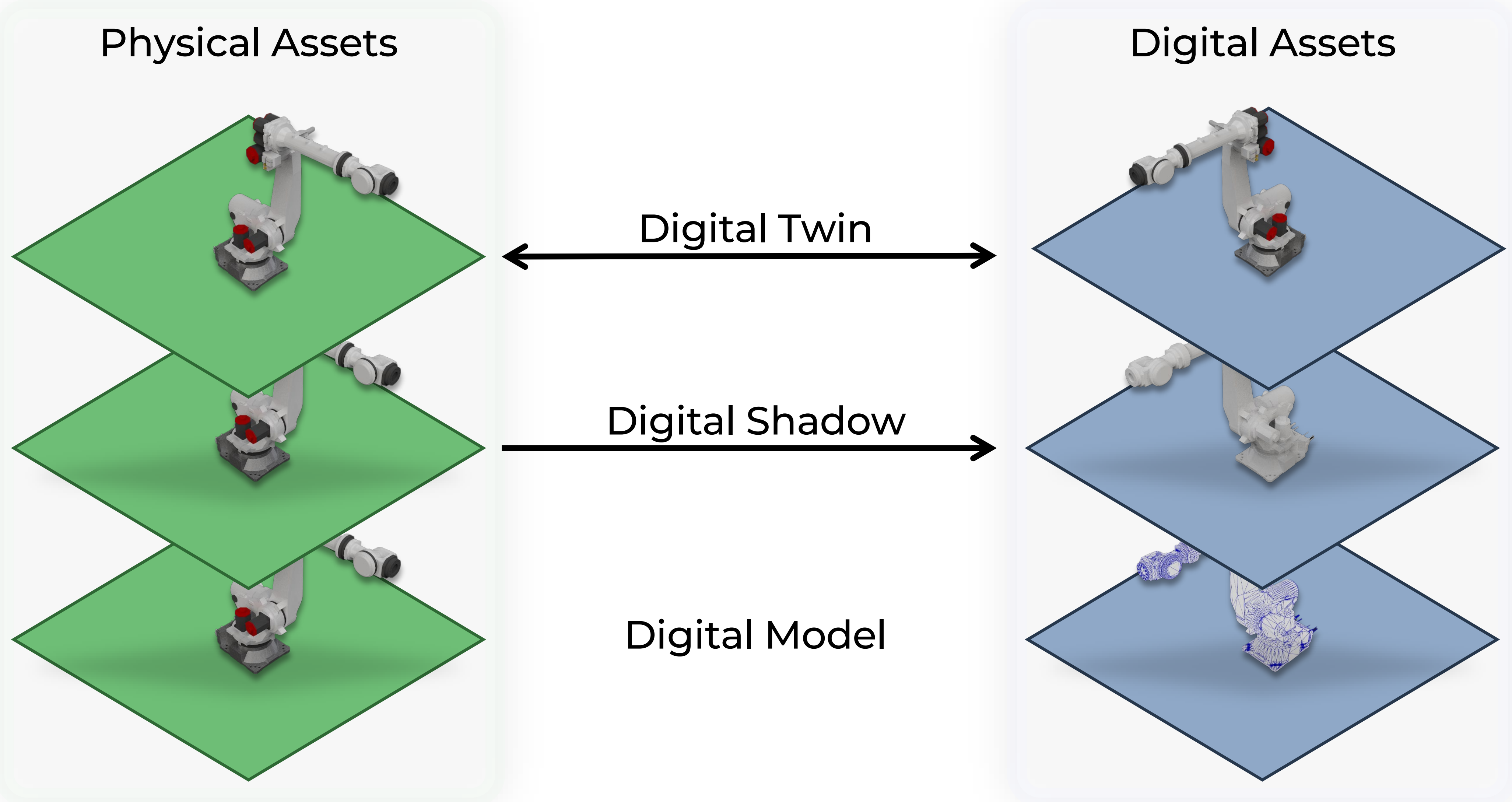
50+
Multidisciplinary specialized engineers

70+
Active Plant integrated and actively monitored

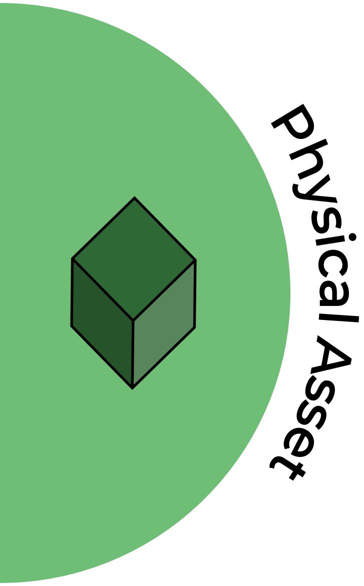
200+
Automatic Solutions installed

Digital Transformation

Digital Transformation Layers



Digital Model



The need for the developments

OTTO Motors

AGILOX

ROCLA

OMRON

Digital Model: Development

Components

Create an asset library with useful component:

- Vehicles (AGVs, AMRs)
- Conveyors (infeed/outfeed systems)
- Buffers (intermediate storage, accumulation zones)

Workflows

Build an automated workflow parser that reads Excel files:

- Automatically link workflows to the correct stations
- Create workflows with configurable frequency and margin
- Define specific time windows with high activity ("peak hours")

Vehicle Logic

Implement key vehicle control logic:

- Dynamic vehicles job assignments
- Vehicles battery levels and recharge cycles management
- Define custom zones within the tracks using waypoints

KPIs

Use Emulate3D’s Experiments Tool:

- Generate real-time KPIs such as Throughput, and Fleet saturation
- Create automatic heatmaps to visually identify bottlenecks in the system

Digital Model: Development Result

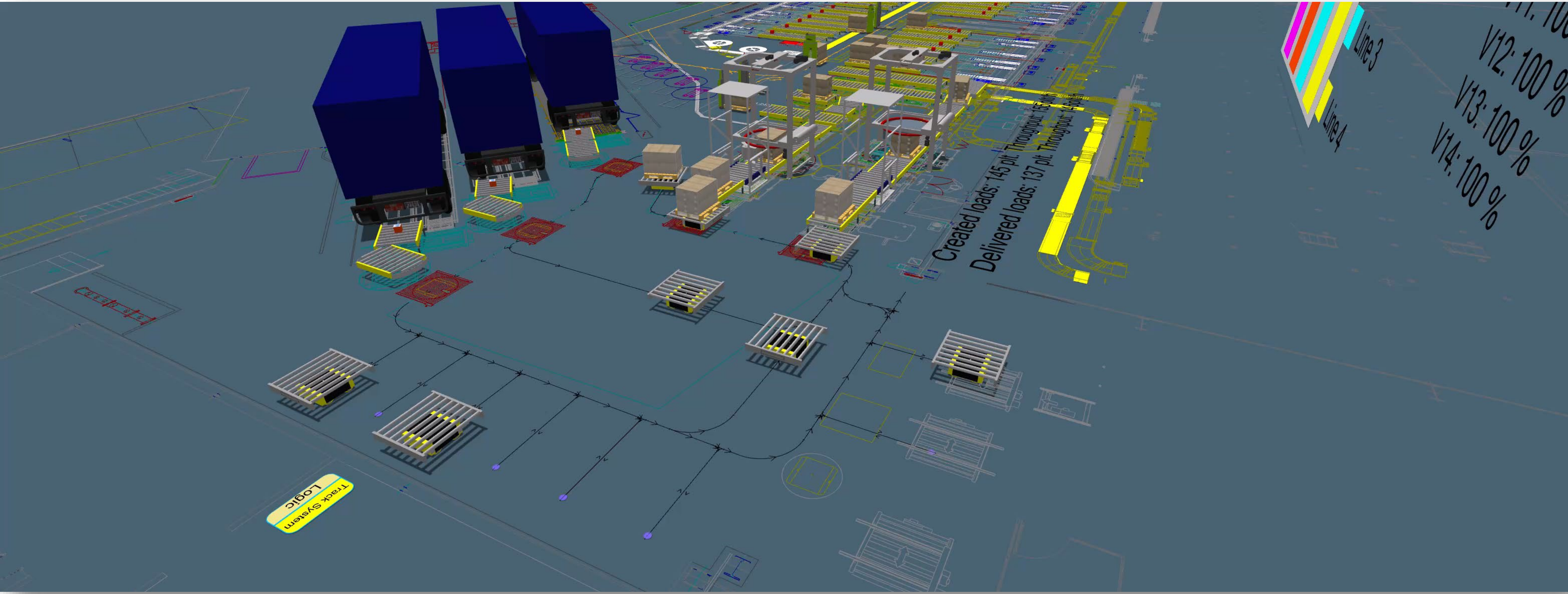
MONTHS

1 WEEK

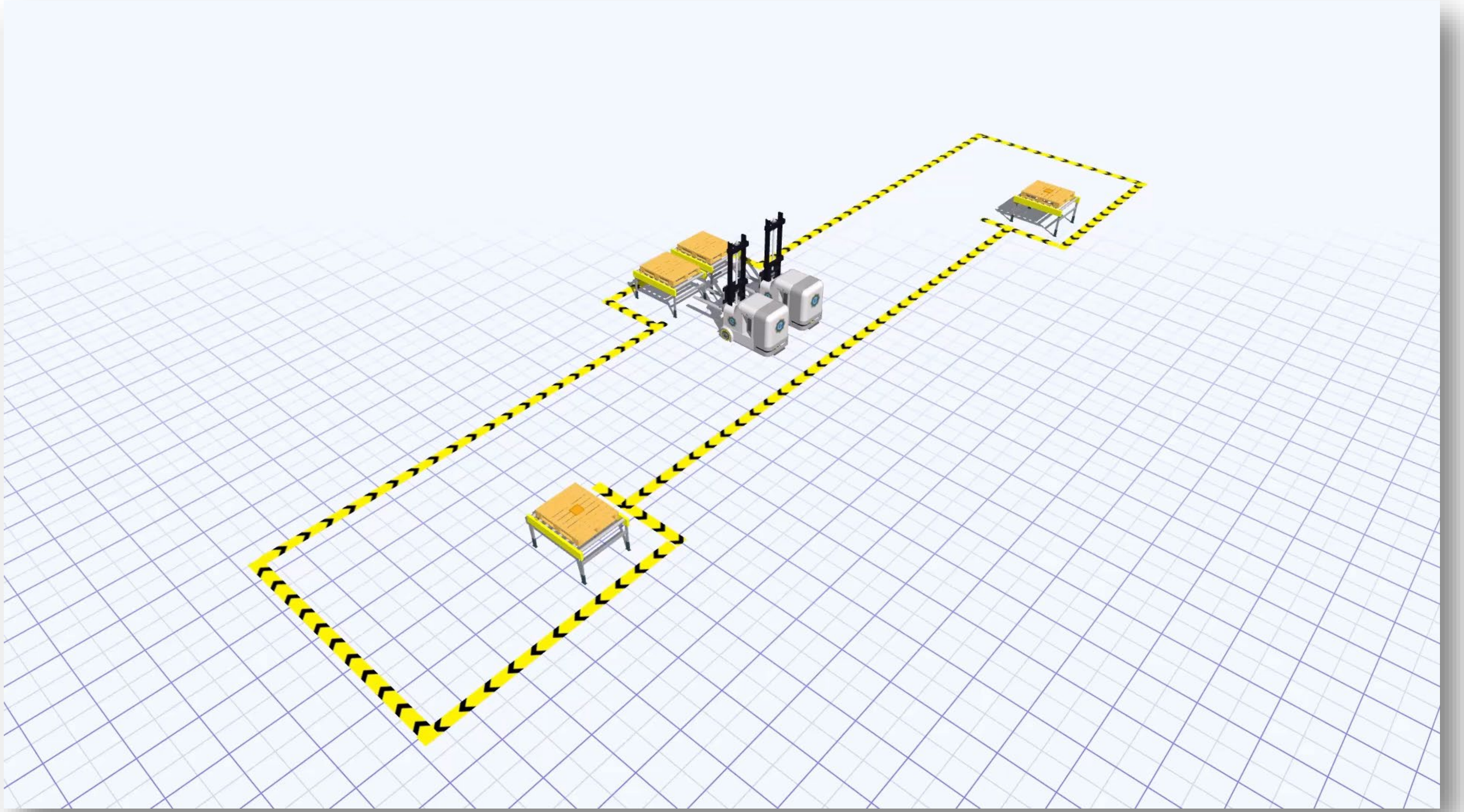
75%

Reduction in the simulation process.

Digital Model: Development Result



Digital Model: Development (II)



Digital Model: Development (II)

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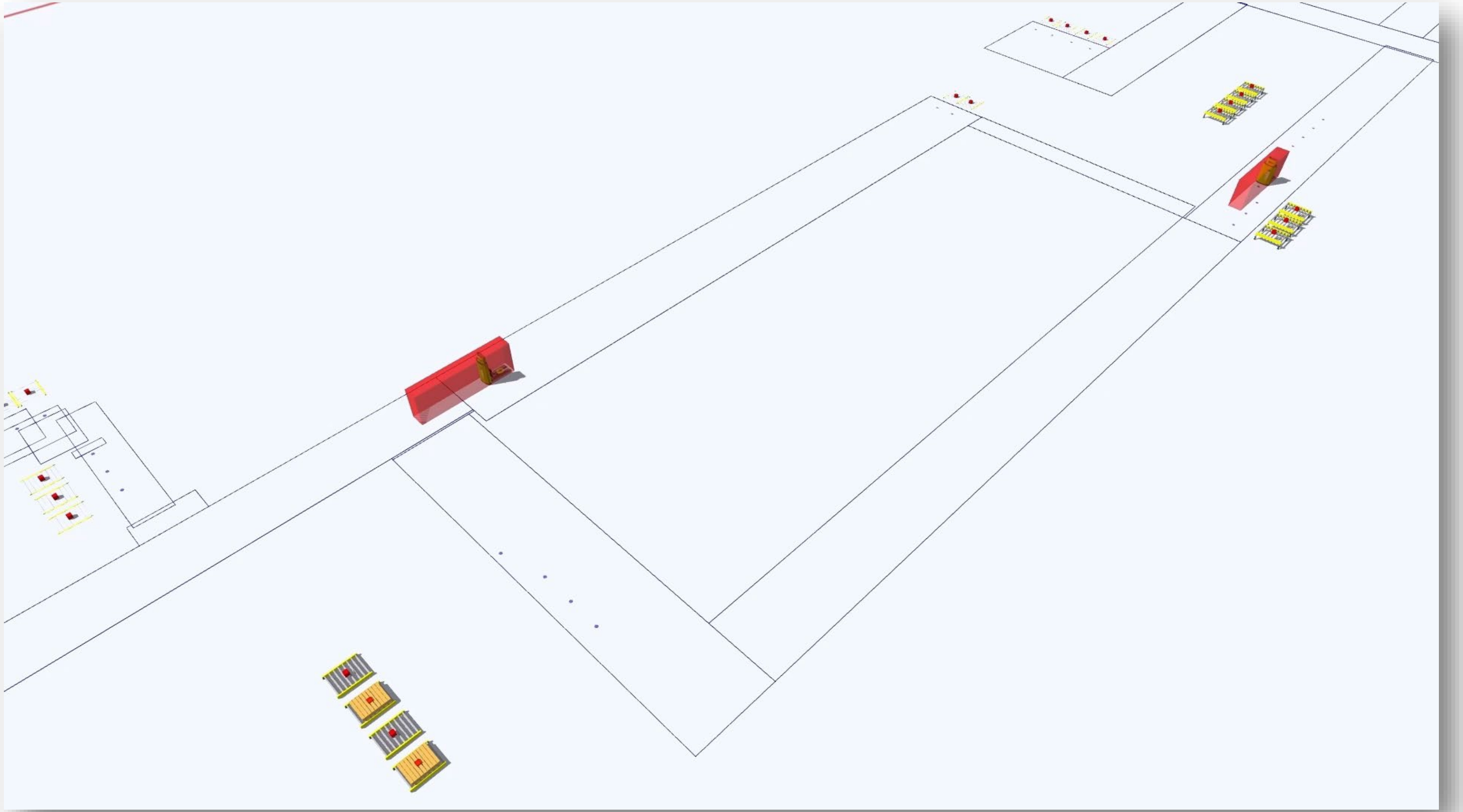


Digital Model: Development Result

1 WEEK

1 DAY

75%

Reduction in the simulation process.

Digital Shadow

Digital Shadow : Continuous improvement

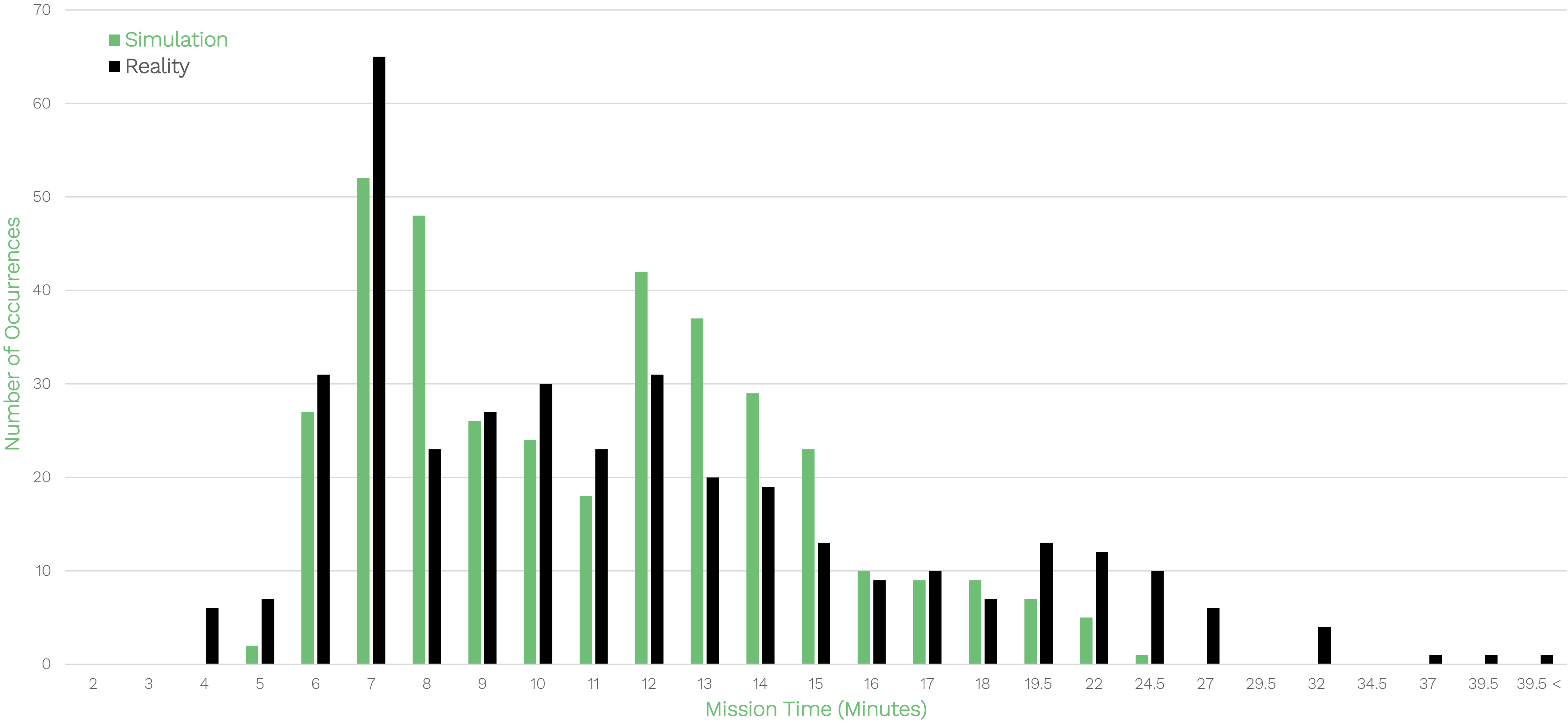
Data Collection & Analysis

Simulation & Validation

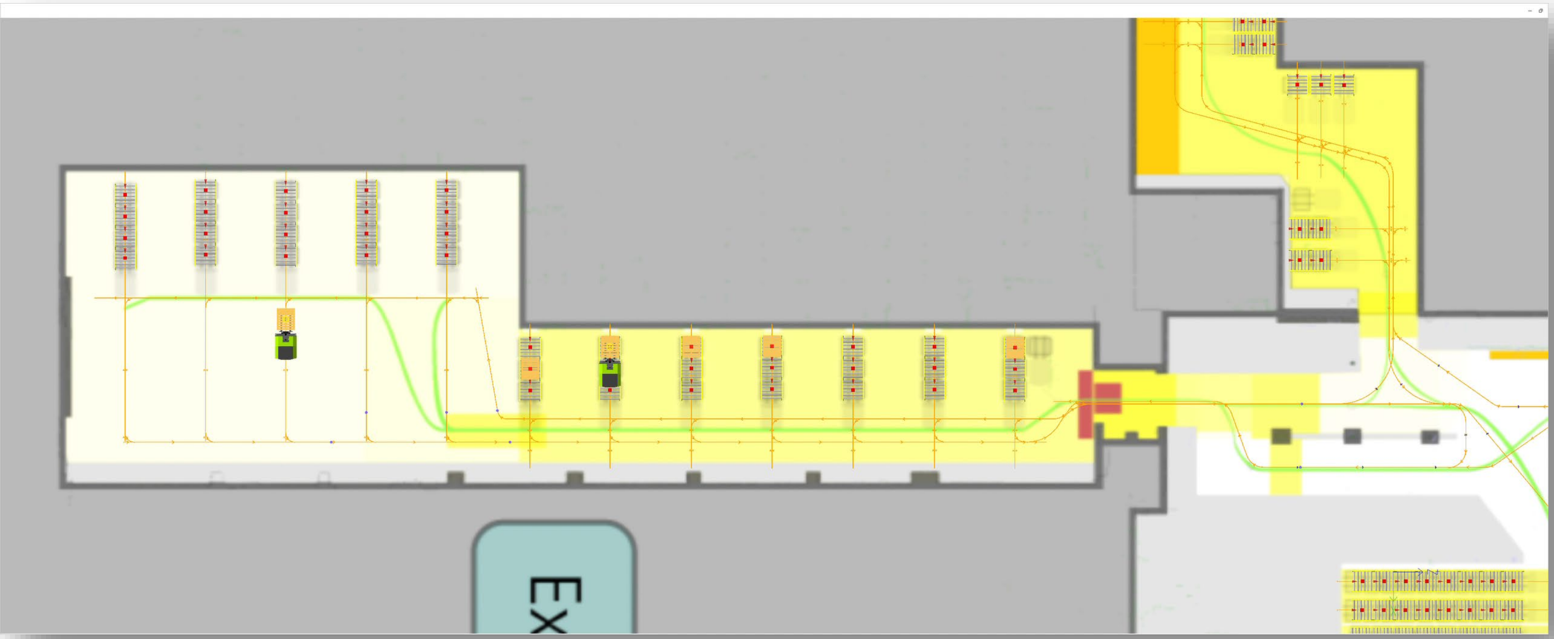
Problem Identification & Solution Design

Implementation & Execution

Digital Shadow: Case Study



Digital Shadow: Case Study

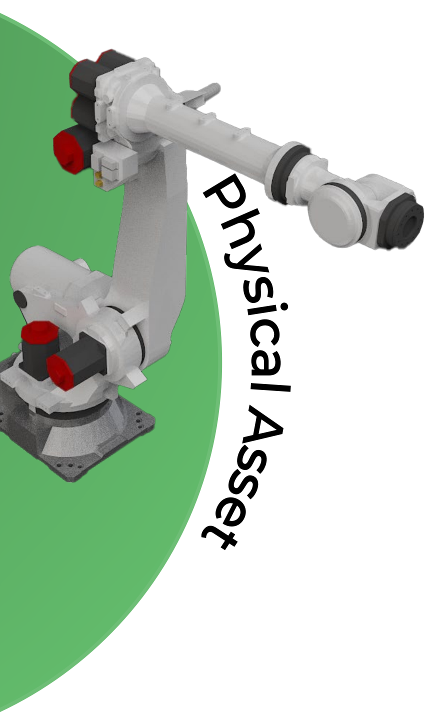


21%

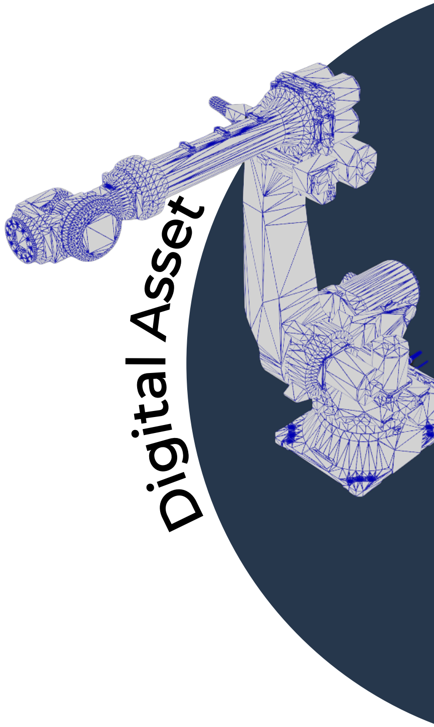
Increase of efficiency.

Digital Twin

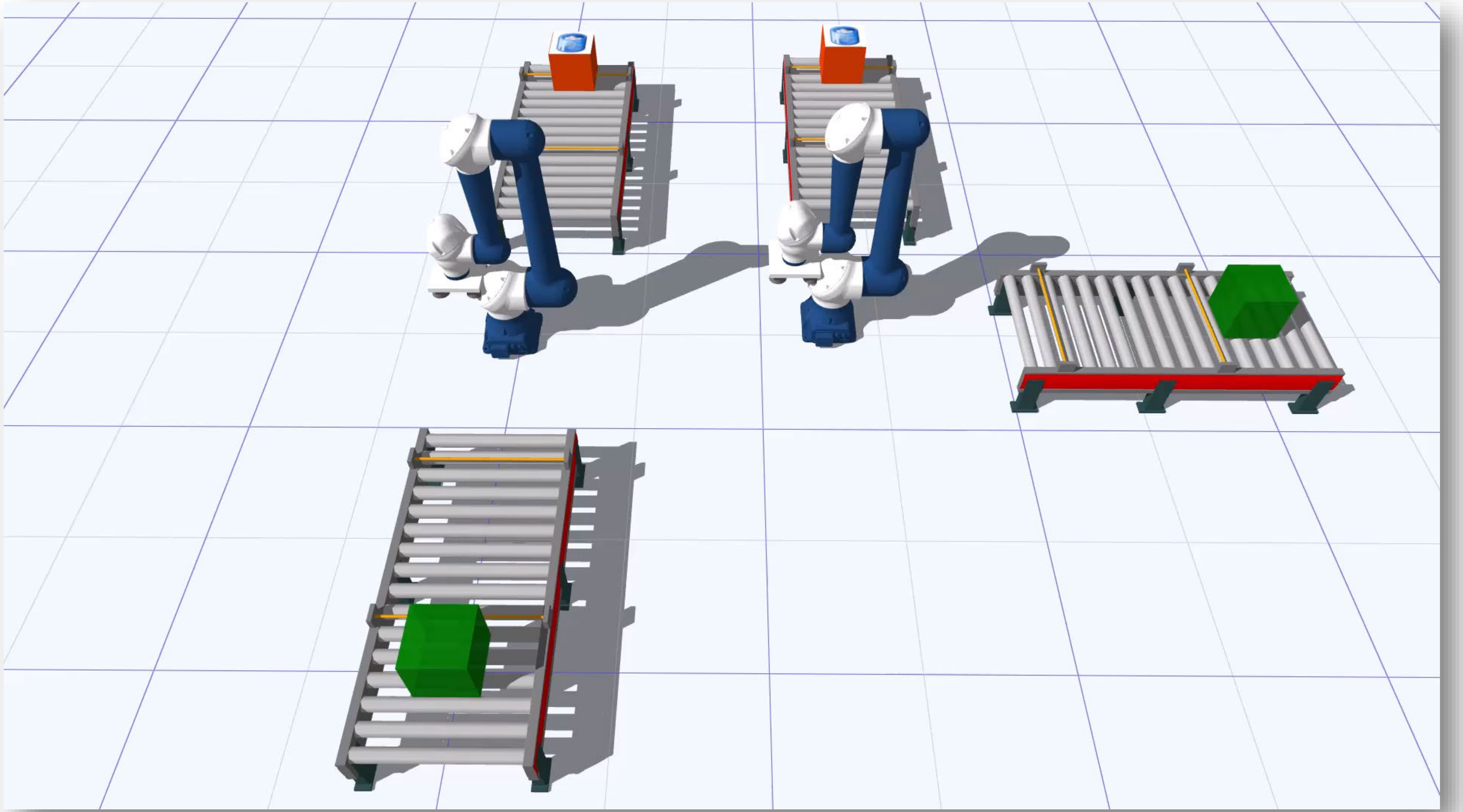
Digital Twin: Case Study



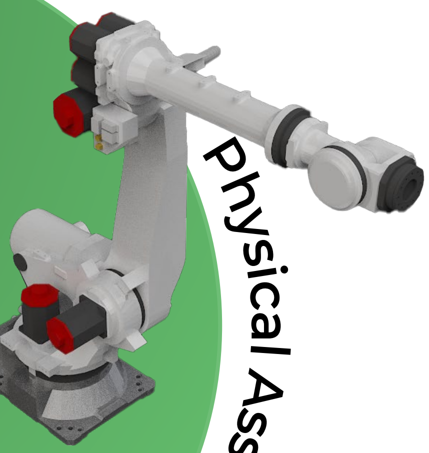
Physical Model & Mark-Up



Digital Twin: Case Study

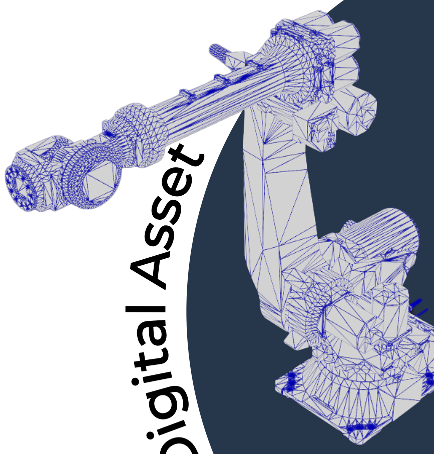


Digital Twin: Case Study

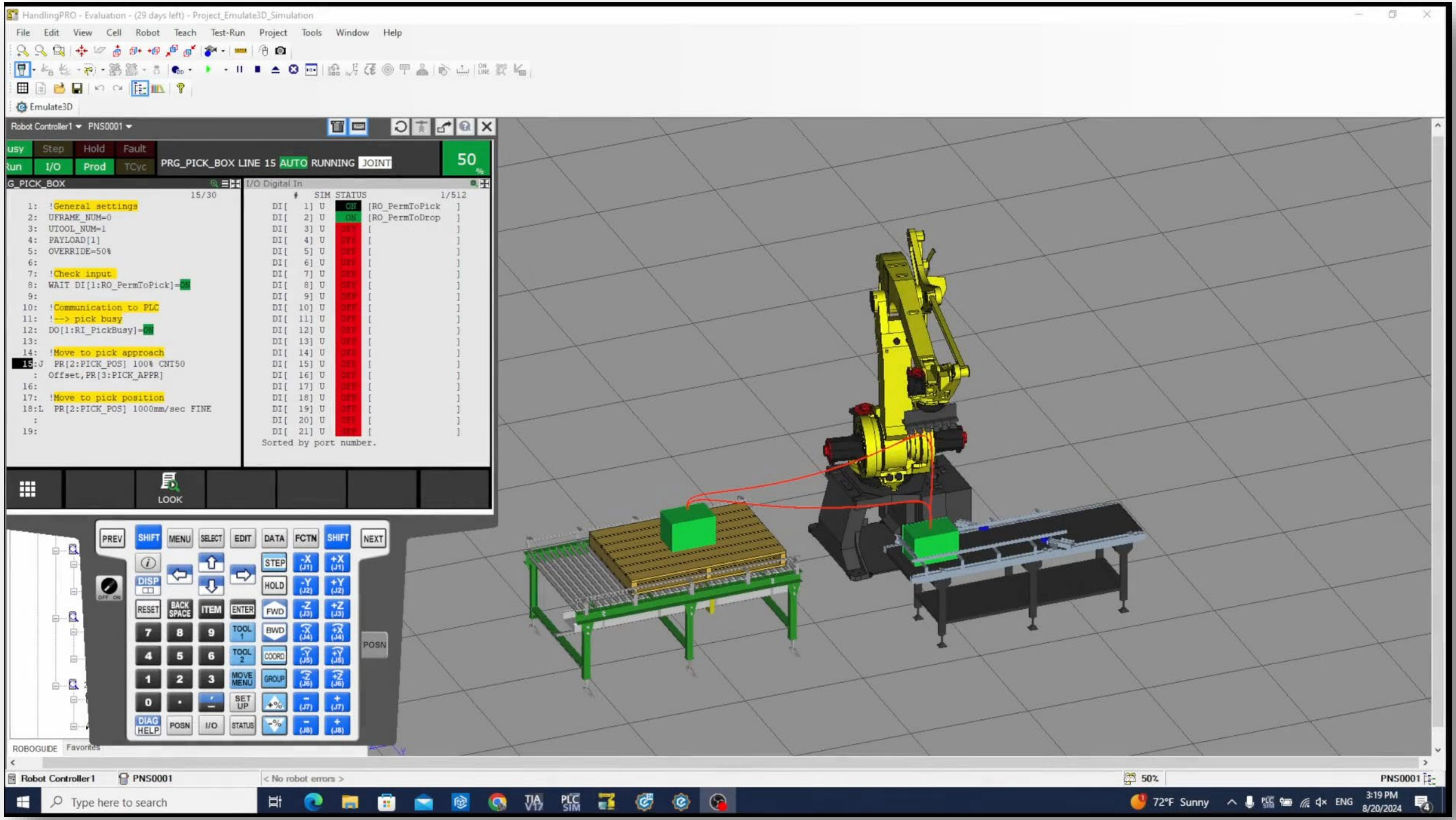


Physical Mode

Robot Software Model



Digital Twin: Case Study

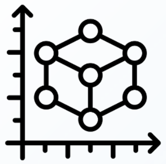


Digital Twin: Case Study

Low
Med
High

Precision

Physical Model & Mark-Up



Low
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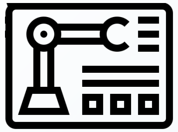
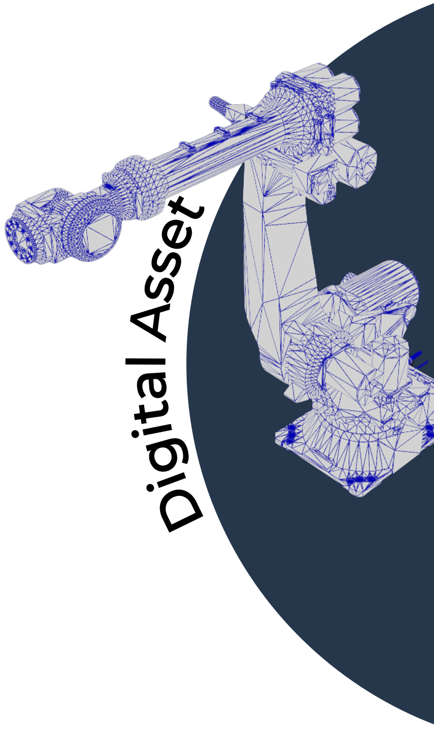
High

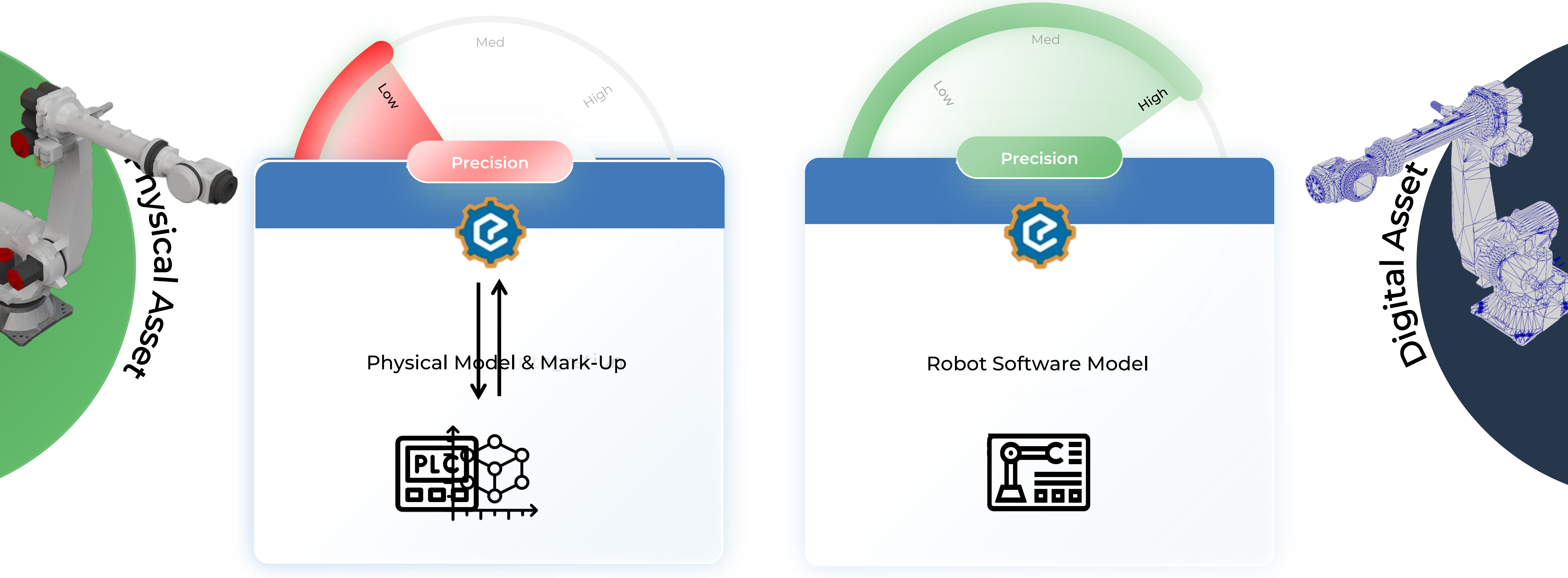
Precision

Robot Software Model

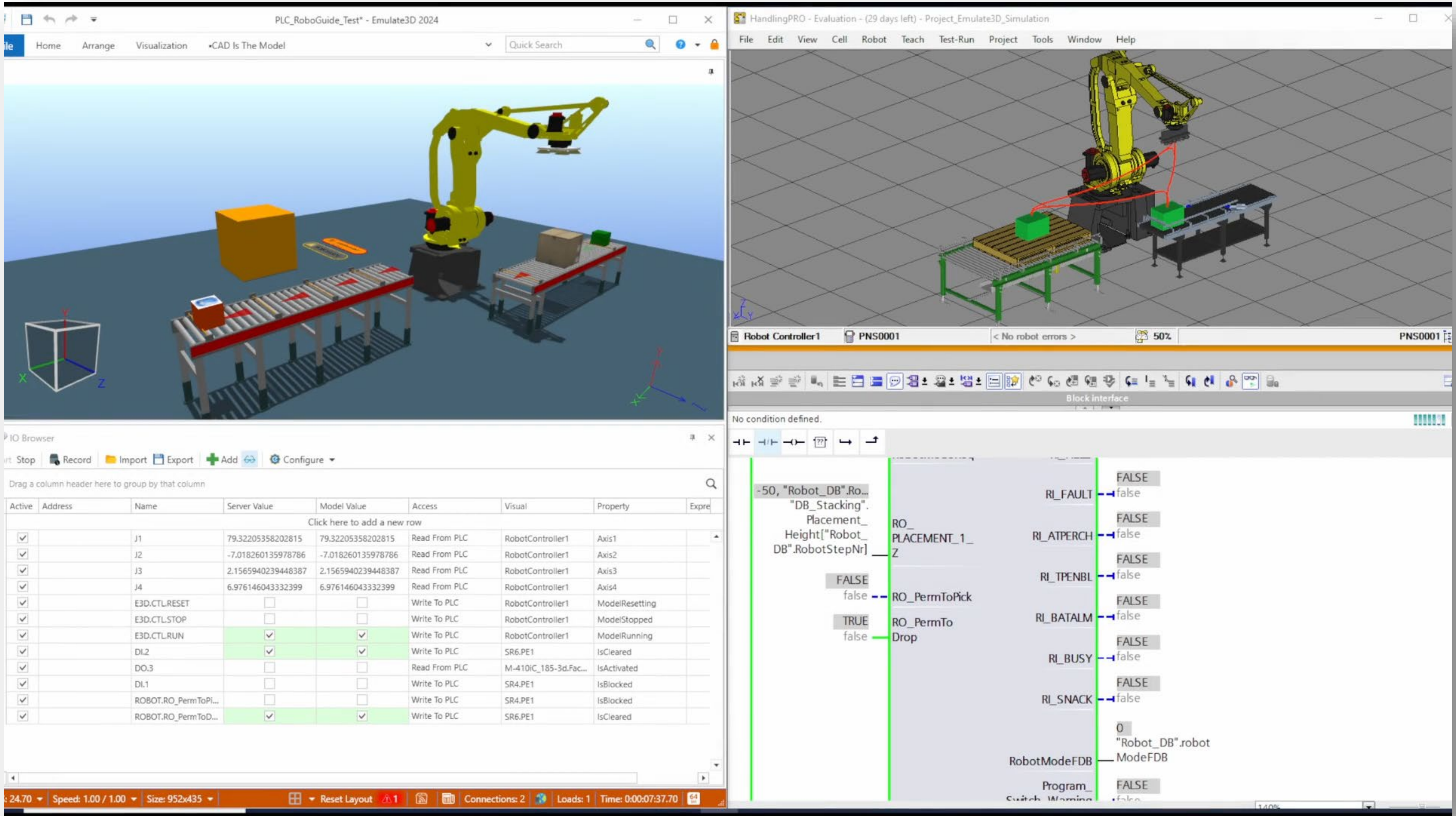




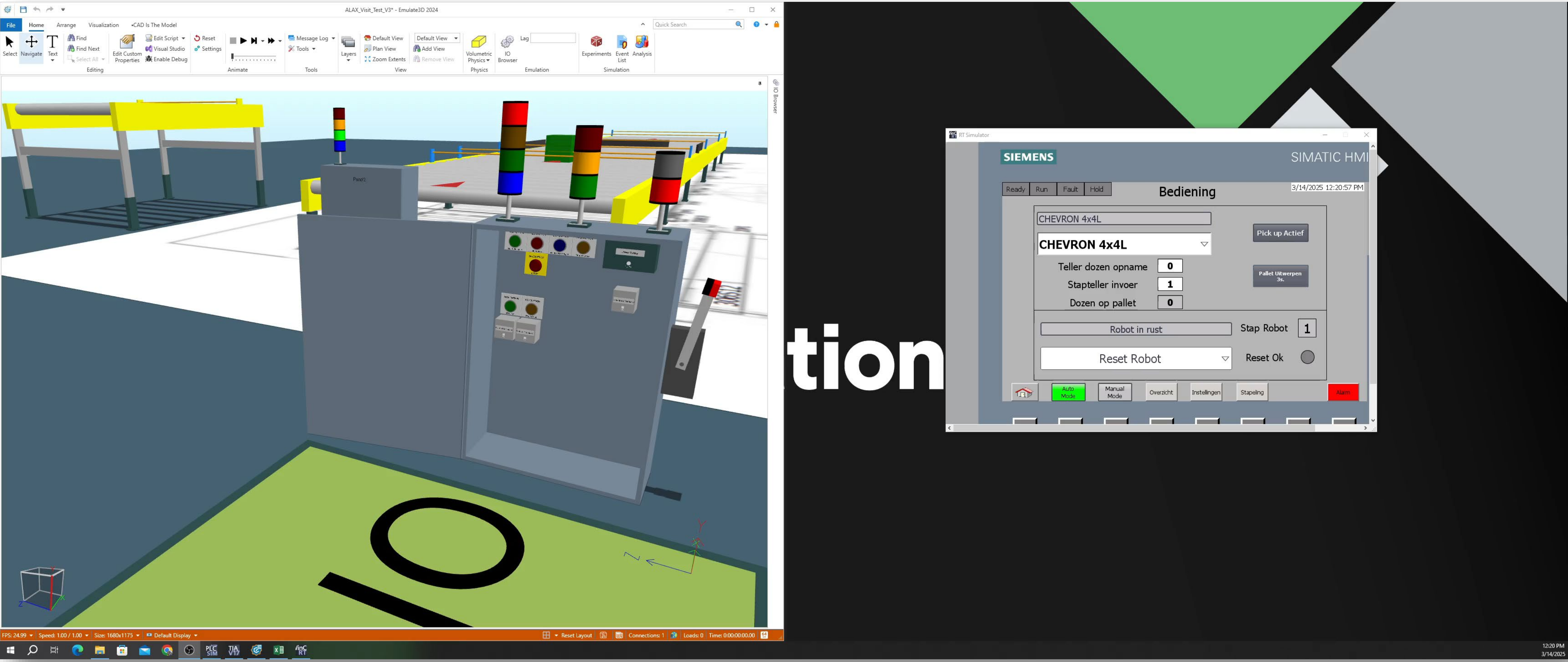
Digital Twin: Case Study



Digital Twin: Case Study



Digital Twin: Ongoing Project



Digital Twin: Next Steps

Virtual Commissioning

Finalize the connection between the simulation environment and the robot control logic to create a fully functional model.

Digital Twin Deployment

Establish real-time communication to mirror physical behavior for testing, validation, and live system monitoring.

Conclusion

2022 → 2025

Faster Simulation Cycles:
Reduced simulation time by 93%,
From months to one day.

Streamlined Project Delivery:
- Accelerated timelines
- Reduced commissioning risks
- Increased solution adaptability

Enhanced Customer Efficiency:
Achieved 20% efficiency gains through
Continuous improvement projects

THIS IS NOT THE END, BUT THE BEGINNING