

ABB Robotics

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2019



The opportunities behind the change . . .

Fundamental changes to make the way we work better

A demographic time bomb



Providing more meaningful work



The current and future workforce wants safer, more rewarding challenges

The opportunities behind the change . . .

Entry barriers are coming down

Yesterday: robots helped mainly bigger businesses



Today: robots are helping smaller manufacturers



Simpler to install, program and use robots will increasingly help small and medium sized businesses

The opportunities behind the change . . .

Flexibility to manage the shift from high volume/low mix to low volume/high mix

Economies of scale



Mass customization



Automation flexibility is needed to efficiently adapt to fast moving market cycles



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ABB Robotics

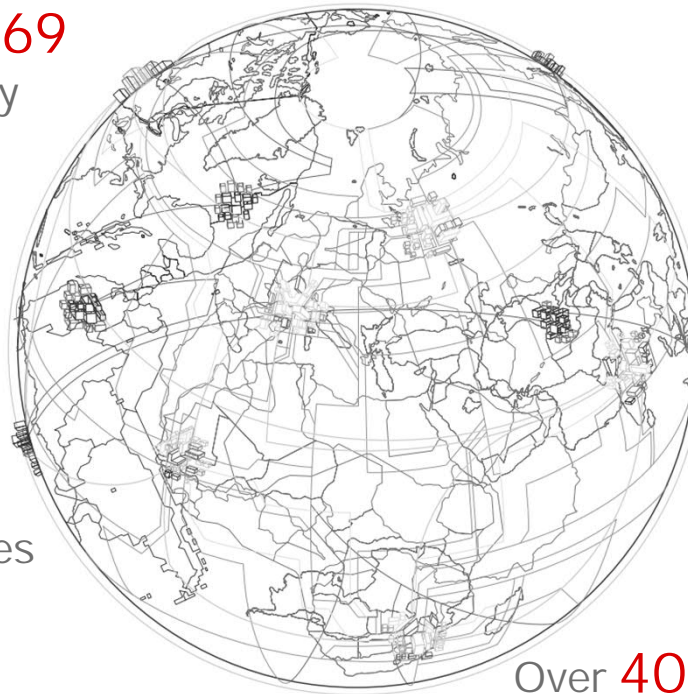


ABB Robotics

Key facts

Introduced painting robots in **1969**
and the world's first commercially
available electric robot in **1974**

Technology leadership sales and
service operations in **53** countries
and more than **100** locations



Manufacturing in **Europe,**
Asia and **America**

~ **6000** employees

Over **400,000** robots delivered worldwide

What makes ABB Robotics different?

Technology leadership

A 40+ year history of innovation

A robot pioneer with a long list of 'world's first'

An early mover in digitalization and service innovation

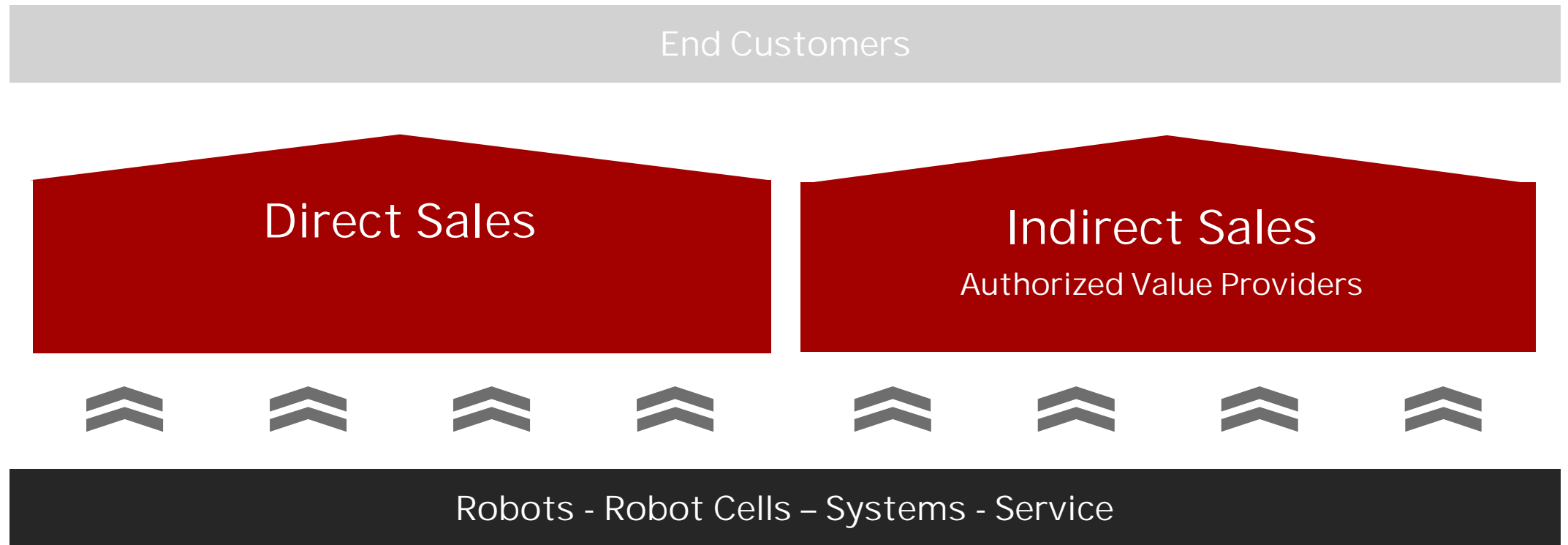
YuMi, the world's first truly collaborative robot

A one-stop-shop from robots to turnkey solutions and the industry's best software



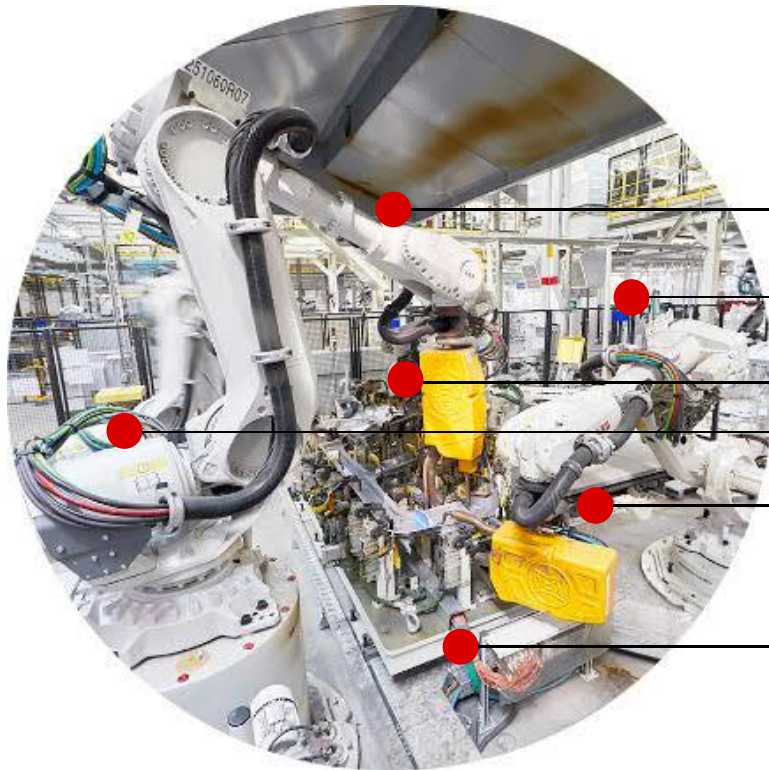
A trusted partner who continues to redefine robotics automation

Dual channel market approach



What makes ABB Robotics different?

Our unique offering



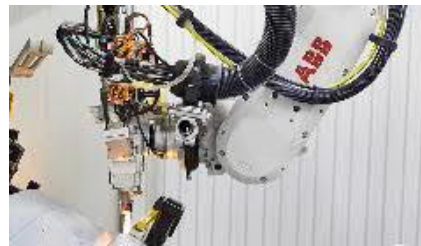
Software



Robots



Complete systems



Equipment



Comprehensive services



Cells, function packages

An enormous range of complete solutions from one trusted brand.

Flexible value steps to solve customer needs

Modular solutions with value step approach

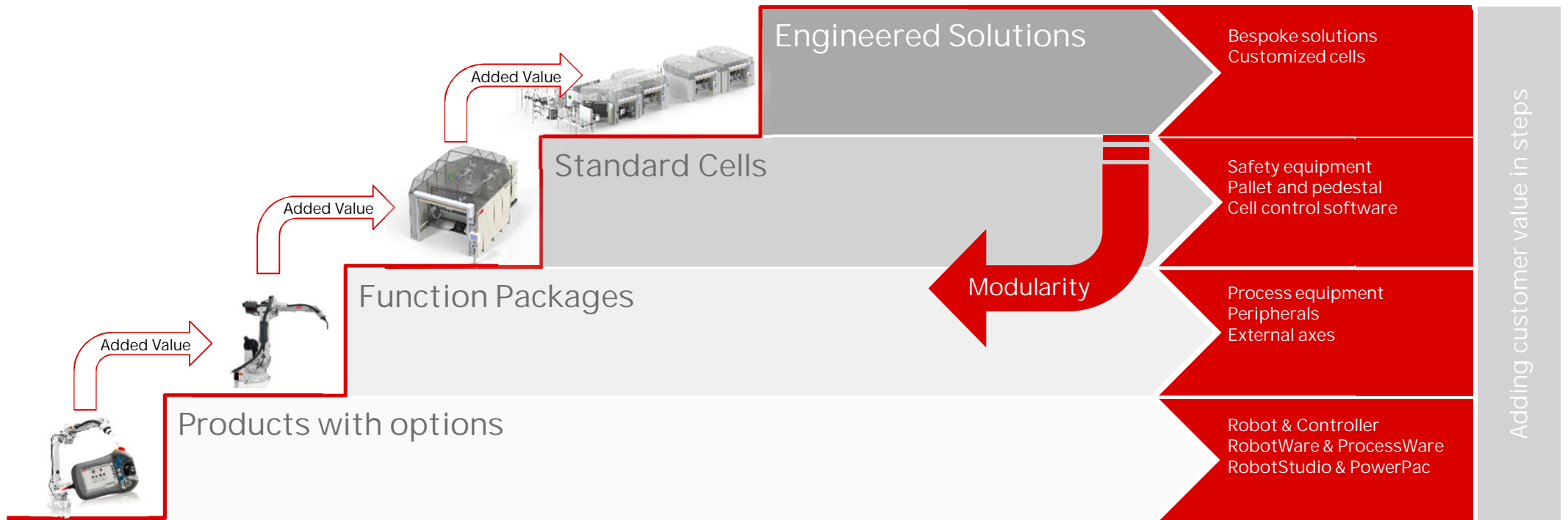


ABB Robotics' differentiators:

Simplification, collaboration and digitalization

Simplification



Managing increased automation complexity
Removing entry barriers for many new robot users
Speeding launch time and efficiency

Collaboration



Increasing the flexibility of people and automation systems
Unlocking entirely new applications
Balancing the imperative for safety with the need for productivity

Digitalization



Efficiency through the entire lifecycle: design, build, operate and maintain
Actionable and proactive intelligence for greater reliability
Connecting islands of automation across plants and enterprises

Collaboration also means different things to different people
It is about productivity and flexibility as much as safety

Collaborative automation means:

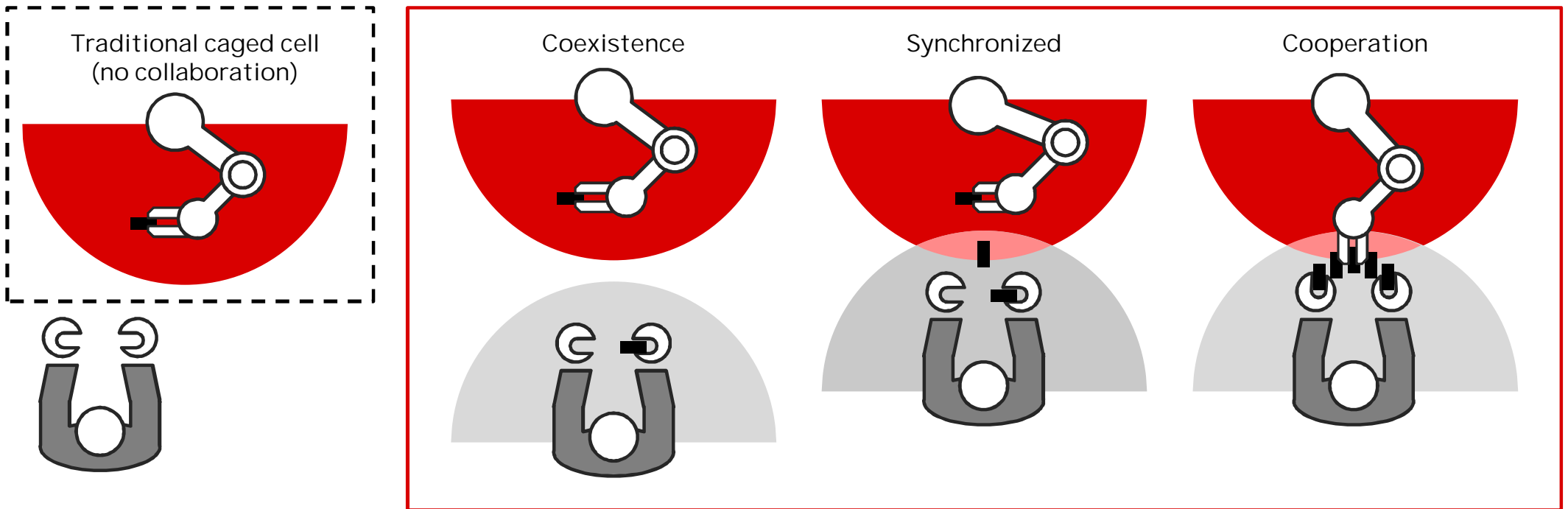
- Safety
- Easy to install
- Easy to program
- Simplicity



Collaborative automation brings safety, flexibility and productivity all together.

Collaboration comes at many different levels

Low volume, high mix manufacturing means people and robots working closer, more often



New Product – 7 Axis Yumi IRB14050

Launch in 2018

Key features

500g rated payload

Small footprint, 7-axis dexterity

Table, wall and ceiling mounting

Integrated Gripper with Vision and Vacuum

Best-in-class safety design

High speed and accuracy

Customer benefits

Short cycle times

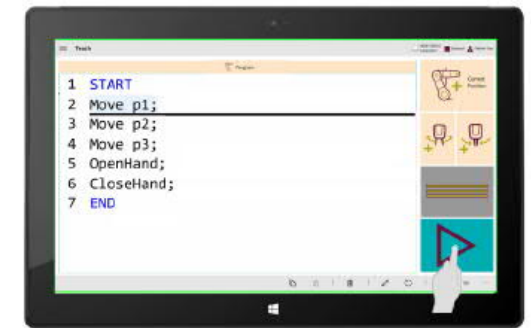
Fenceless operation

Easy programming with Lead through

Lower investment

Easier to integrate

New External
Compact Controller
and new
TeachPendant



Single Arm YuMi App for Easy Programming



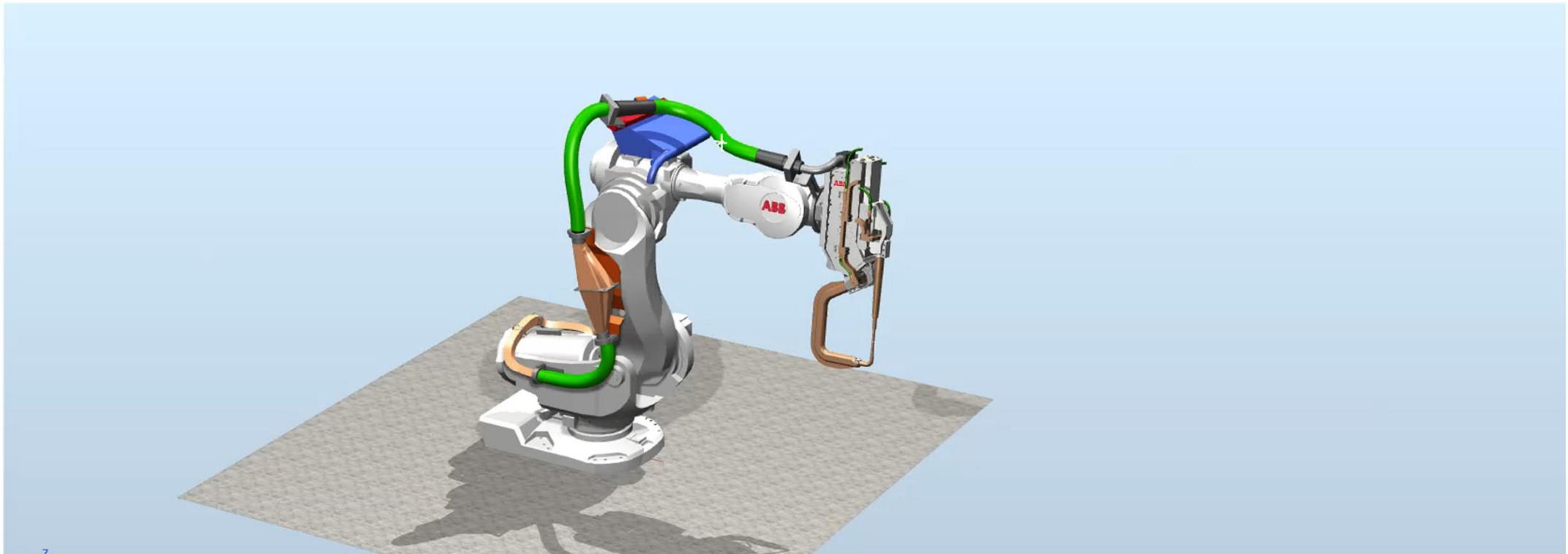


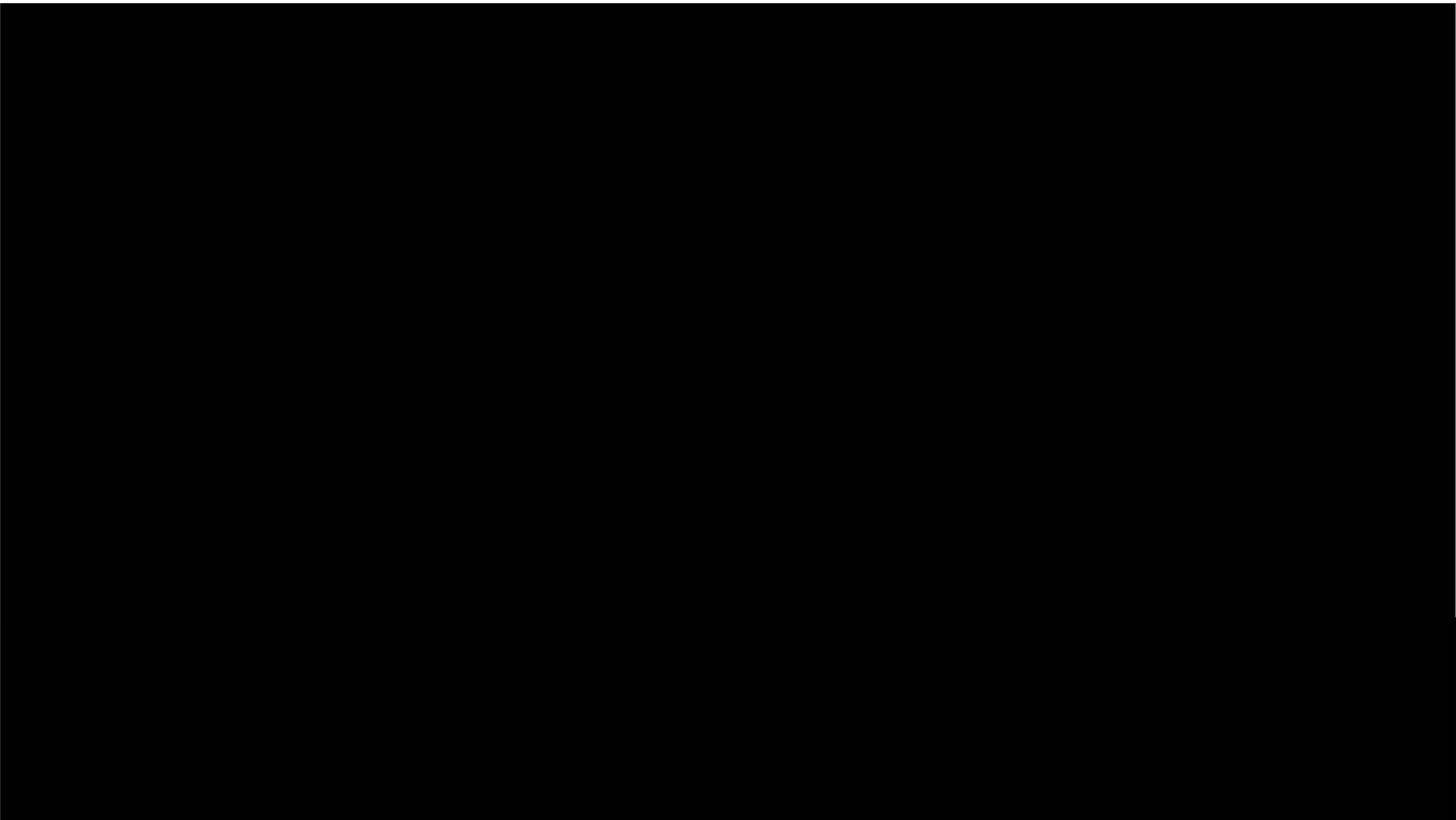
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RobotStudio



Cable simulation

Cable simulation driven by high-end physics computational engine







RobotStudio Virtual Reality



VR hardware

Which VR headset to choose?

HTC Vive / Vive Pro



Suitable for room-scale VR < 10x10 m

– Requires dedicated space

Wireless (soon)

Mature product

Oculus Rift with Touch



Suitable for limited space

– Use teleport function to move in VR

Mature product

Windows Mixed Reality headsets



No additional sensors or lighthouses required

- Uses inside-out tracking

Easily portable

Immerse yourself!

VR with RobotStudio

Scenario: Operator training (existing functionality)

Operator training

Feature: Interact with and explore a robot cell in VR

Benefit: Operator training can be done

- completely safe
- before the real equipment is available.
- without risk of damaging equipment

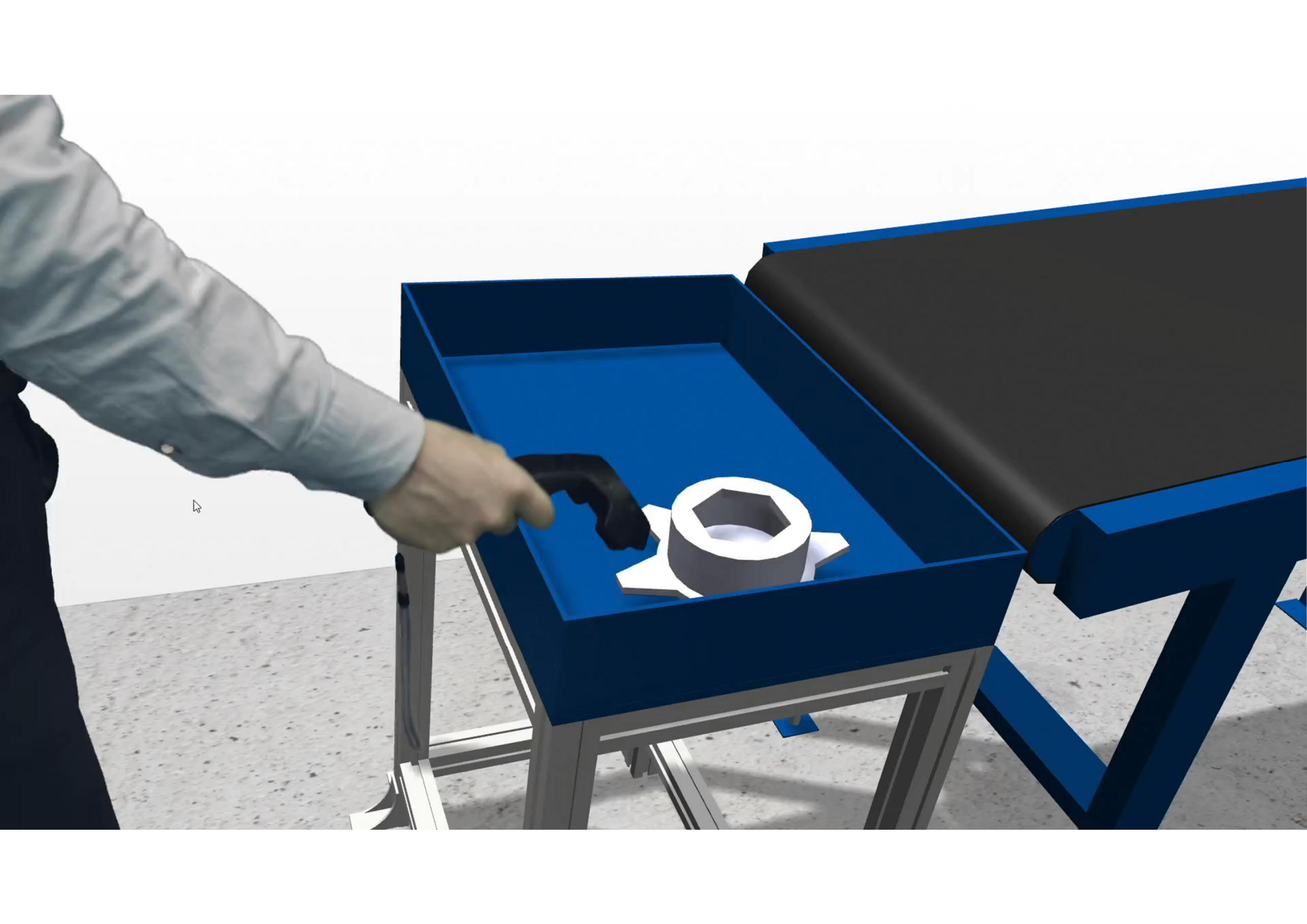
Value:

- Increased safety, earlier start-of-production, better trained operators

The functionality has been available in RobotStudio since before but is described here for completeness.

The video shows an operator being trained in operating a robot cell.





VR with RobotStudio

Scenario: Lead through programming (integrated in RobotStudio 6.07)

Lead through programming

Feature: Teach the robot what to do.

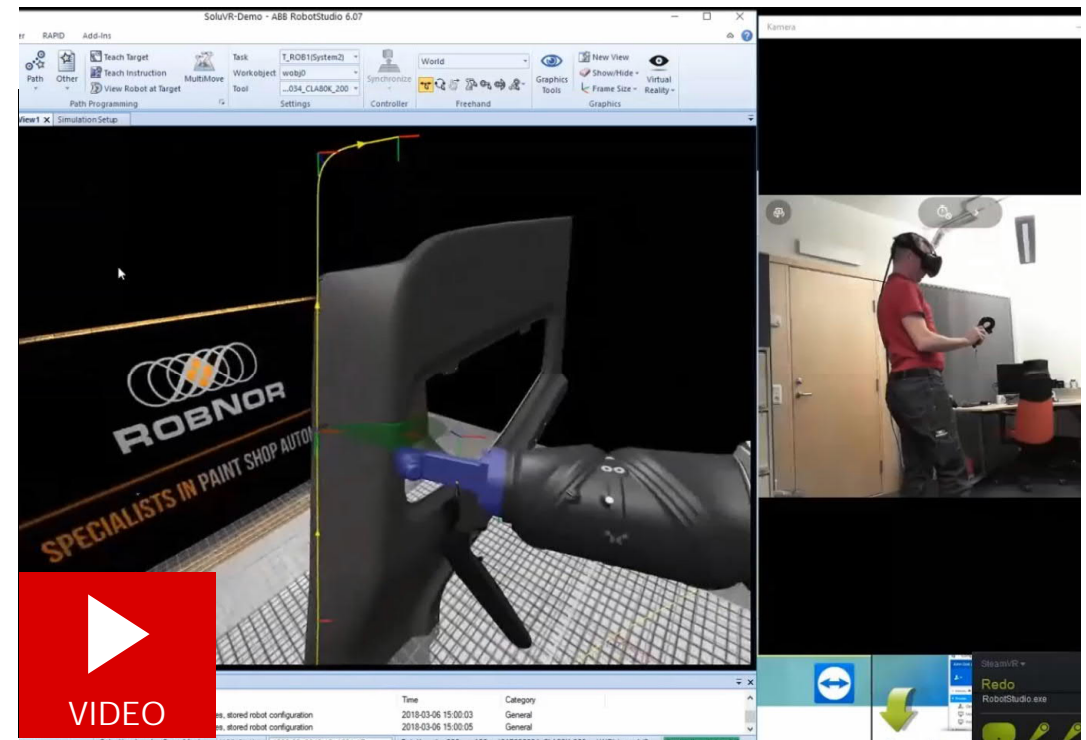
Benefit: Programming can be done

- before equipment is available,
- during office-hours
- with increased safety,
- with less risk of damaging equipment
- with less training
- faster and with better quality

Value: Increased part quality, increased safety, makes offline-programming accessible to non-experts.

Functionality have partly been available since before as separate RobotStudio add-ins

The video shows a programmer creating a complete paint program in just five minutes. (Courtesy of RobNor AB)



SoluVR-Demo - ABB RobotStudio 6.07

File Home Modeling Simulation Controller RAPID Add-Ins

ABB Library - Library - Robot System - Import Geometry - Frame Target Path Other

Teach Target Teach Instruction View Robot at Target MultiMove

Task: T_ROB1[System2] Workobject: wobj0 Tool: ...034_CLA80K_200

Synchronize Controller Freehand Graphics Tools New View Show/Hide Frame Size Virtual Reality

Layout Paths&Targets Tags SoluVR-Demo:View1 Simulation Setup

SoluVR-Demo*

- Station Elements
- System2
 - T_ROB1
 - Tooldata
 - Workobjects & Targets
 - Jointtargets
 - JointTarget_1
 - wobj0
 - Paths & Procedures
 - Path_Main
 - Path_VR (entry point)
 - MoveAbsJ JointTarget_1
 - pBotGun
 - pFrontGun
 - pLeftGun
 - pRightGun
 - pTopGun

ROBNOR
SPECIALISTS IN PAINT SHOP

Interact
Jog Undo
Programming
Paths Teach Speed
Zone Conf. Brush

Output

Show messages from: All messages

Time	Category
2018-03-06 14:57:24	General
2018-03-06 14:57:30	General

Selection Level - Snap Mode - UCS: Station | -1239.82 2940.12 1621.17 | PaintL - v800 - z100 - t217099034_CLA80K_200 - \WOBJ=wobj0 - Controller status: 2/6

Kamera

SteamVR

Redo
RobotStudio.exe

Skapa en lista med

VR with RobotStudio

Scenario: Collaborative engineering through RobotStudio Meeting (new in RobotStudio 6.07)

Meeting

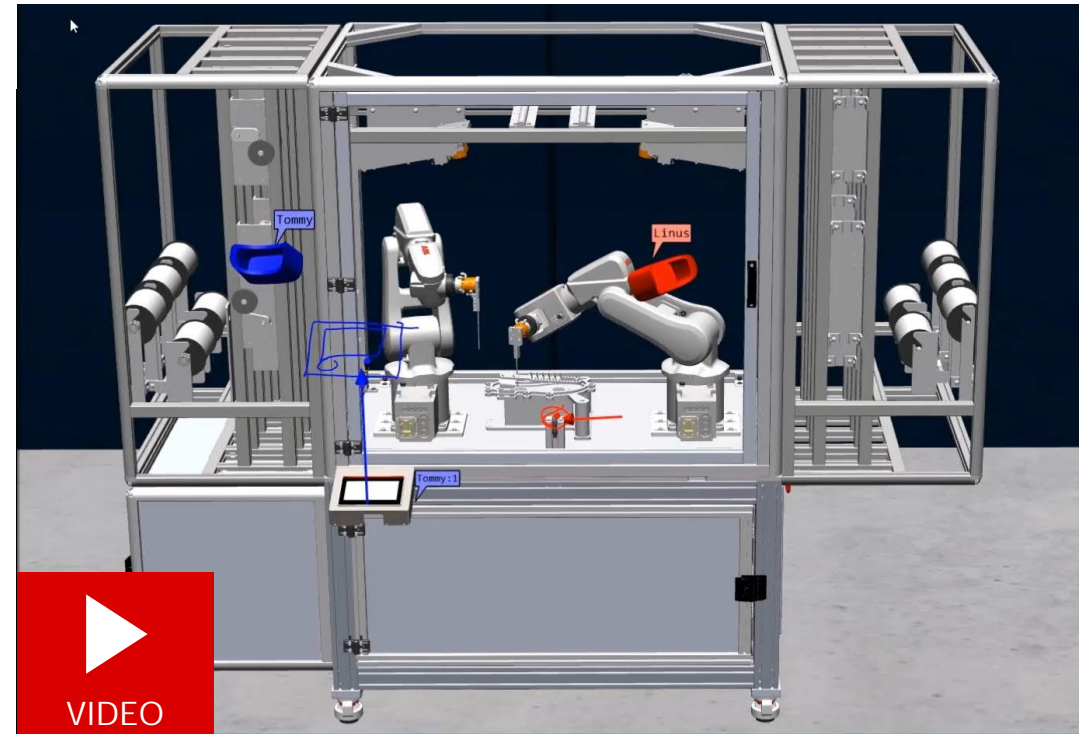
Feature: Meet in VR from any geographical location and share the same RobotStudio station. Stakeholders can review, discuss and approve robot cell.

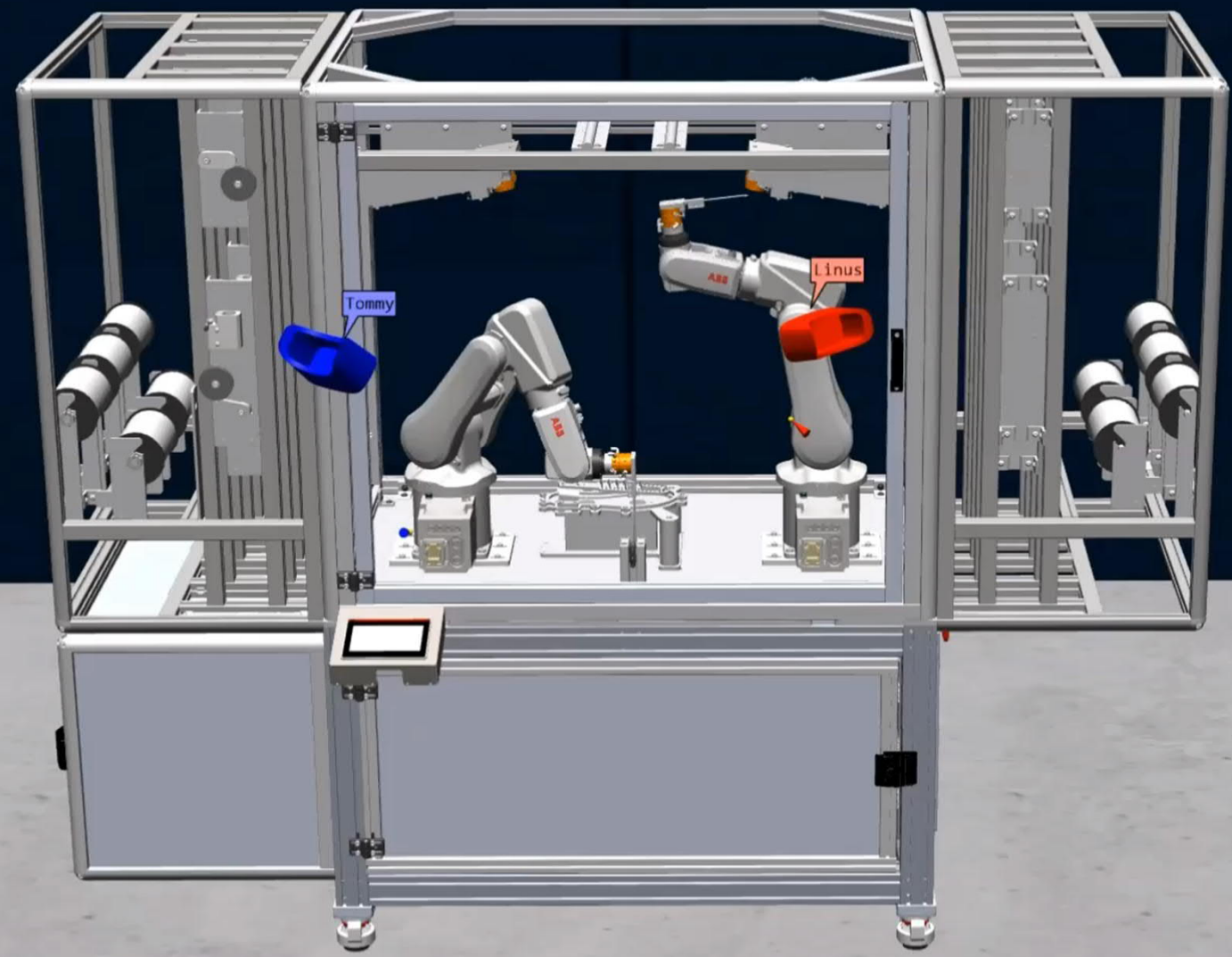
Benefit:

- Increased confidence and better decisions made by decision makers
- Reduced travel cost
- Errors found during design phase
- No prior 3D CAD experience required to understand or review cell layout

Value: Increased transparency, earlier start-of-production

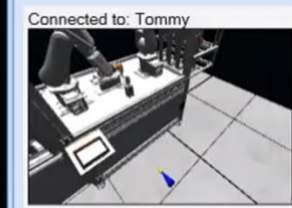
The video illustrates how a design review can be carried out using the RobotStudio Meeting function.





Your Name: Henrik (Host)
Status: Connected
Disconnect

Provide this key to other participants to allow them to connect:
2d8c1c9dd4f4429bbd4b11d4 Copy



ABB