



**VAN METER**



# smart

## SOLUTIONS SUMMIT

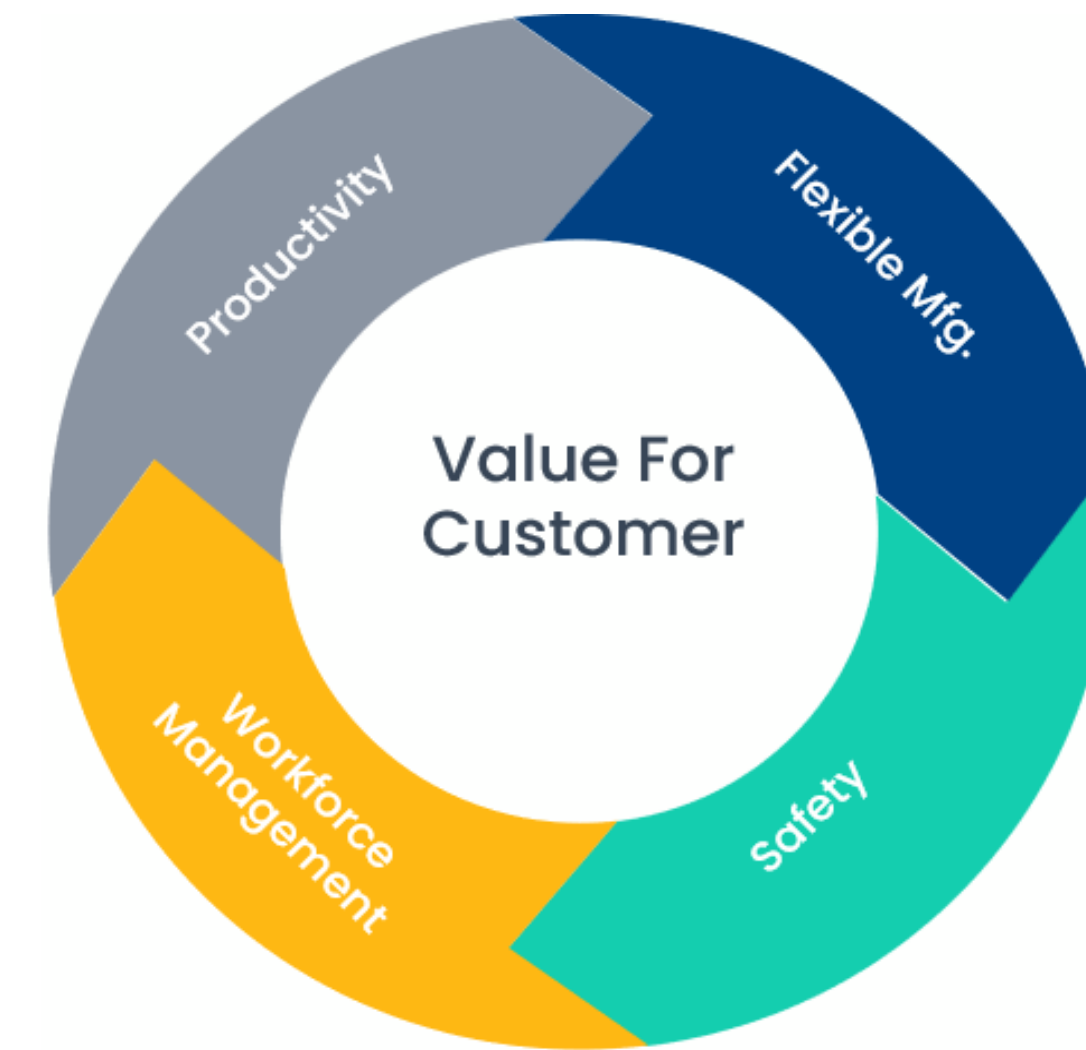
### **FLEXIBLE MANUFACTURING**

### **LEVERAGING INDEPENDENT CART TECHNOLOGY & ROBOTICS**

George Rovolis, Smart Machines & Robotics Manager, Van Meter



# CUSTOMER CHALLENGES AND OUTCOMES



**150%**

INCREASE IN  
AUTOMATABLE TASKS IN  
10 YEARS

**4/5**

COMPANIES HAVE MORE  
THAN 100 PRODUCT  
SKUS

**2M**

SKILLED MANUFACTURING  
JOBS WILL GO UNFILLED

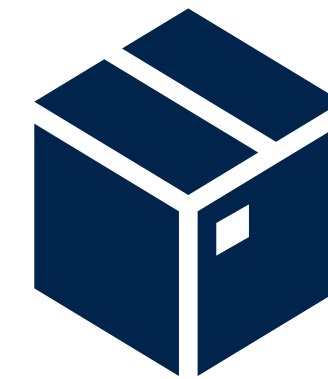
# TODAY'S ROADBLOCKS



**LABOR SHORTAGE**

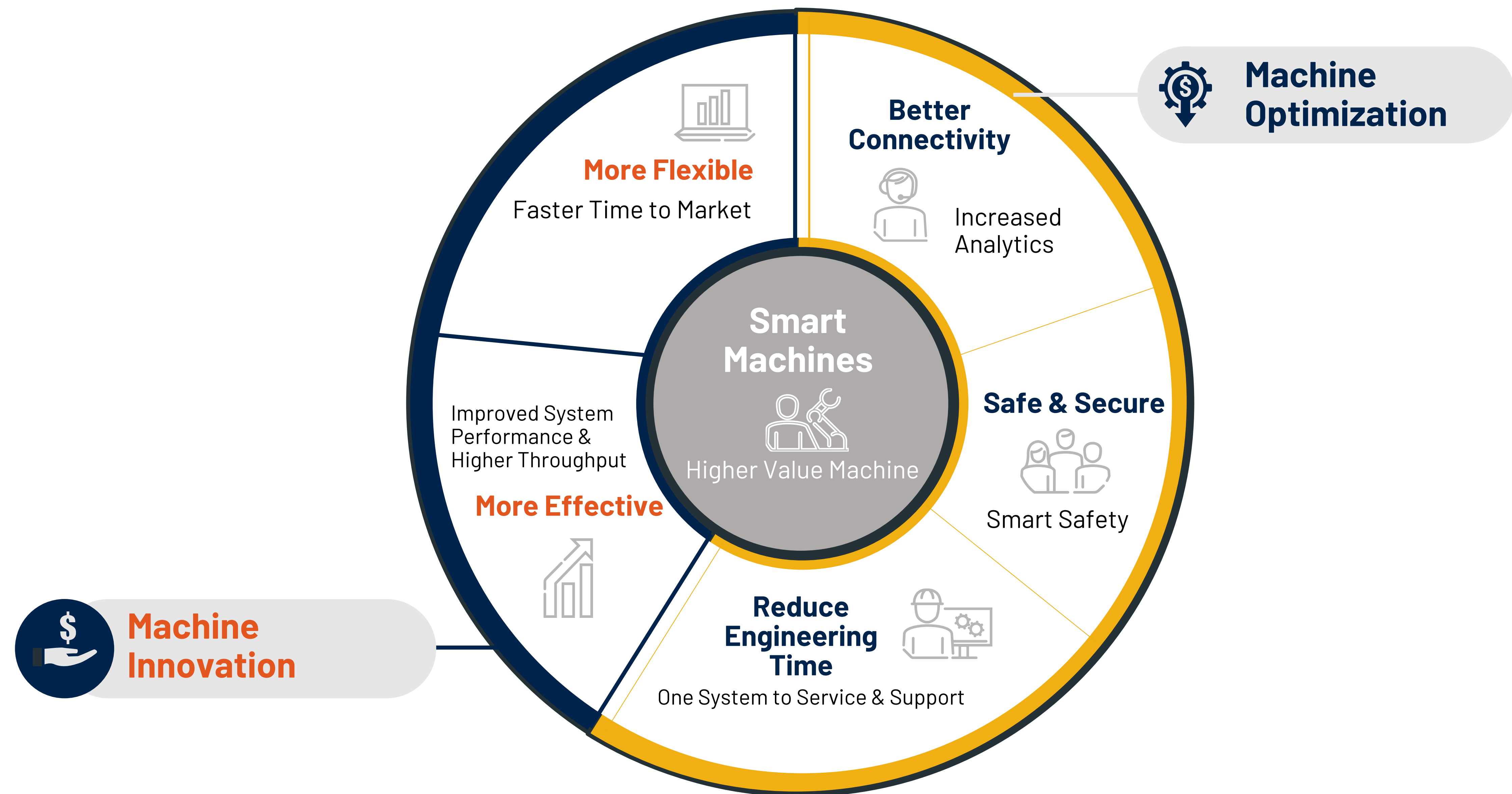


**MACHINE PERFORMANCE**



**PACKAGING DEMANDS**

# SMART MACHINE SOLUTIONS





# CASE STUDY



## LEVERAGING INDEPENDENT CART AND ROBOTICS TECHNOLOGY

### CHALLENGES ADDRESSED

- Growing demand for more product variety
- Workforce and training requirements
- Downtime resulting from changeover

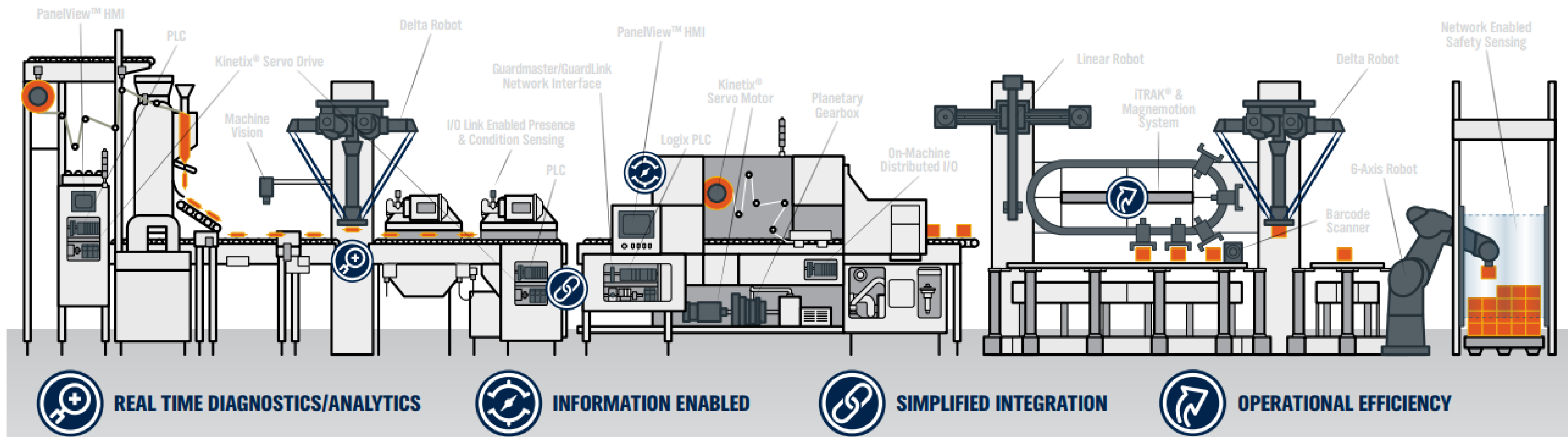
### WAYS TO SOLVE

- Automatic machine process adjustments
- Dynamic product routing
- Motion, product transport and robotics integration

### RESULTS ACHIEVED

- 4000 SKUs with the push of a button
- 97% OEE
- 49% validation cost decrease

# SMART MACHINE SOLUTIONS



**Robotics**

**Motion Control**

**Mechatronics**



# CASE STUDY: PACKAGING MACHINE EVOLUTION



# FULL SCALABILITY WITH iTRAK

iTRAK 5730

iTRAK Medium  
Frame

iTRAK ETO





# THE VALUE OF ICT

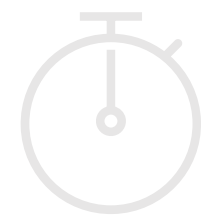
The next machine generation.



**HIGHER THROUGHPUT**



**UNLIMITED FLEXIBILITY**



**INCREASED UPTIME**



**SMALLER FOOTPRINT**



Traditional System



Independent Cart System

# ICT PORTFOLIO

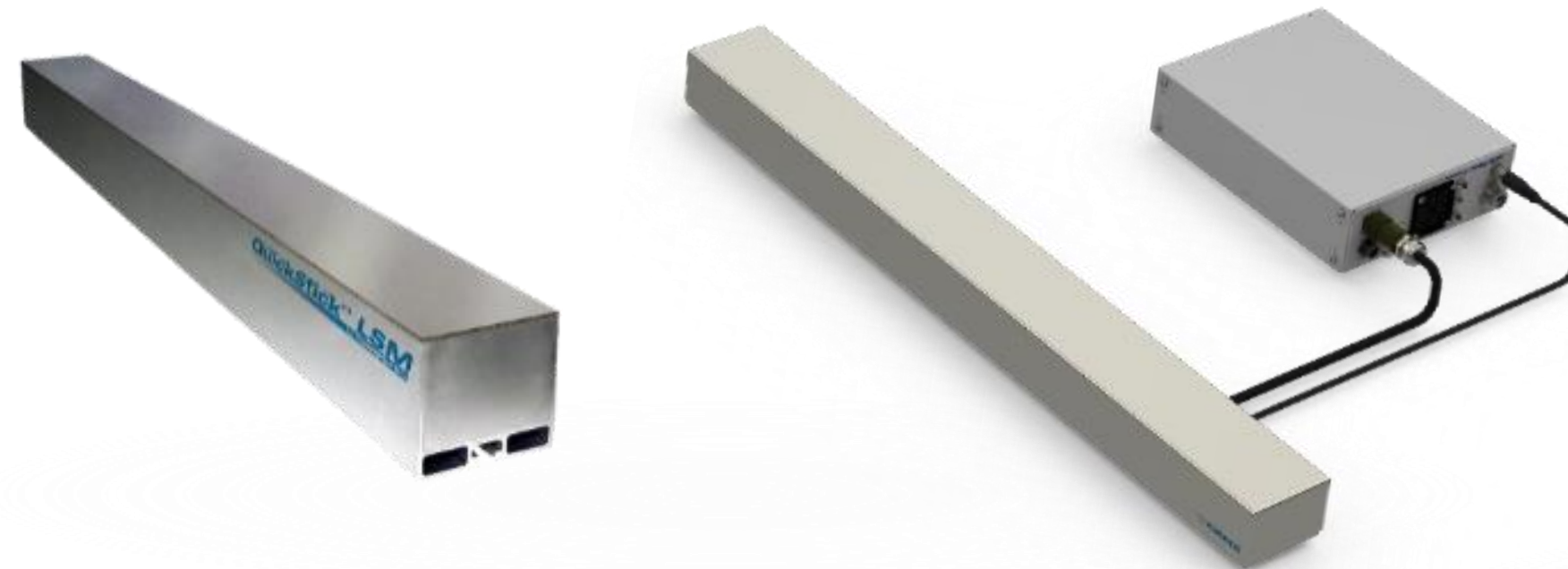
## MagneMover LITE®

- Intelligent conveyor system for light payloads (<10 kg)
- Collaborative
- “Erector Set”, Easy design and setup
- Flexible, modular, and scalable
- Simple programming and control of 1,000s of carts
- Speed up to 2 m/sec



## QuickStick® QuickStick HT™

- Intelligent propulsion and control system
- Payloads from 10s to 1,000s of kilograms
- Flexible, modular, and scalable
- Simple programming and control of 1,000s of carts




## iTRAK

- Intelligent positioning and flexible conveyor system
- Deterministic closed loop servo performance
- Automatic synchronization with other motion axes
- High dynamic performance and force
- Speed Up to 5 m/sec.





An aerial photograph of a MagneMover LITE maglev train traveling on a track. The train is a long, dark-colored vehicle with a series of yellow rectangular lights or sensors along its side. The track is elevated and runs parallel to a body of water. The text "MagneMover LITE" is overlaid in the center of the image.

MagneMover LITE



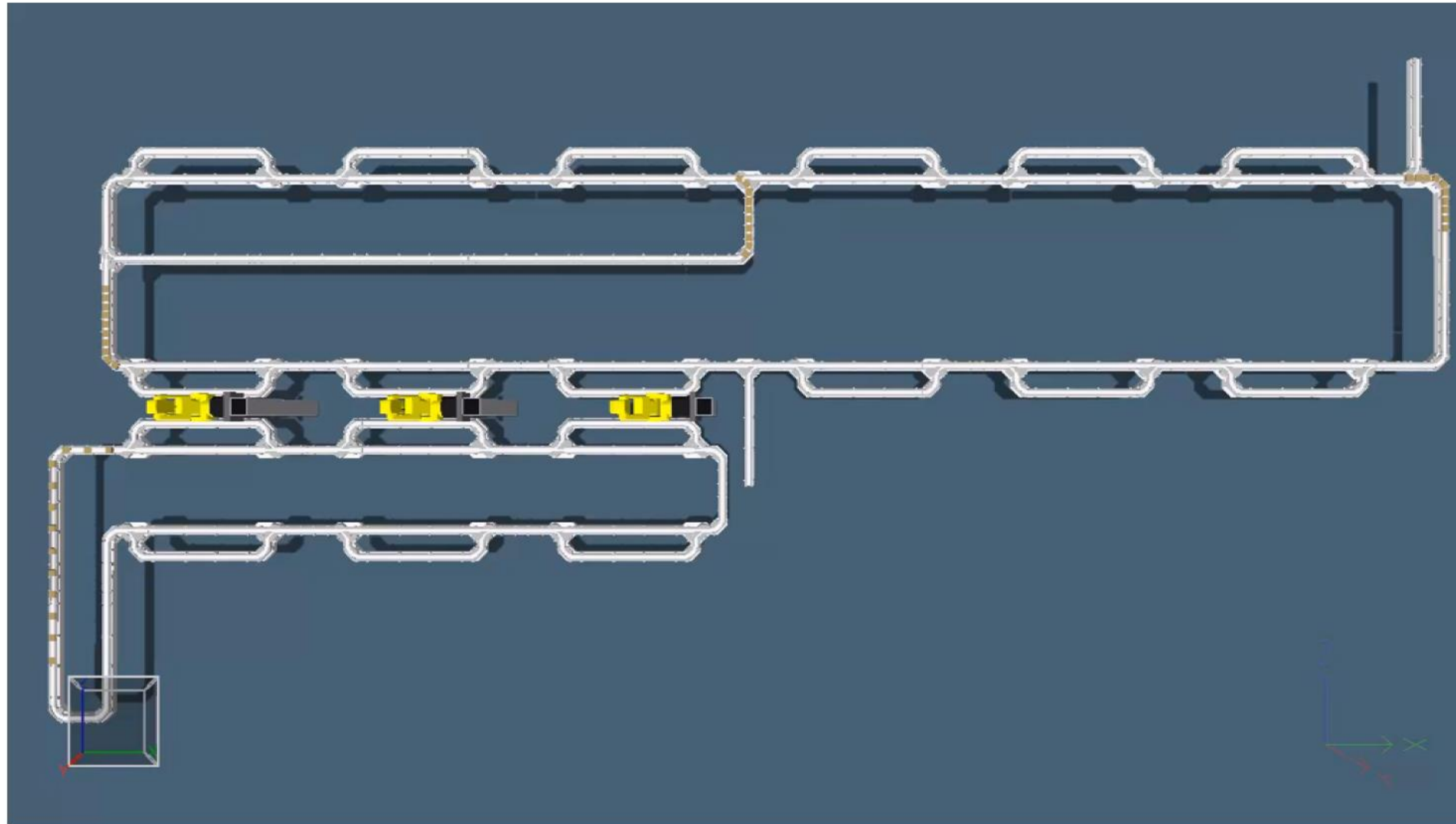
# CASE STUDY: ARUP/ANALYTICS



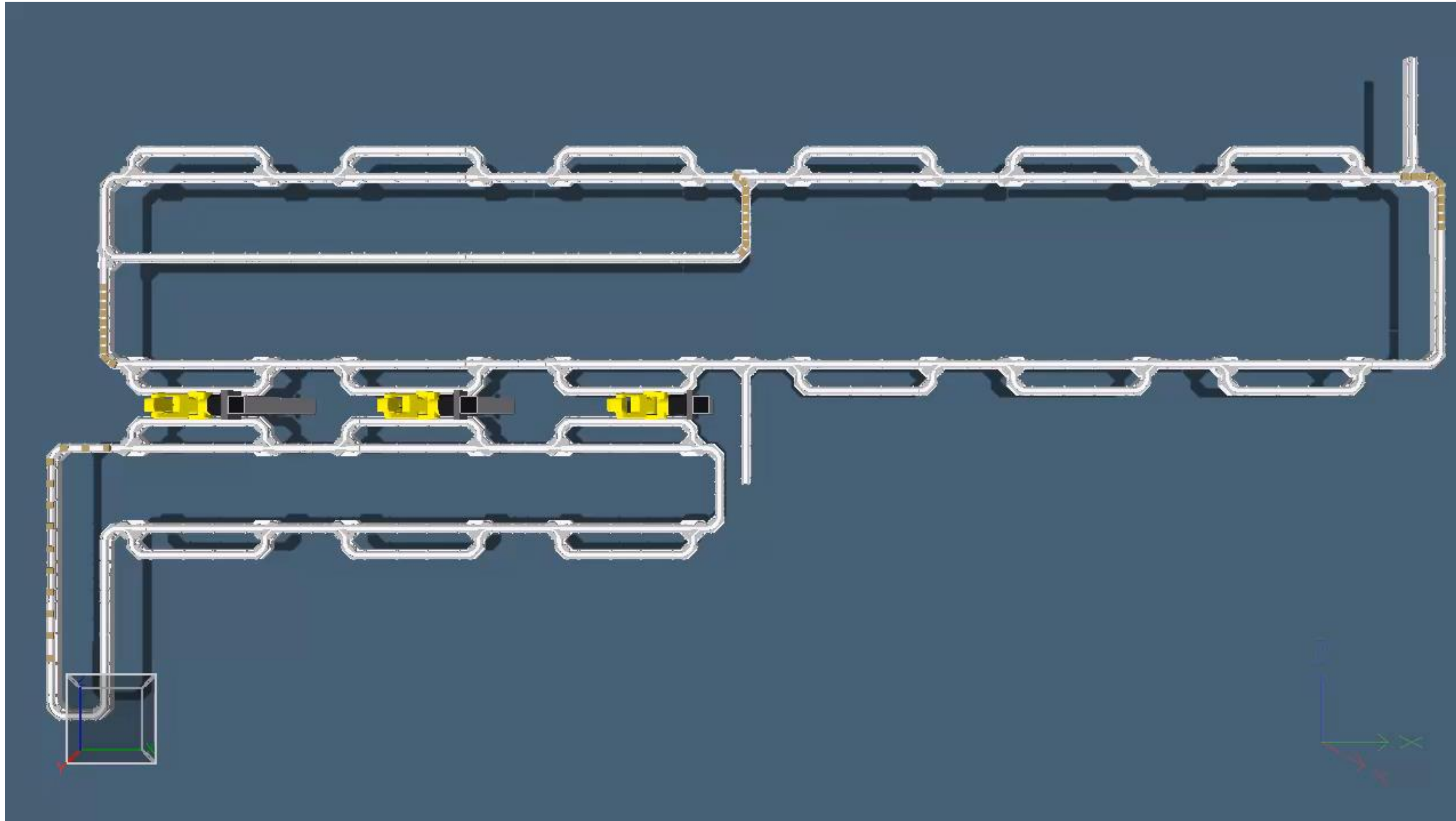


# CASE STUDY: BOTTLE VARIETY PACK

## SECONDARY PACKAGING



# CASE STUDY: BOTTLE FILL OPERATION

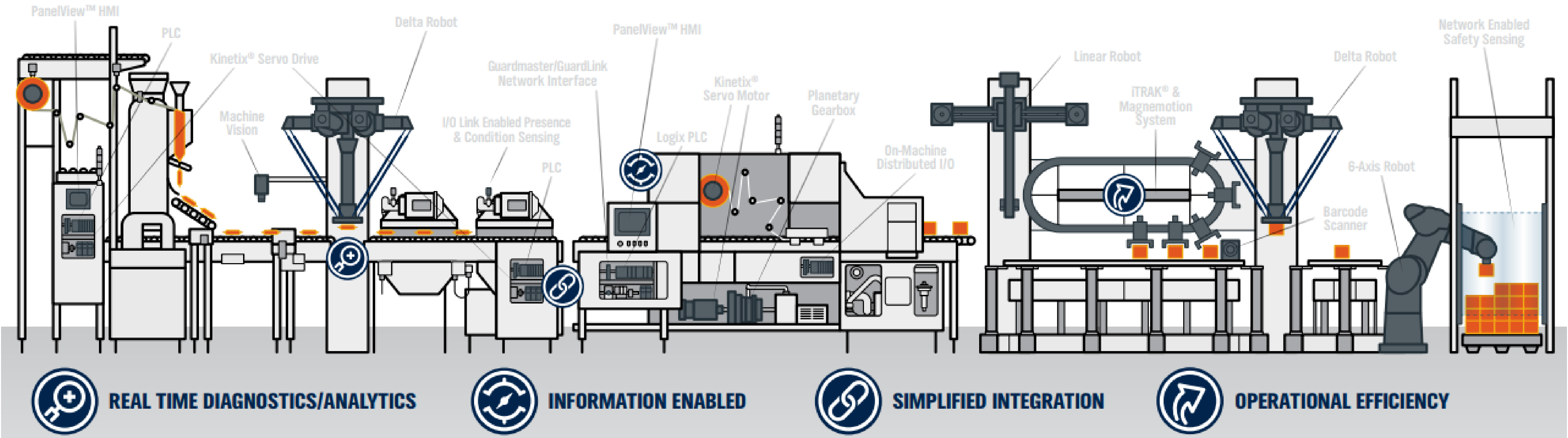




# ROCKWELL MILWAUKEE CONTRACT LINE



# SMART MACHINE SOLUTIONS



Robotics

Motion Control

Mechatronics



A background image of a male worker wearing a white hard hat with a headlamp, safety glasses, and a dark work shirt. He is smiling and holding a laptop. The background shows industrial equipment and wiring.

“ Although **industrial robots** have been used in factories for decades, **robots currently perform only around 10% of manufacturing tasks**, on average. By 2025 BCG estimates, the portion of **tasks performed by robots** will near **25%** for all manufacturing industries worldwide.

Source: Boston Consulting Group

”



# ROBOTS ARE KEY TO...



**Reduce  
operating  
costs**

**Increase  
output**

**Raise  
product  
quality**

**Improve  
reliability**

**“Flexible industrial robot-based automation delivers  
the solution to all these challenges.”**

– INTERNATIONAL FEDERATION OF ROBOTICS  
WORLD ROBOTICS 2021



# OBSTACLES TO OVERCOME



**Lack of visibility  
& control**



**Rigid production /  
low flexibility**



**Scheduling  
& delivery  
pressures**

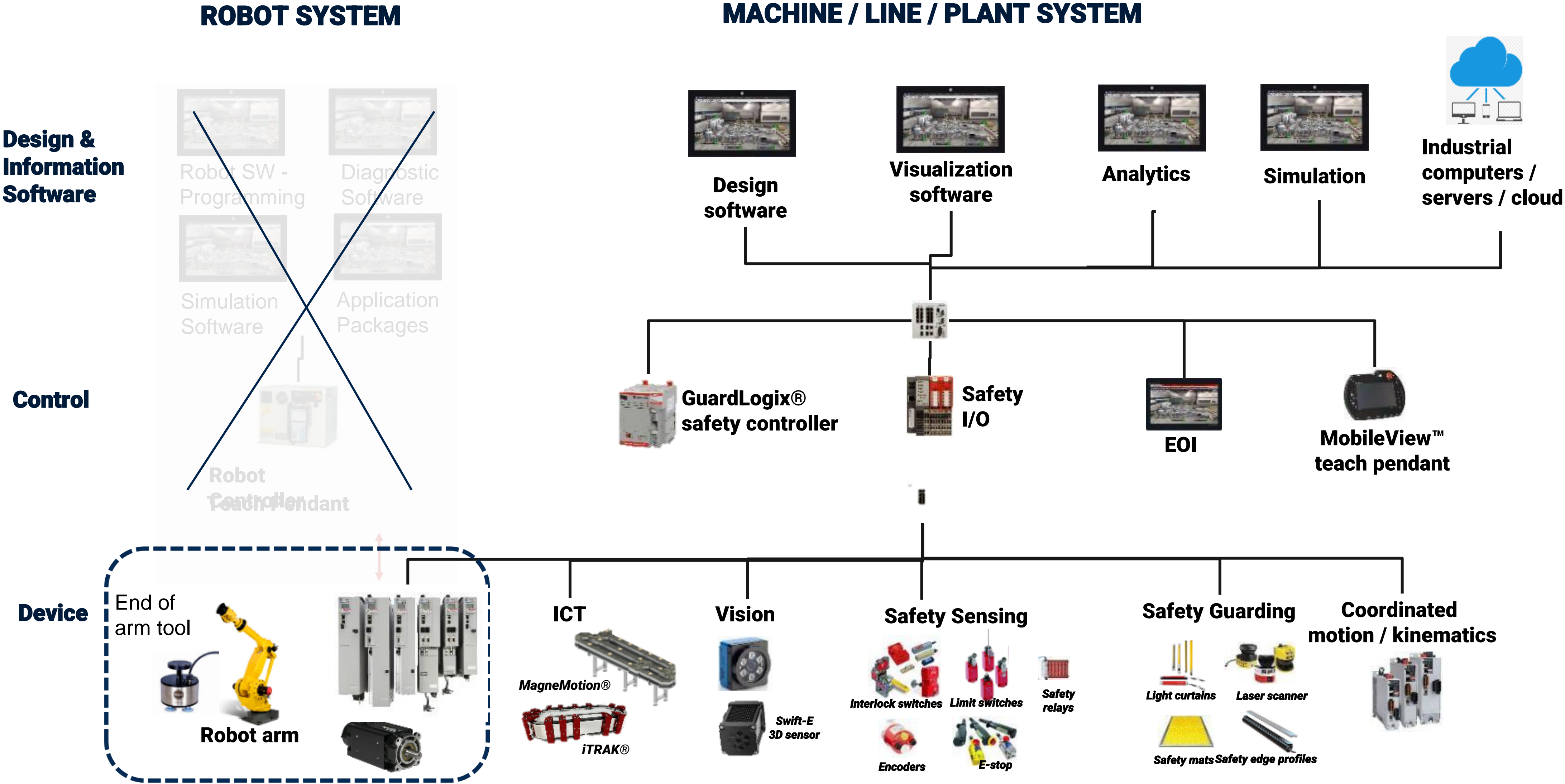


**Stranded or  
difficult to  
reach data**



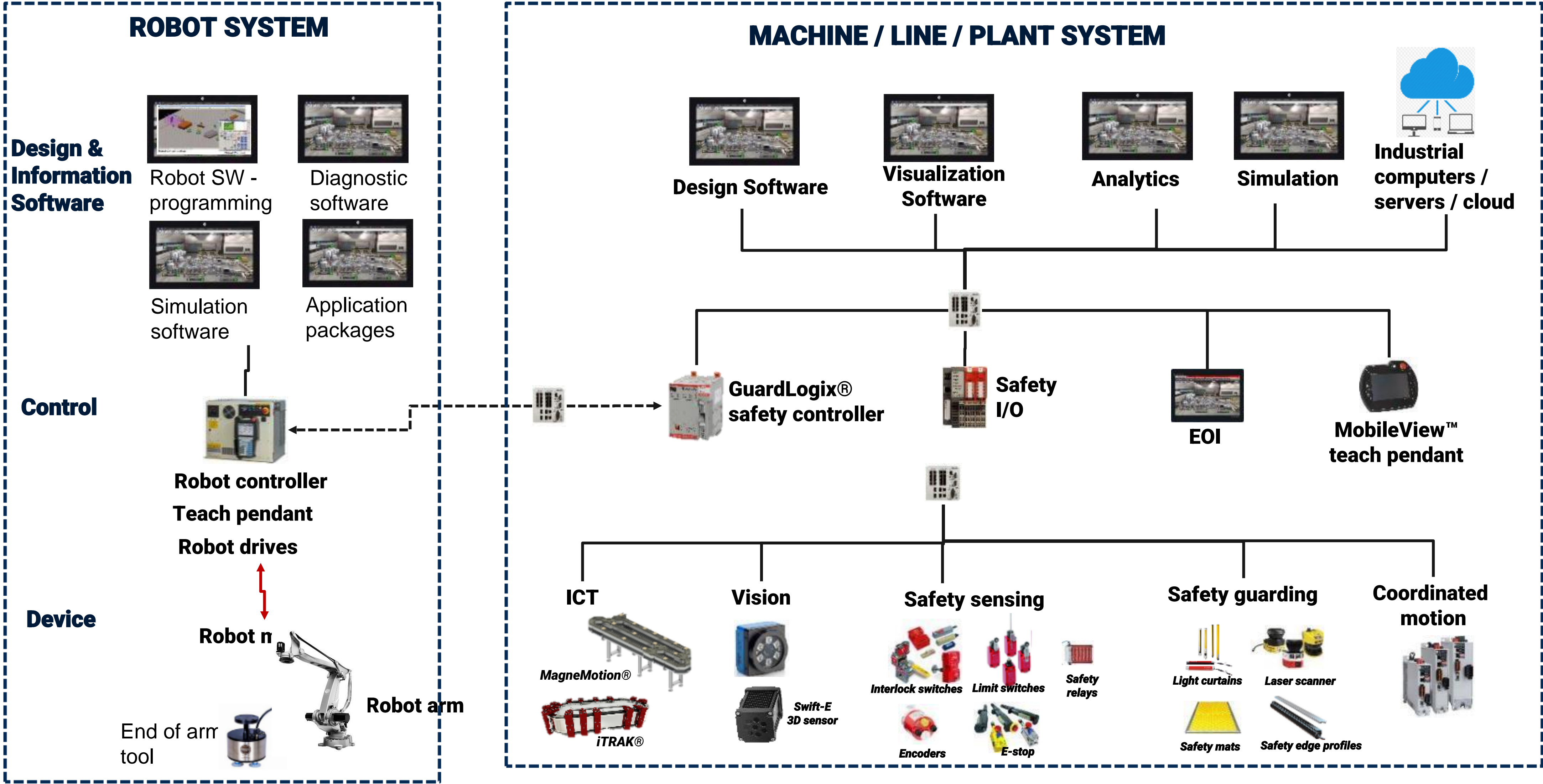
**Skilled  
workforce  
challenges**

# UNIFIED ROBOT CONTROL





# SMART MACHINE WITH ROBOTS



# VALUE OF UNIFIED ROBOTS

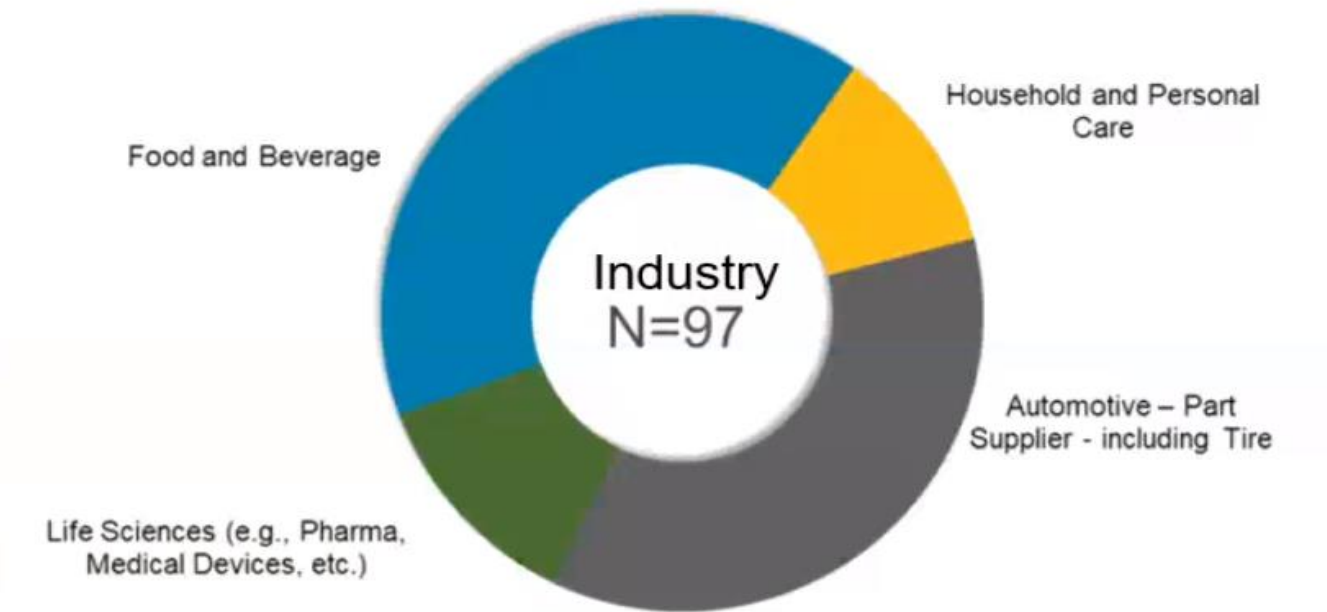
## VoC for Unified Robot Control

*Blind Customer survey via 3<sup>rd</sup> party*

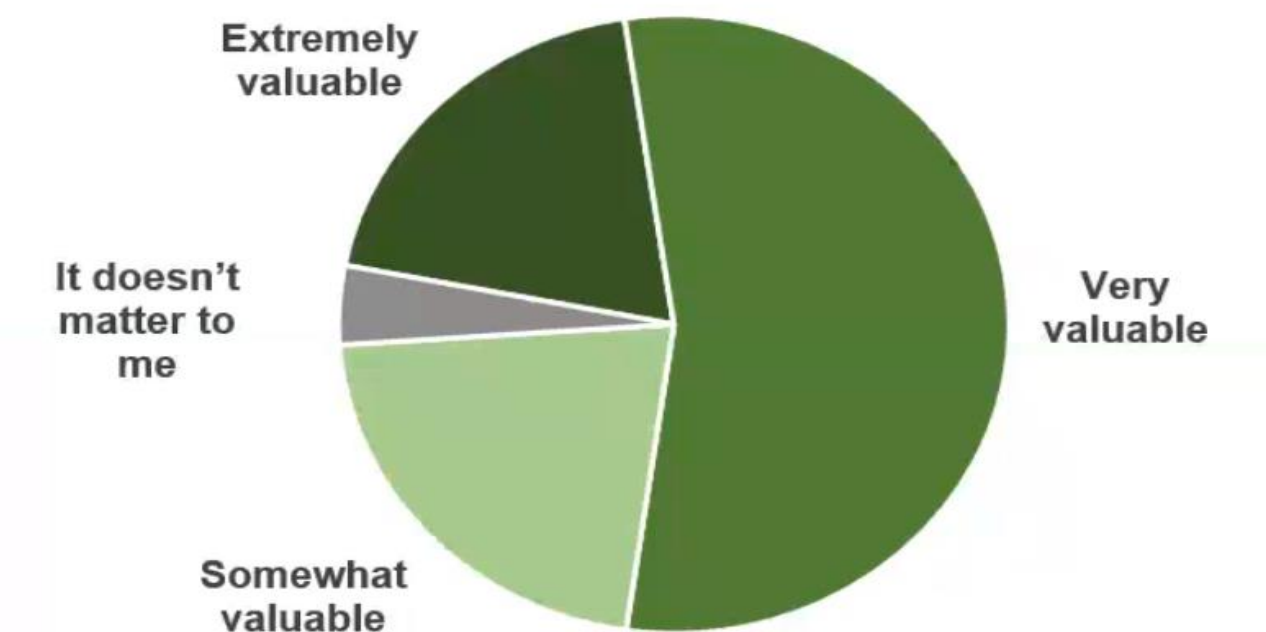
### Value of unified robot control in Logix multi-discipline environment

- Simplified robot and line coordination & operation
- Single programming & operating environment
- Centralized robot & machine information for diagnostics & analytics
- Simplified lifecycle management (integration, operation, maintenance, training)
- Leverage Comau application expertise & mechanical arm portfolio

#### Benefit to having a Unified Robot Control Solution



#### Value to have same environment for both machine/line control and robot control





# THE FUTURE IS UNIFIED

**Simplify machines and get more from your robots**

## **Launch projects faster**

by programming machine and robot logic in one environment

## **Empower your workforce**

by leveraging talent already proficient in the Studio 5000® environment

## **Increase productivity**

with more simple, intuitive robot systems



## **Create resilient, repeatable projects**

by replicating and reapplying code

## **Reach new levels of value**

with more flexible, modular and effective machines

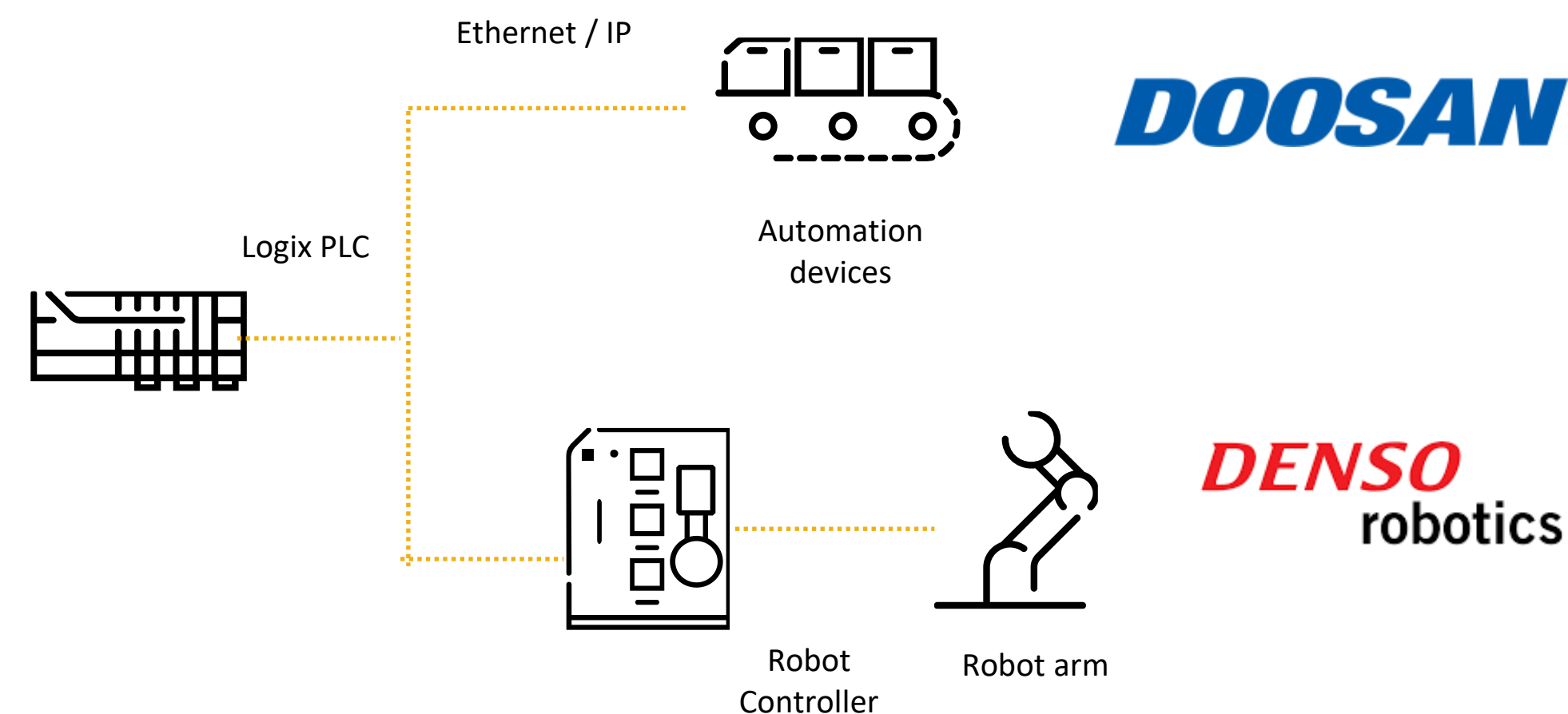
## **Realize digital productivity**

using seamless connectivity with Emulate3D™ software

# TWO PATHS FOR ROBOTIC SOLUTIONS

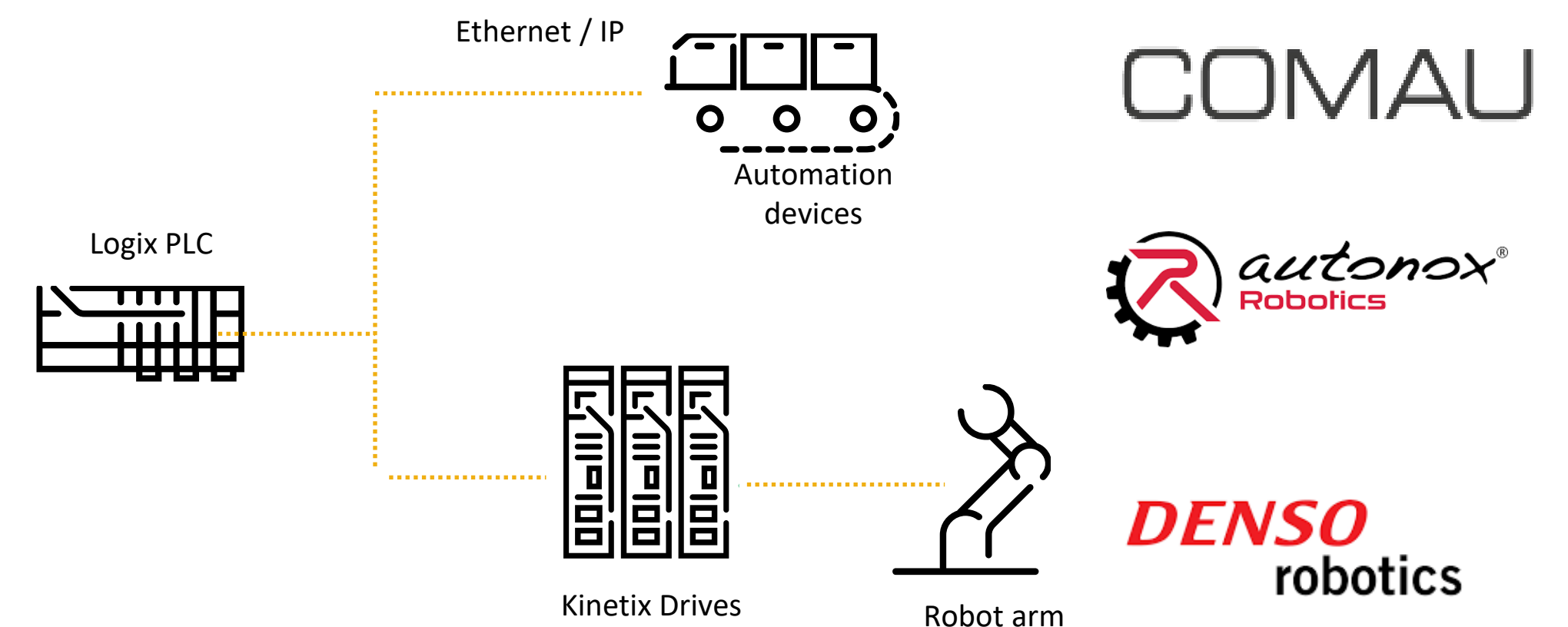
## ETHERNET/IP CONNECTED ROBOT CONTROLLER

- Support the value of Ethernet/IP connected robotics in our Logix architecture.
- Leverages **Rockwell Automation capabilities** of safety, sensing, operator interface, and information solutions.
- Robot controller communicates via standard **EtherNet/IP**.
- Robot programs are written in either the robot vendor's programming environment or via Studio 5000® **AOI robot integration** features.



## UNIFIED ROBOT CONTROL

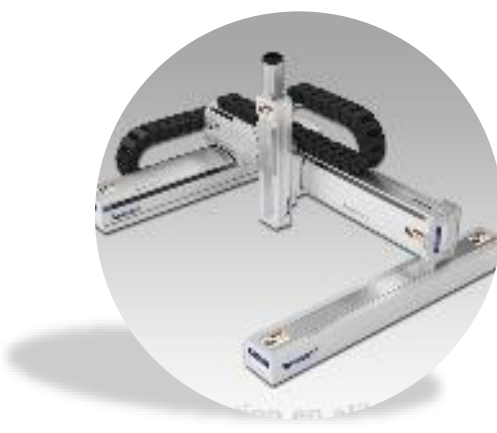
- **Direct Logix control** of the robot eliminates the need for a dedicated robot controller.
- **Studio 5000 programming** provides complete machine and robot control support.
- **Fully integrated with Rockwell Automation capabilities** of safety, sensing, operator interface, information solutions, and software.
- **Emulate3D** simulation and virtualization.
- **Robot vendor partnerships** for optimal user experience.



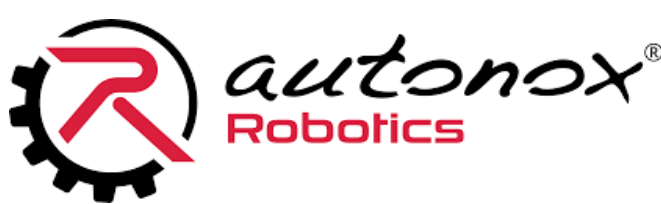


# VAN METER ROBOTICS SOLUTIONS

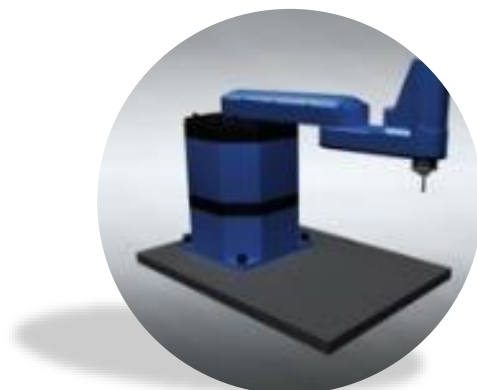
Cartesian



Parallel (Delta)



SCARA



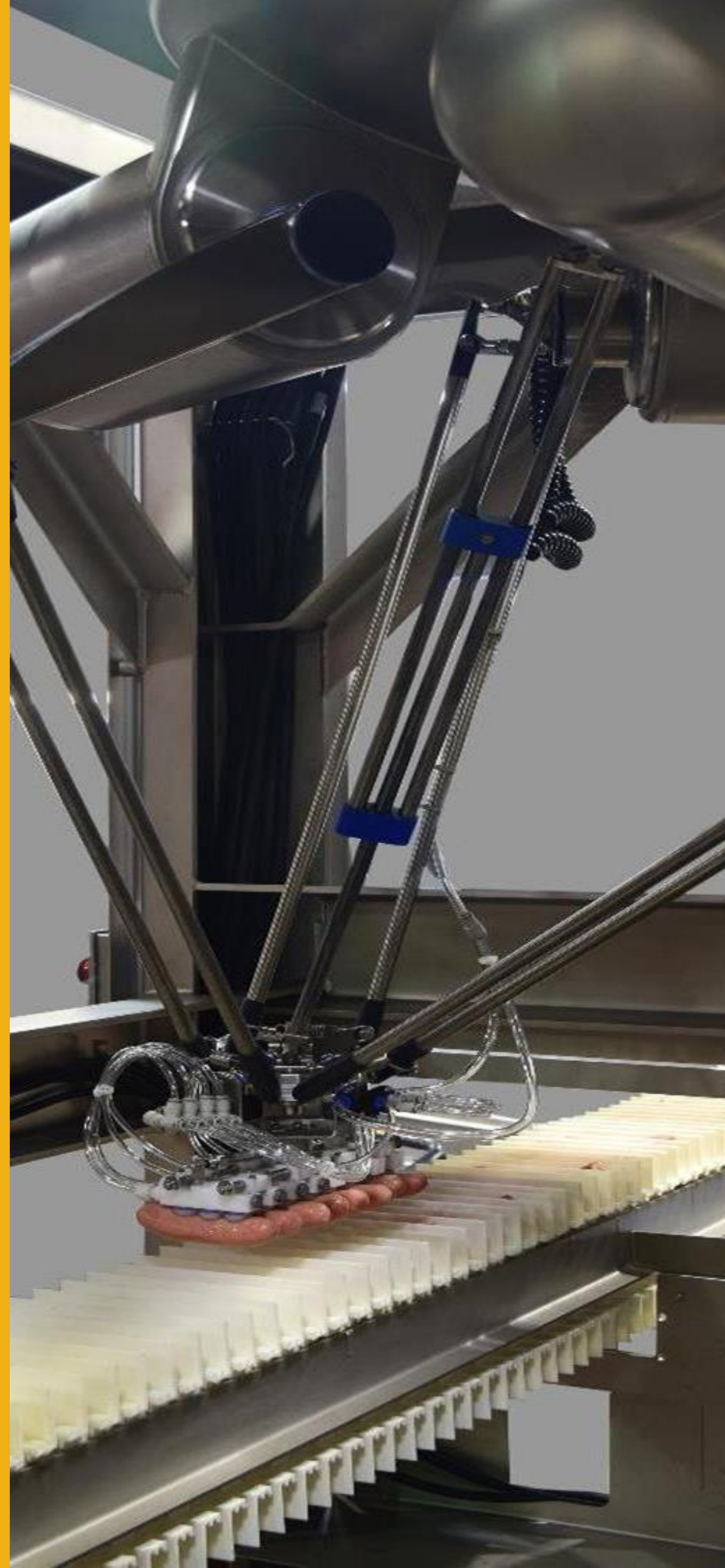
Articulated



Collaborative



# CASE STUDY



## BACKGROUND

- **TARGET** - Create more intelligent and responsive packaging equipment
- **INDUSTRY** - Food and beverage
- **APPLICATION** – Pick-and-Place

## CUSTOMER NEED

- Scalable advanced motion control functionalities
- Simplified lifecycle management
- Smaller machine footprint: less production space

## SOLUTION

- Fully coordinated robot
- Precise pick accuracy with no encoder time delay
- Reduced space claim without the need for controller



# CASE STUDY



## BACKGROUND

- **TARGET** – Enhance end-of-line performance and flexibility.
- **INDUSTRY** - Food and beverage
- **APPLICATION** - Palletizing

## CUSTOMER NEED

- Address various SKUs and order types in one robot cell
- Speed up time to market with faster implementation
- Improve efficiency by better linking to equipment

## SOLUTION

- Use Studio5000 to easily build and update recipes
- Implement a simplified architecture
- Synchronize operations with data rich communications



# APPLICATIONS



## CNC Machine Tending

Placing material on pallet after injection into/removal from CNC machine



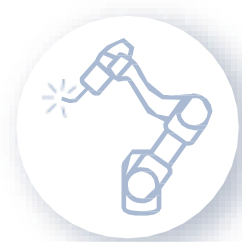
## Assembly (Screw, Gear)

Traditionally manual assembly tasks such as screw locking and gear assembly



## Plastic Injection Assistance

Detaching item from mold of injection molding machine and loading onto/unloading from pallet



## Welding

Welding parts like skilled welder by various paths with certain quality



## Pick & Place

Simple loading/unloading work such as moving objects between tasks



## Polishing & Deburring

Burr removal and surface polishing after processing



## Packaging & Palletizing

Product packaging and palletizing, including transportation and loading of packaged products (e.g. electronics/F&B industries)



## Service

Safely and repeatedly performs pre-defined tasks in accordance with user needs in service industries like medical and F&B



## Air Blowing

Exterior cleaning of finished products or workpieces with spiral spray motion and multi-angle composite spray motion



## Gluing/Bonding

Spraying of consistent amount of adhesive for gluing and bonding



## Press Forming Assistance

Picking up panel for loading onto/unloading from press machine



## Inspection

Inspection of parts for internal defects and confirmation of parts assembly



# SMART MACHINE AND ROBOTICS TEAM

## WHO DO I CONTACT FROM THE ROBOTICS TEAM?

### TECHNICAL SPECIALISTS



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### SOLUTION CONSULTANT





# QUESTIONS?





# THANK YOU!



**GEORGE ROVOLIS**

Smart Machines & Robotics Manager, Van Meter





WE WANT TO HEAR FROM YOU!

# BREAKOUT SESSION FEEDBACK

