Anlauf ohne böse Überraschungen – Simulation und Virtuelle Inbetriebnahme mit Emulate3D

Rockwell Automation

expanding **human possibility**®

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Strategic Alliance Partner

Rockwell Automation and PTC: Stronger together

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"As IT and OT converge, there is a natural alignment between our companies. Together, we will offer the most comprehensive and flexible IoT offering in the industrial space."

BLAKE MORET, CHAIRMAN AND CEO

2021
ptc
PTC PARTNER NETWORK AWARD WINNER

ptc

"Leveraging Rockwell's industry-leading industrial control and software technology, strong brand, and domain expertise with PTC's award-winning technology enables industrial enterprises to capitalize on the promise of the industrial IoT and Augmented Reality."

JIM HEPPELMANN, PRESIDENT AND CEO

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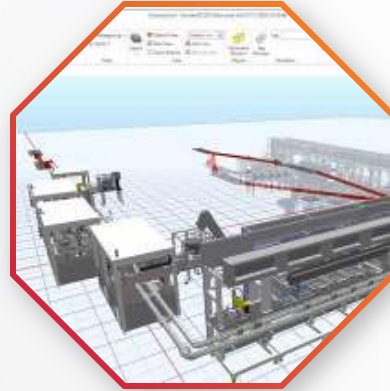# Move away from the
status quo...

Design – Build – See the result

Test and improve your designs virtually before ever beginning production

On-site commissioning

Mechanical & Logic operations validated prior to site. Reduced time between design complete and production milestones.

Dynamic Digital Twins with Emulate3D
Create a functional twin of a system to continuously experiment, test and improve without physical constraints.

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Digital Engineering with Emulate3D

Establish concurrent work streams in a single digital environment to design, test, build and commission.

Concept   **Proposal**

Use early models to show data proving concept design

System Design

Automation Design

Controls Testing

Training

Commission & Startup

Operation & Maintenance

Challenges – Traditional Projects

- Decisions based on estimates & history.

- Performance and output based on trust and commitments rather than data.

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Concepts & Smarter Proposals

Make concept decisions based on data and proof early in a project

Use Emulate3D to create early, low complexity models to demonstrate dynamic system layouts.
Rapidly concept multiple configurations or designs during the sales cycle.

OUTCOME

- Make concept decisions with more certainty.

- Convey proposed system function with an operating model.

- Align multiple suppliers or components into a single system proposal.

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Digital Engineering with Emulate3D

Establish concurrent work streams in a single digital environment to design, test, build and commission.

Concept

Proposal

System Design

Automation Design

Controls Testing

Combine mechanical and controls design earlier through a shared model space

Training

Commission & Startup

Operation & Maintenance

Challenges – Traditional Projects

- Little opportunity to experiment.
- Reliant on physical parts delivery.
- High risk event in testing late in project.
- Mechanical & Automation decisions typically siloed.
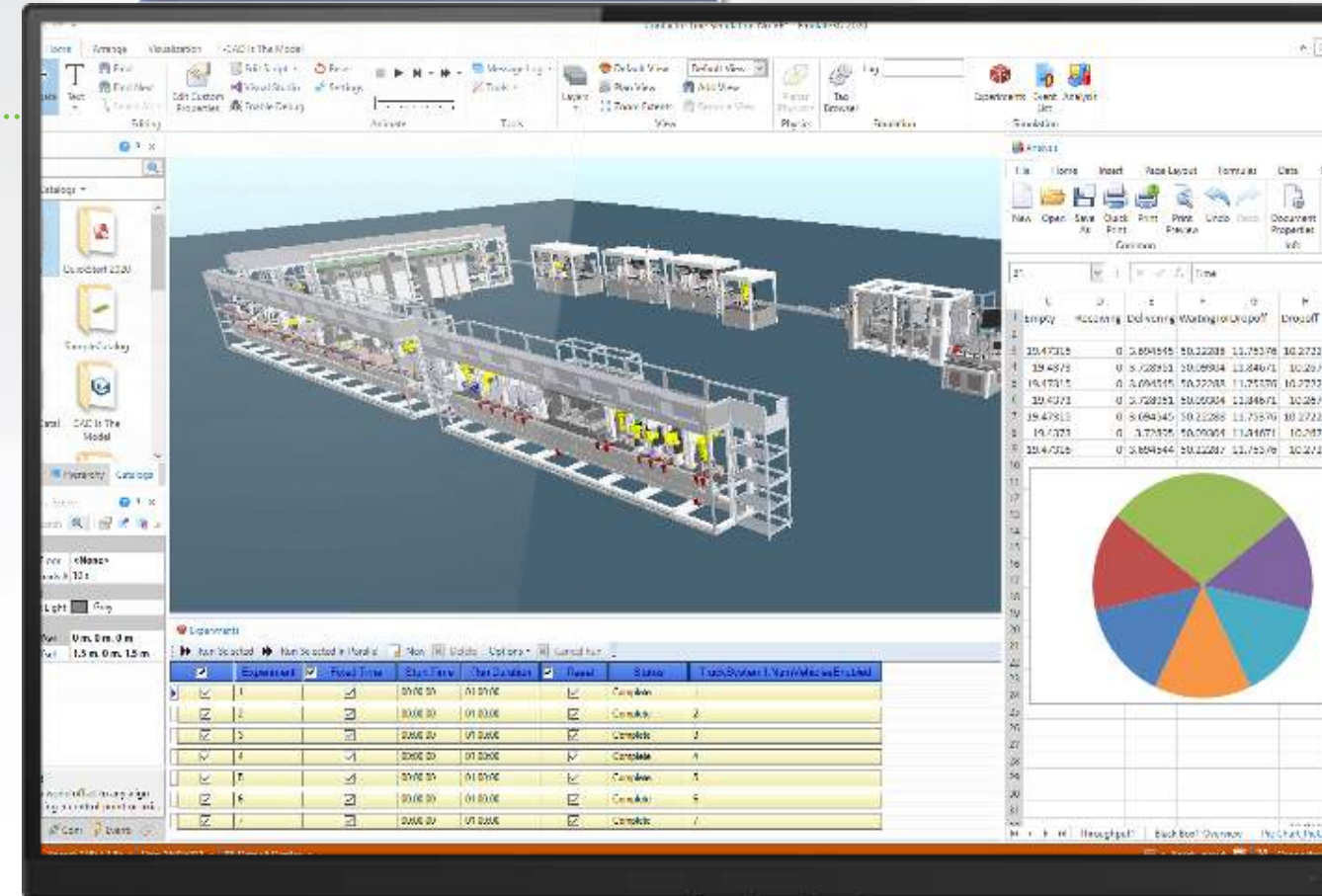
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System Design

Simulate operations to understand limitations and barriers

Use Emulate3D to analyze system throughput, identify bottlenecks, dimension resources appropriately and understand the system response to operational changes.

Optimize throughput with real-time 3D simulation of dynamic processes

OUTCOME

- analyze operation

- improve layout and product flow

- Reduce the risk associated with automation investment

- Demonstrate best choices numerically and repeatably

- Explore layout and operational options

- Understand system response to operational changes

Digital Engineering with Emulate3D

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Commission & Startup

Work *inside* the model against production demands to train and commission early.

Challenges –Traditional Projects

- Extended time means penalties, lost production, etc.
- Ad-hoc design changes at a deadline, on site are full of risk and moderate quality.
- Requires access to physical system.

Operation & Maintenance

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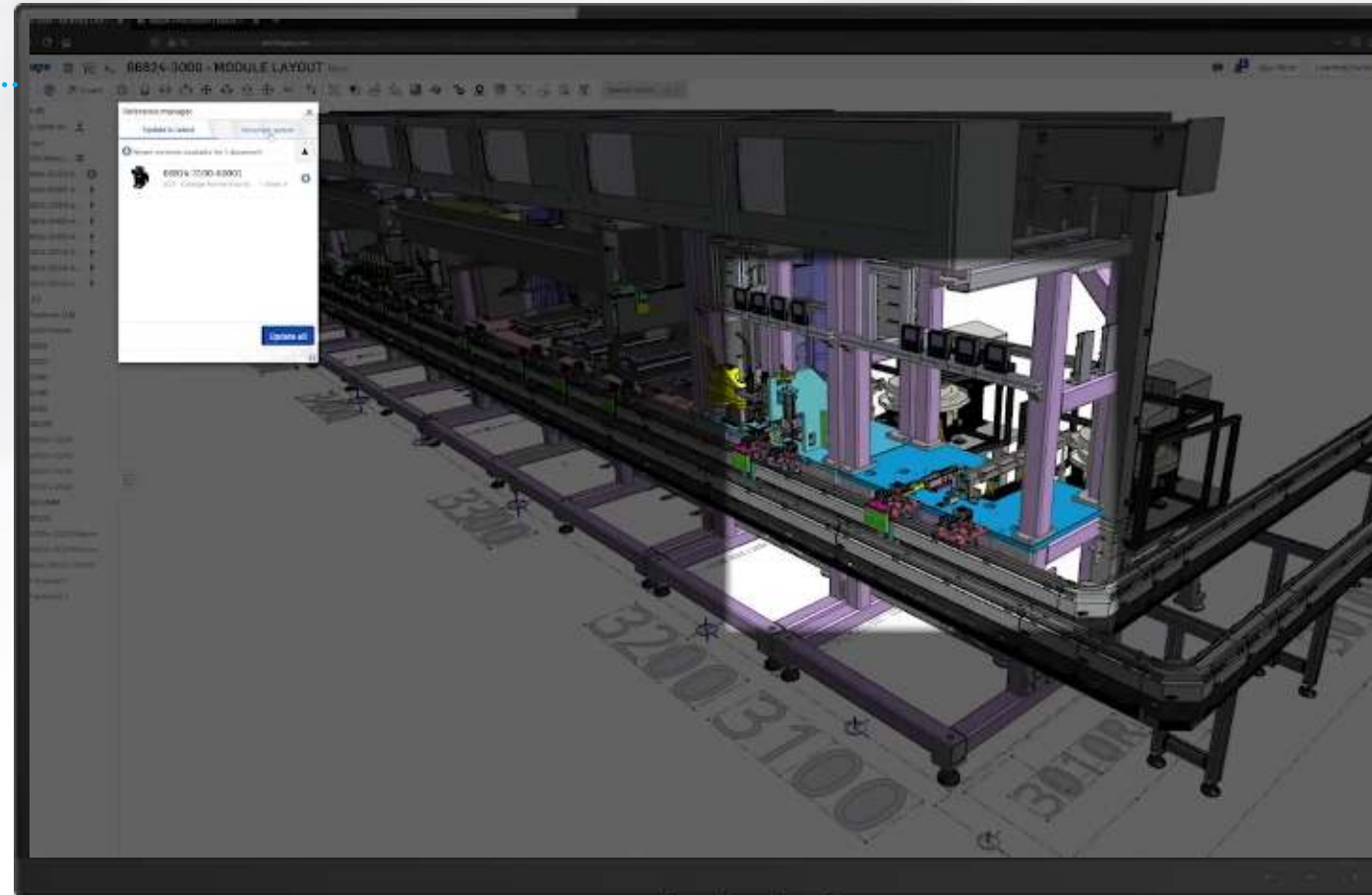
Commission Virtually prior to going on site.

Operate your real application logic alongside your mechanical model and electrical system.

Operate a digital twin with 3D elements that have the real properties of the true asset.

Identify mechanical misalignment, fit, placement before physical builds.

OUTCOME

- Earlier testing while designs are flexible and prior to physical commitment.

- Earlier identification and resolution of commissioning issues

- Less reliance on physical location, reduced travel and on-site time.

- Reduced test product waste and lower time to production on site.

Digital Engineering with Emulate3D

Establish concurrent work streams in a single digital environment to design, test, build and commission.

Concept

Proposal

System Design

Automation Design

Controls Testing

Training

Commission & Startup

Have a digital workspace of your production system to propose upgrades or changes as needs evolve

Operation & Maintenance

Challenges – Traditional Projects

- Upgrades or changes start this cycle all over again.
- No data to prove a change will achieve desired results.
- No equal machine inhouse for testing upgrades & improvements

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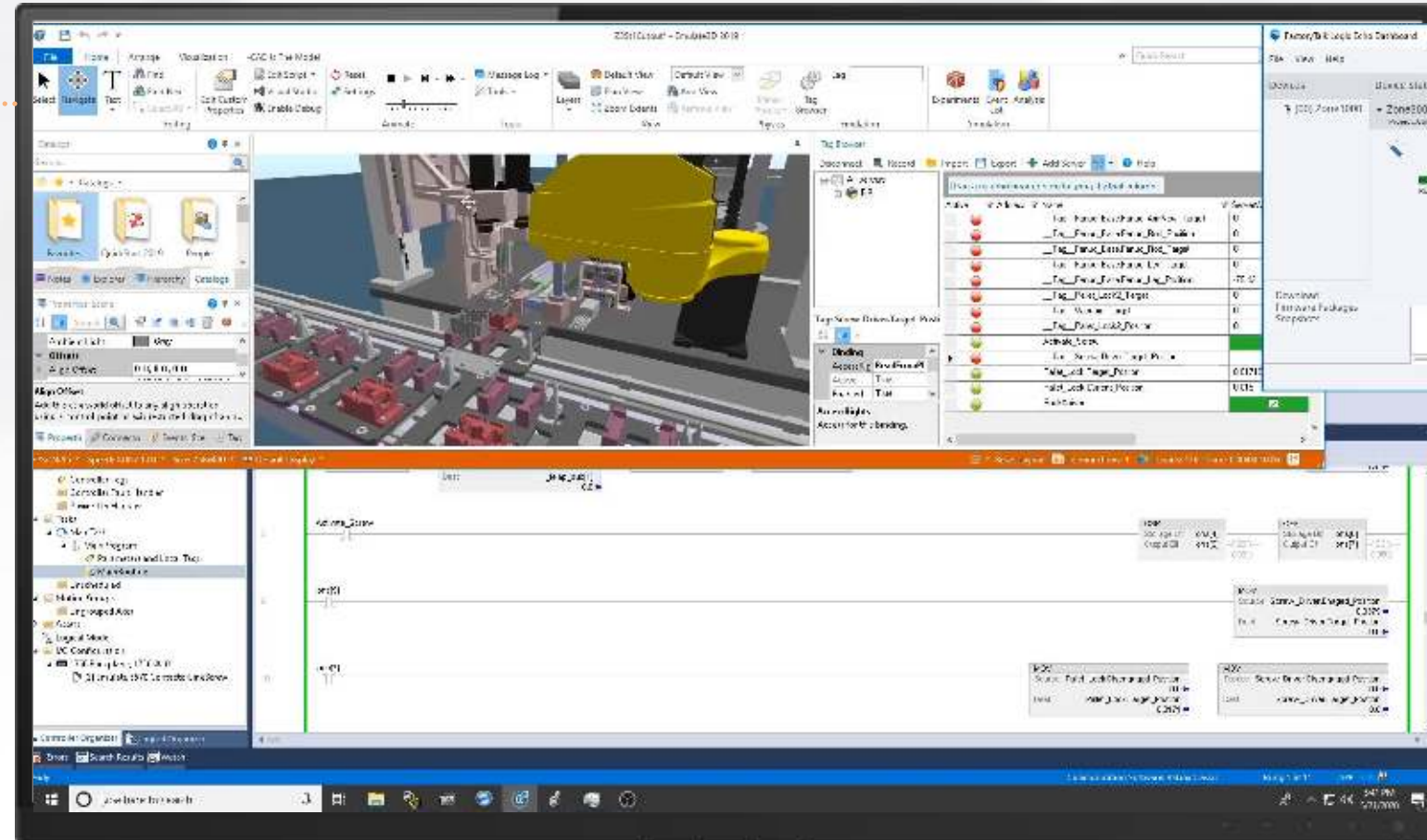
Ongoing experimental assets

Further development of the machine

Operate a digital twin of your machine in house even the real machine is on site.

Verify upgrades and new developments before physical builds on site

OUTCOME

- Test bed for upgrades, modifications throughout asset life.

- Reduce downtime on site to test commission upgrades.

- Ongoing experimental asset that does not affect production.

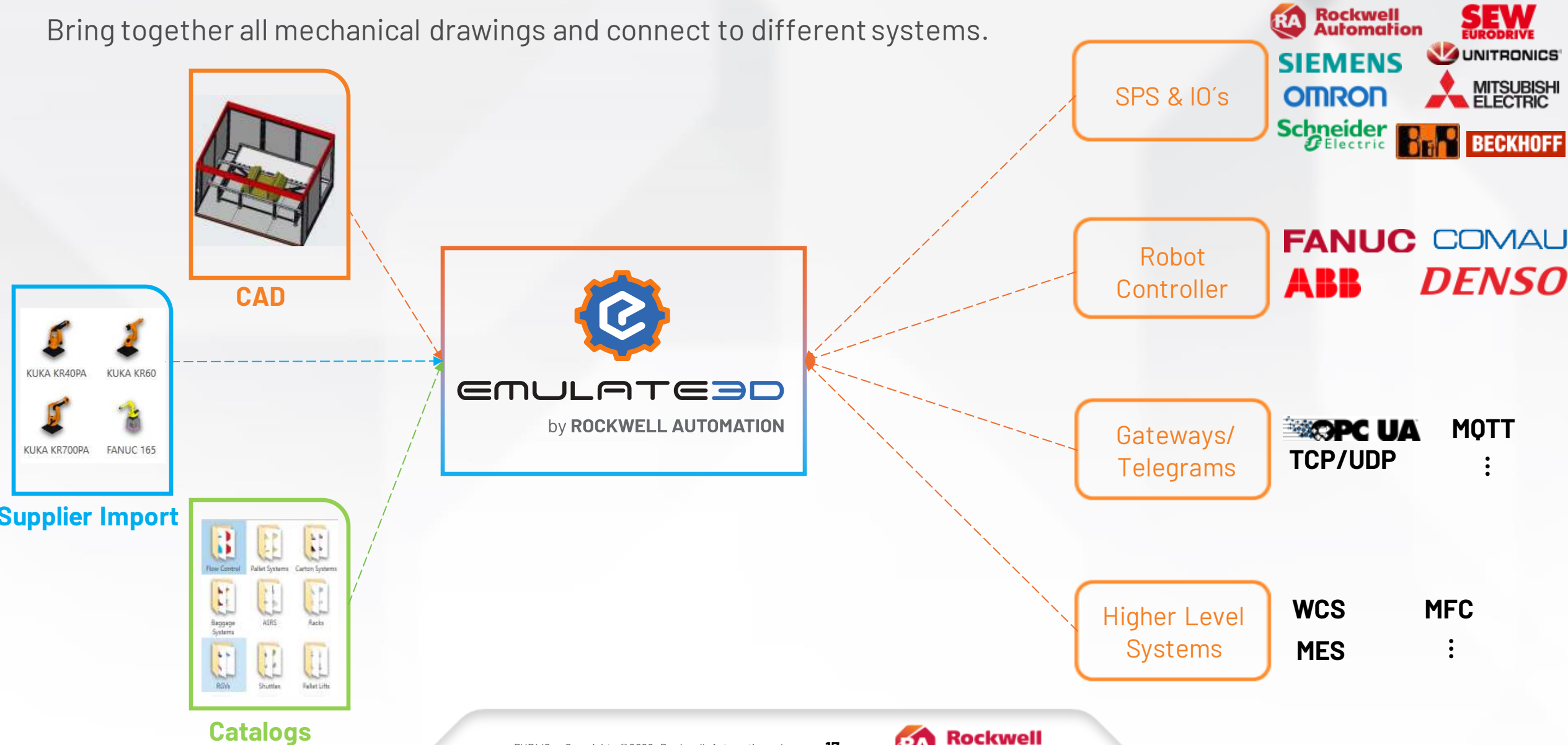- Refine designs based on real production data and conditions.

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Build your Digital Twin

Design from every source.

Bring together all mechanical drawings and connect to different systems.

CAD

Supplier Import

Catalogs

EMULATE3D
by ROCKWELL AUTOMATION

SPS & IO's

Robot Controller

Gateways/ Telegrams

Higher Level Systems

Rockwell Automation **SEW EURODRIVE**

SIEMENS **UNITRONICS**

OMRON **MITSUBISHI ELECTRIC**

Schneider Electric **B&R** **BECKHOFF**

FANUC **COMAU**

ABB **DENSO**

OPC UA **MQTT**

TCP/UDP ⋮

WCS **MFC**

MES ⋮

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Digital Engineering with Emulate3D

Reduce project timelines by experimenting and testing digitally earlier.

Expand Design possibilities by iterating and experimenting multiple scenarios and designs rapidly in a model.

Reduce risk by commissioning before going on site.

Reduce waste and travelling by validating your new machines and upgrades within Emulate3D.

Customer statements:
"Time to market **reduced by 5 months**, Onsite Commissioning **reduced by 50%.**
With that two additional contracts signed"
–ECM Technologies–

"**Organization advantages**, more easy and clear communication of new Solutions. **Improvement of teamwork** between mechanical and software areas during machine design"
–Ronchi–

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THANK YOU

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