



FACULTY **institute**
OF MECHANICAL **of automation**
ENGINEERING **and computer science**

Programming for robots and manipulators

Lecture 2 (b)

1.

Introduction

2.

Robot control

3.

Type of simulation tools

3.1

B&R, ABB, UR, etc.

3.2

ROS

3.3

Unity3D



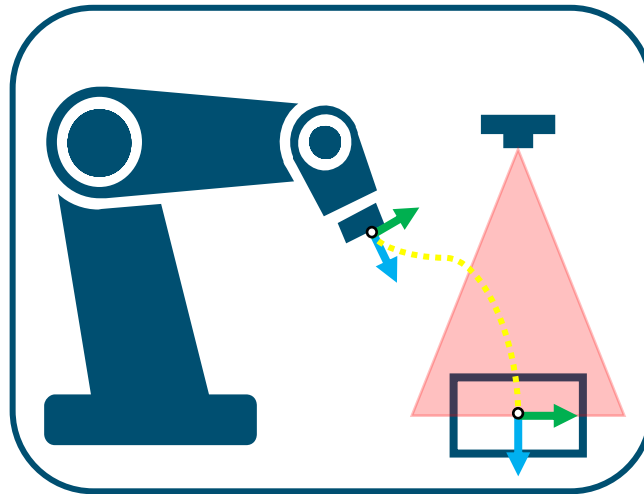
Introduction

Simulation Software

Simulation tools are built to replicate real-world robotic applications as closely as possible, taking every environmental and physical factor into account and testing for all possible variables.

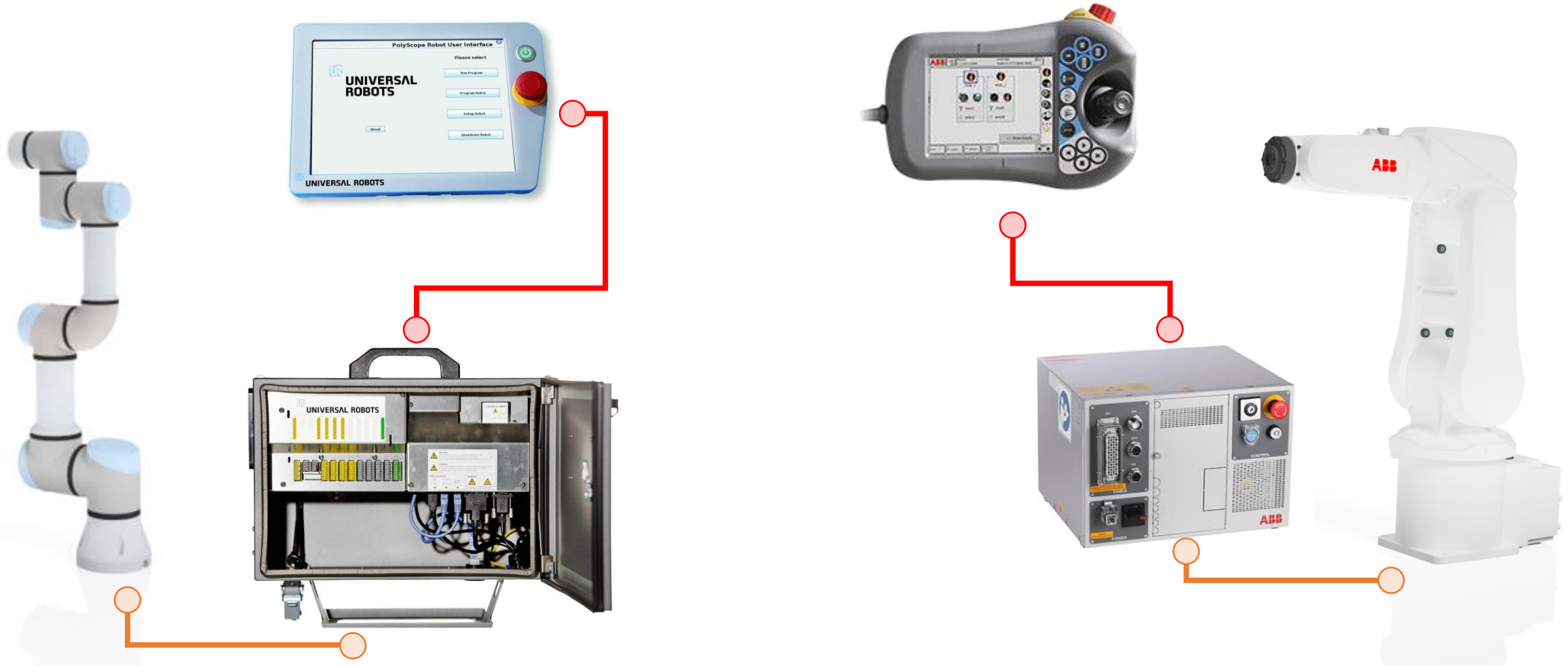
Why use simulation tools?

1. Proof of Concept and Proof of Design
2. Reduced Integration Costs
3. Shorter System Delivery Times
4. Something else?

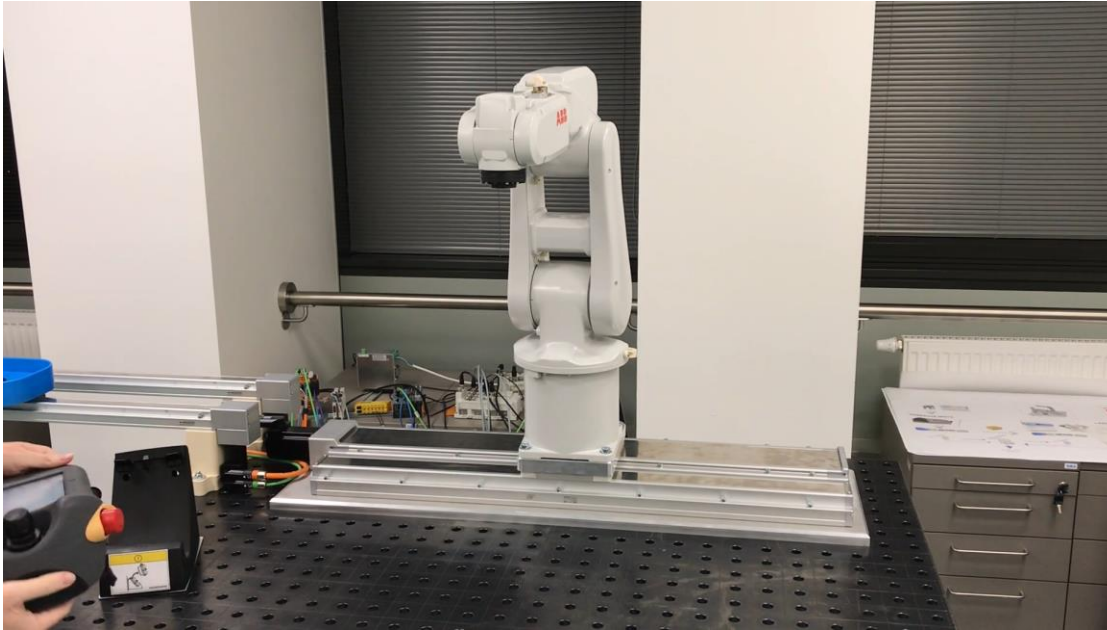


Robot Control

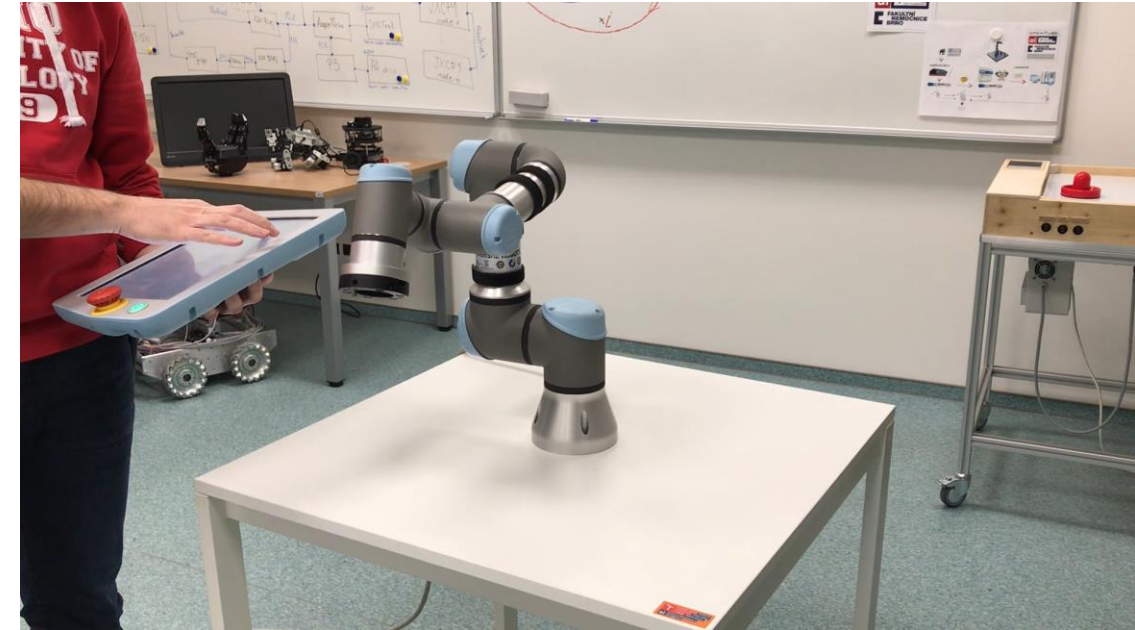
Degree of freedom (DOF)



Degree of freedom (DOF)

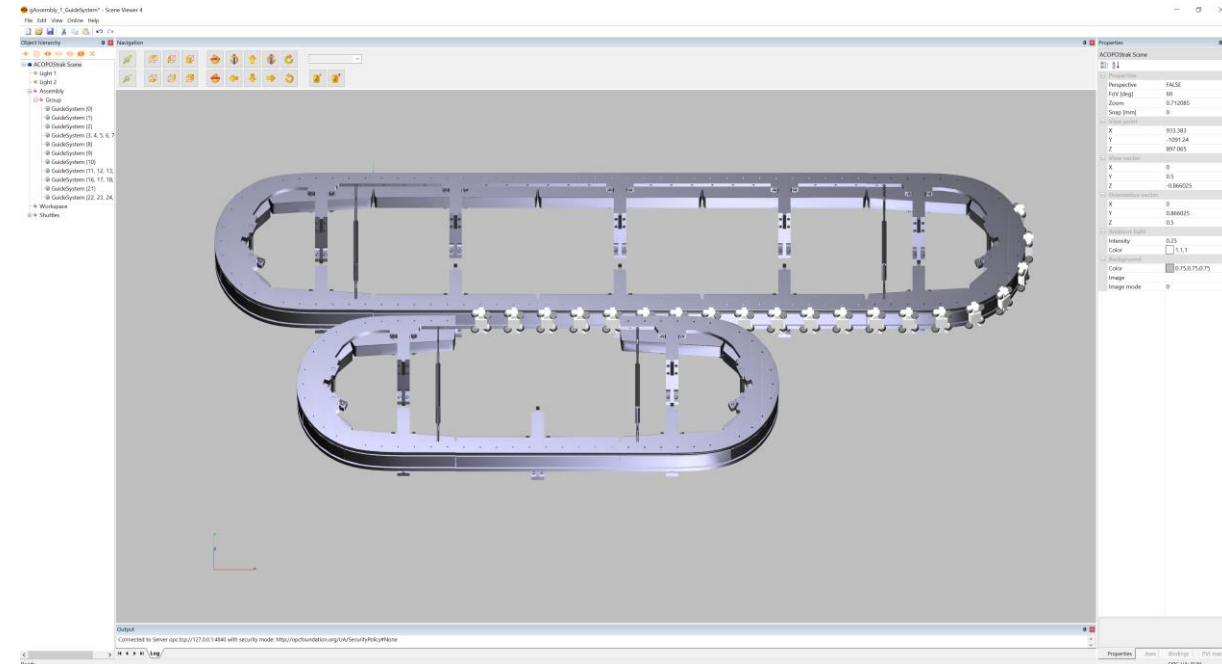
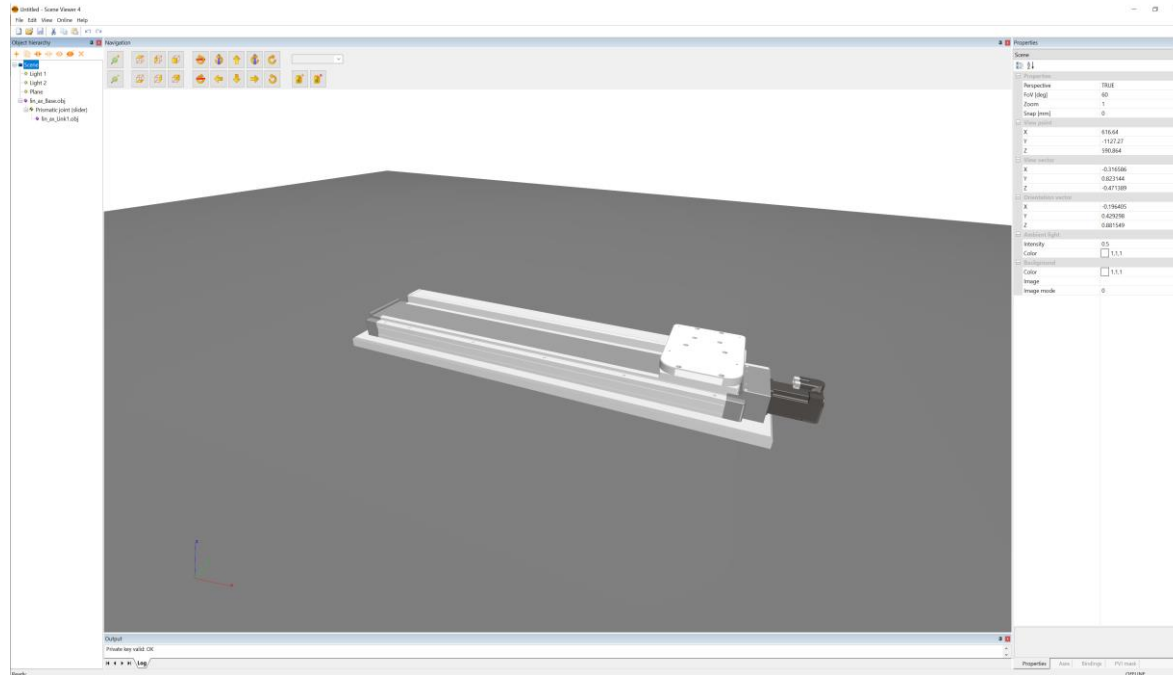


Industrial Robot ABB IRB 120



Collaborative Robot UR3

Type of simulation tools



B&R Automation - SceneViewer

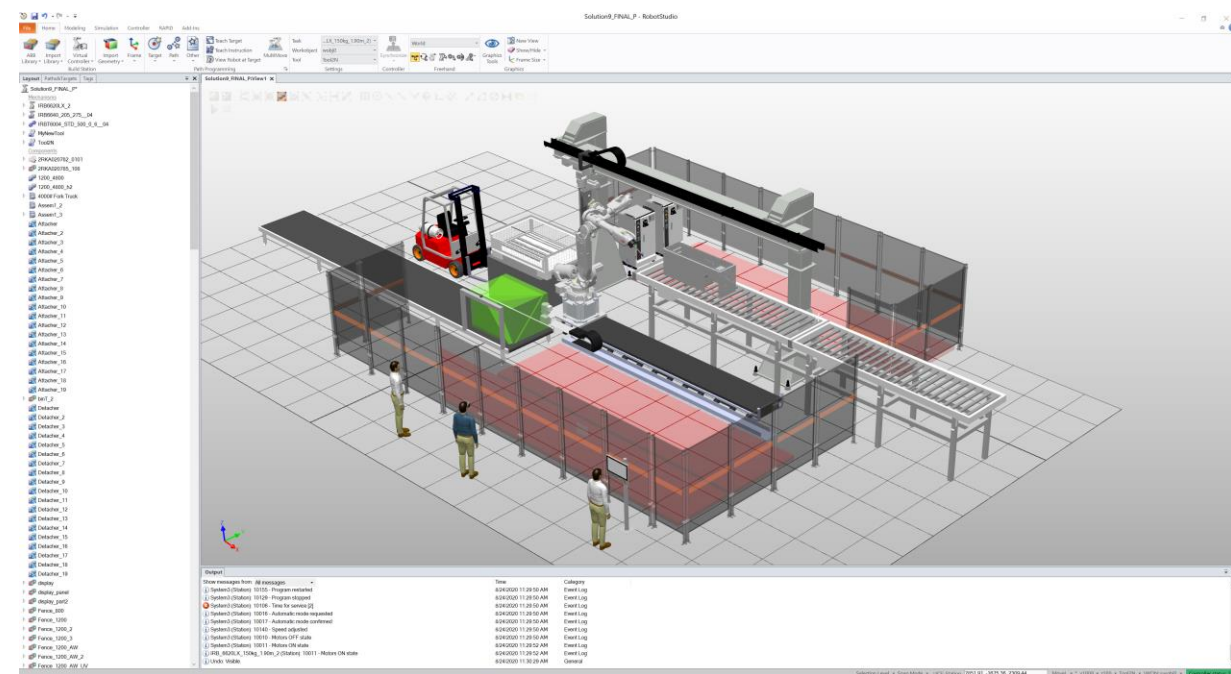
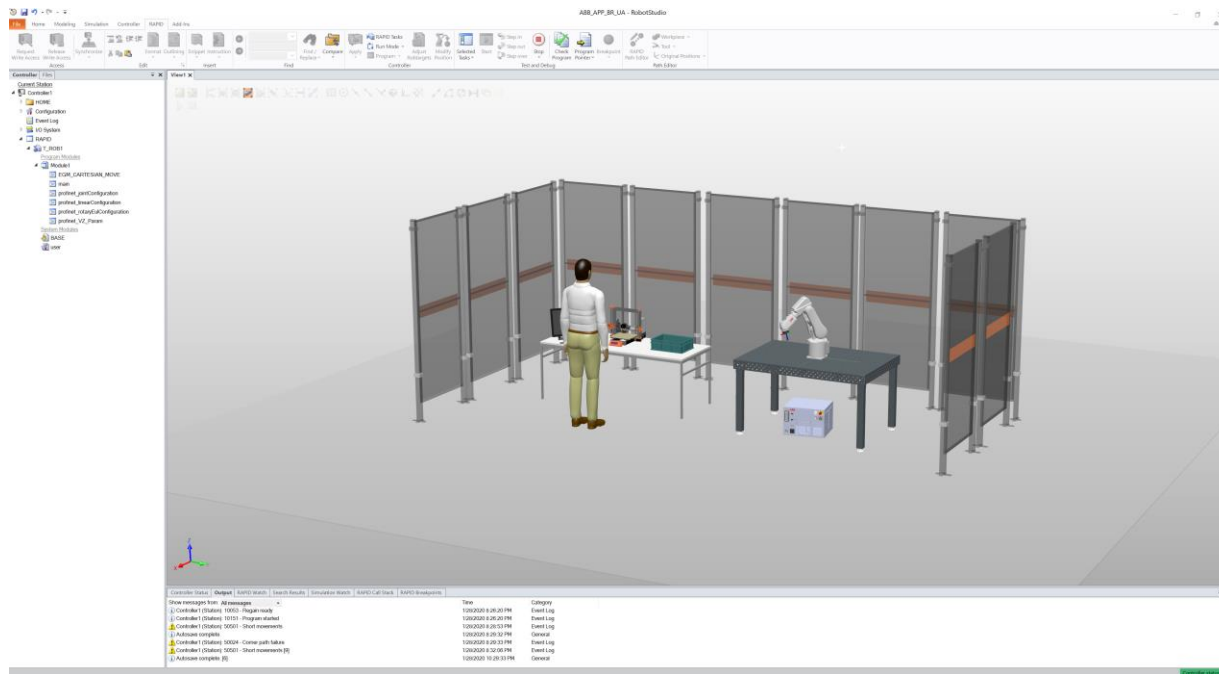
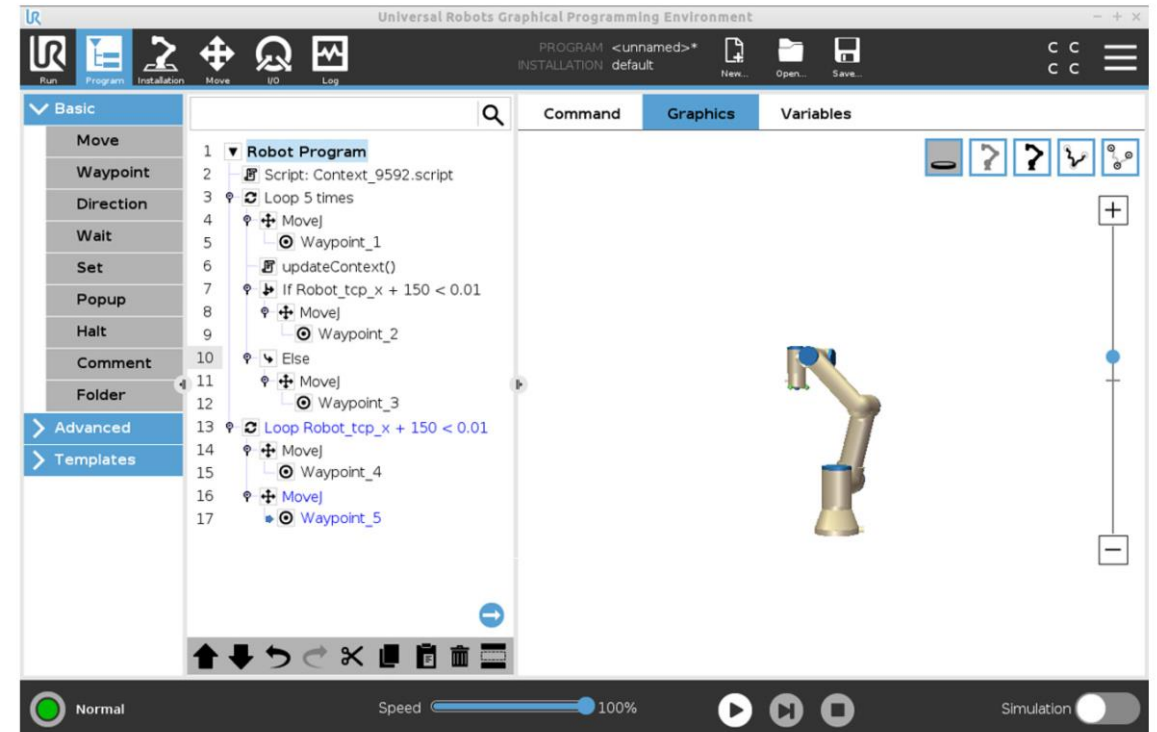
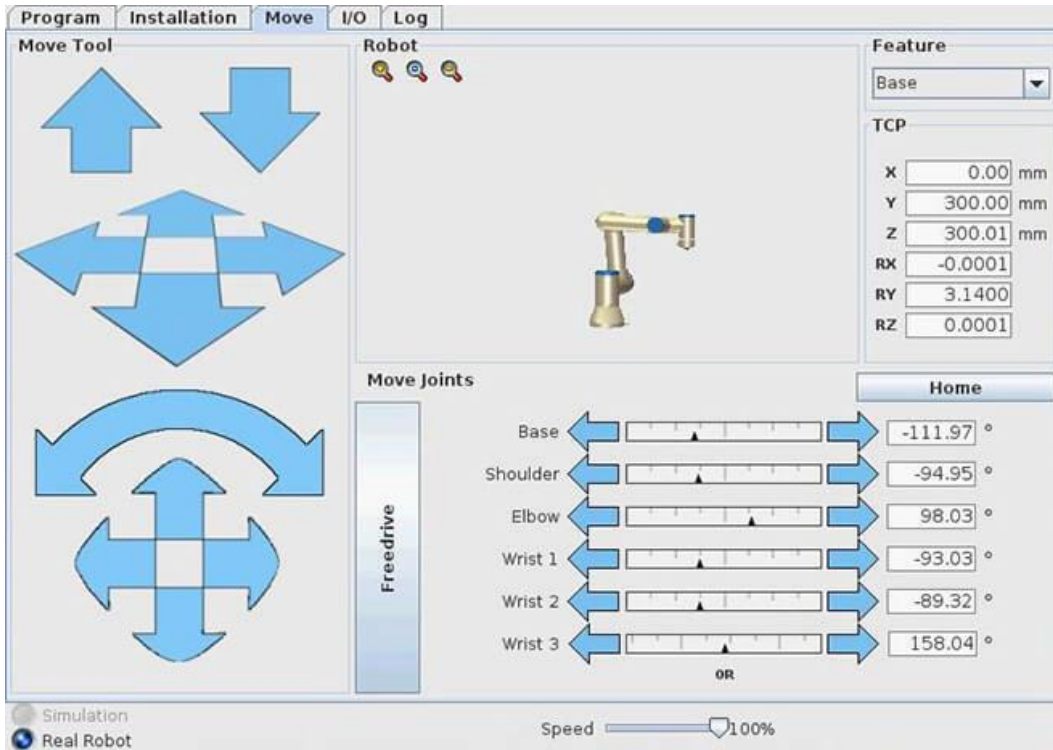


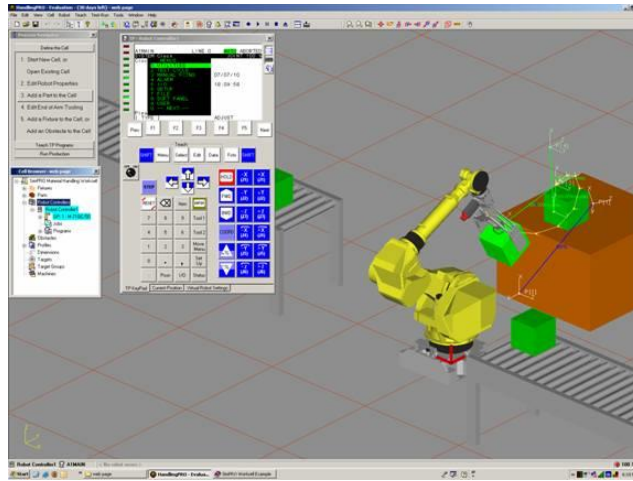
ABB RobotStudio

Universal Robots

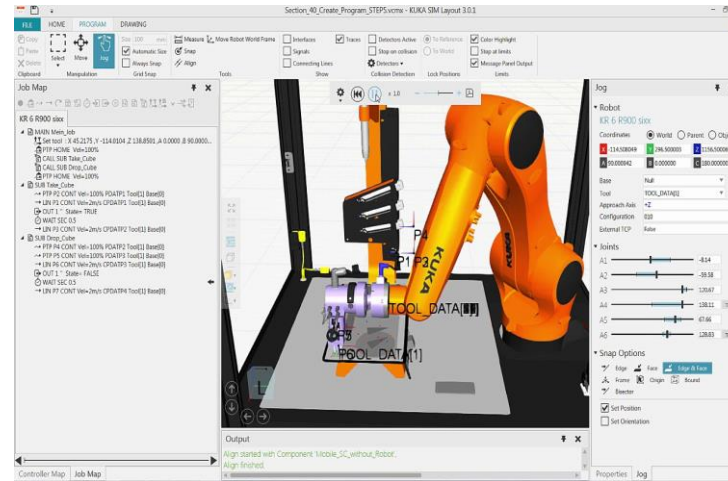


UR – Polyscope

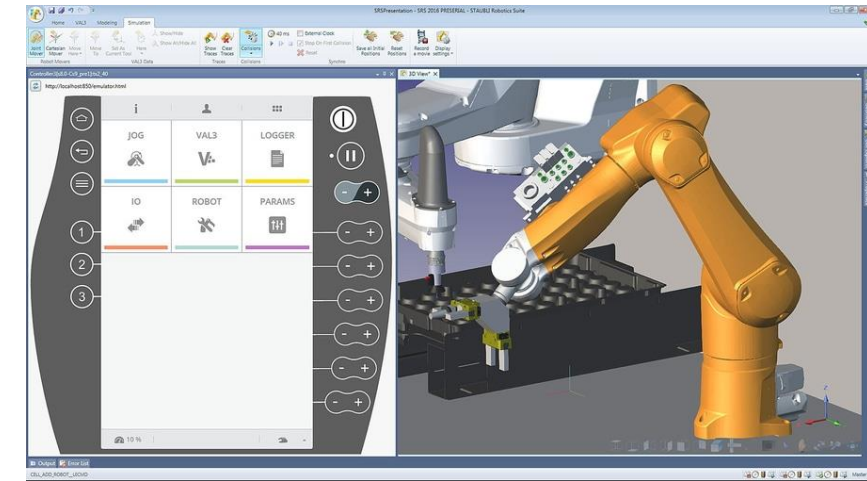
Another official robotics simulator



[Fanuc Roboguide](#)



[Kuka Sim Pro](#)

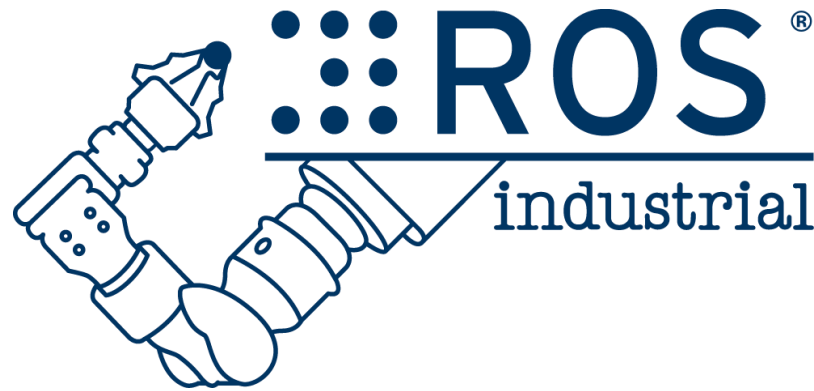


[Staubli Robotics Suite](#)

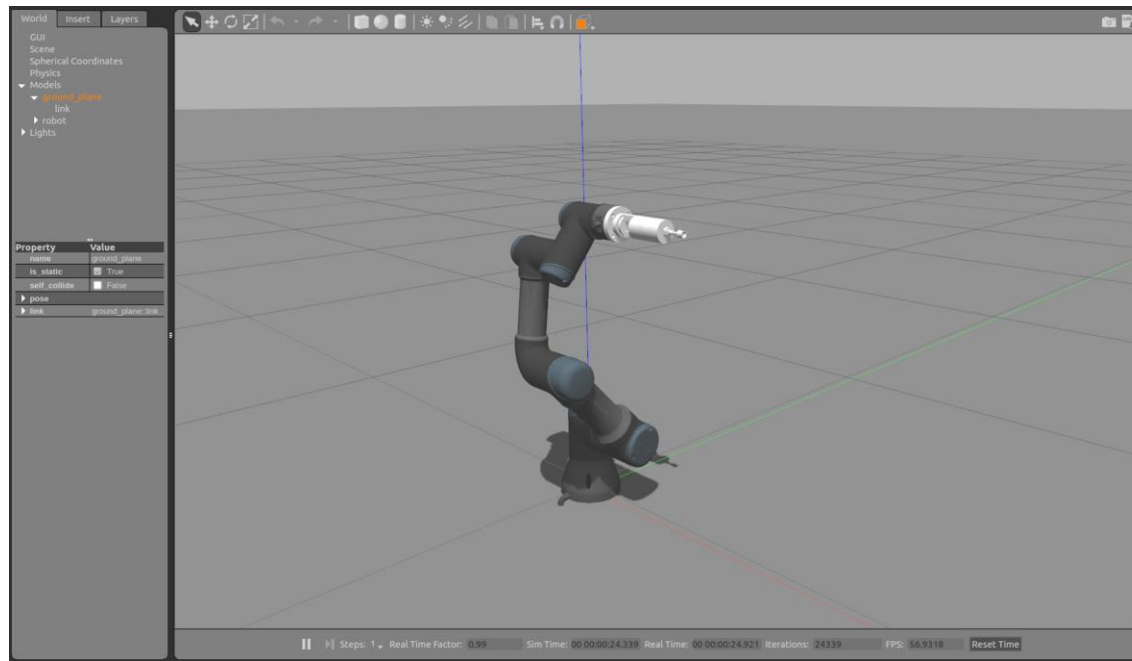
ROS, an open-source project, provides a common framework for robotics applications. ROS is heavily utilized by the research community for service robotics applications, but its technology can be applied to other application areas, including industrial robotics.

ROS-Industrial:

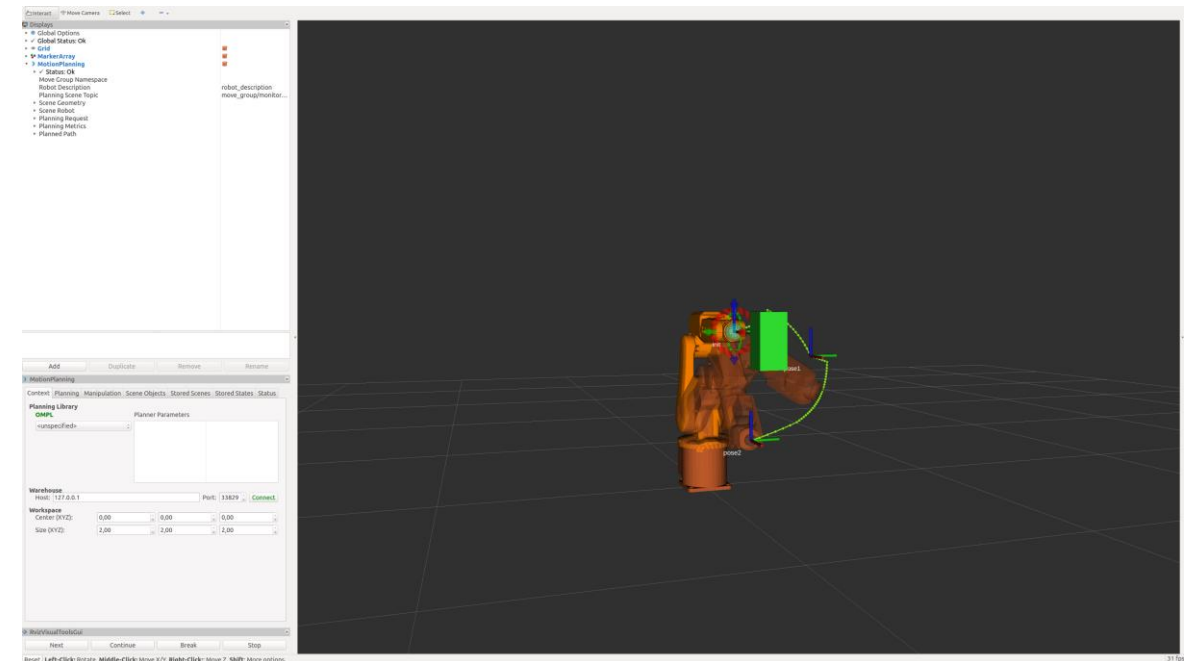
ROS-Industrial is an open-source project that extends the advanced capabilities of ROS to manufacturing automation and robotics. The ROS-Industrial repository includes interfaces for common industrial manipulators, grippers, sensors, and device networks.



ROS Simulation Tools



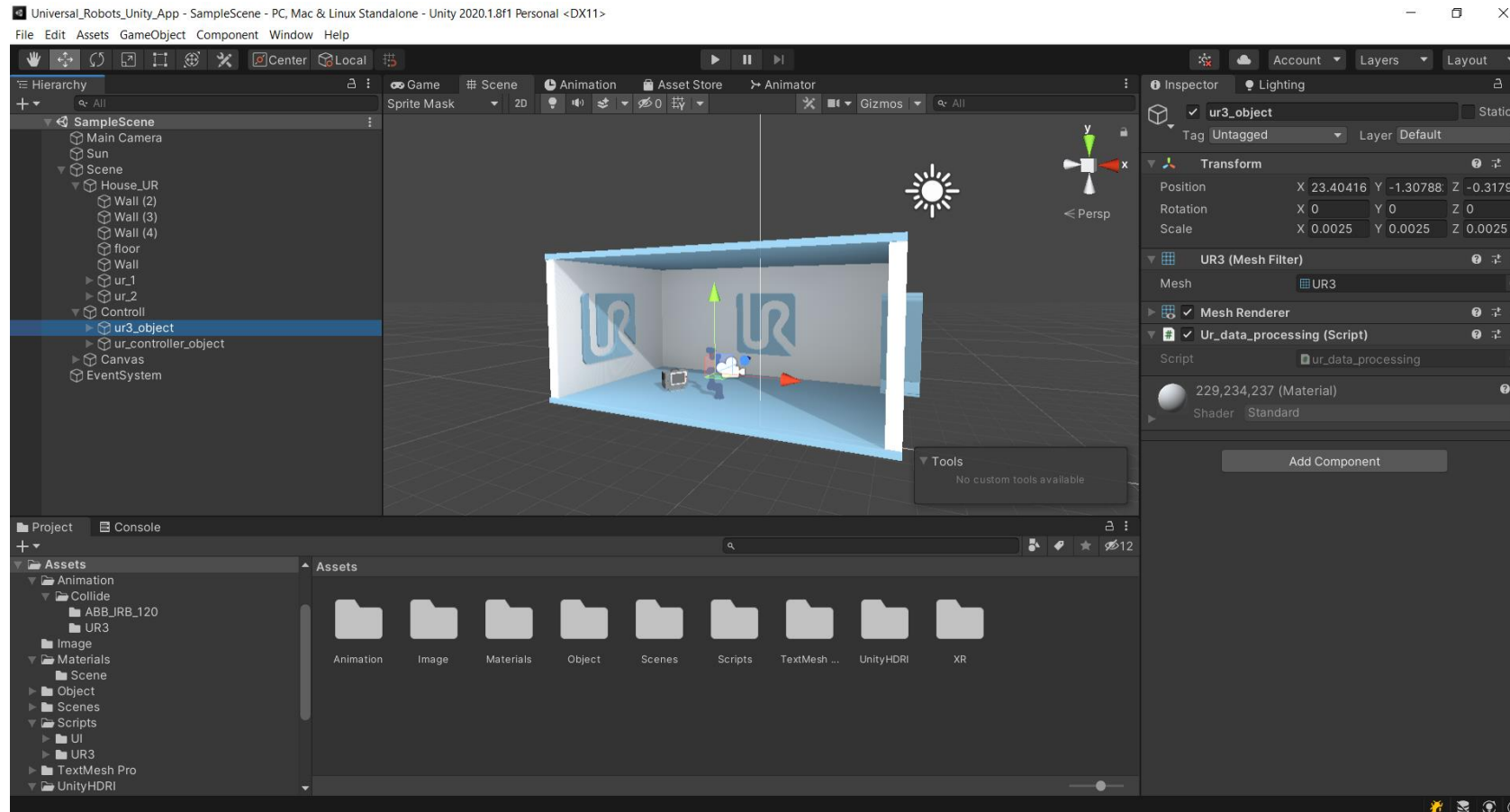
GAZEBO



RVIZ

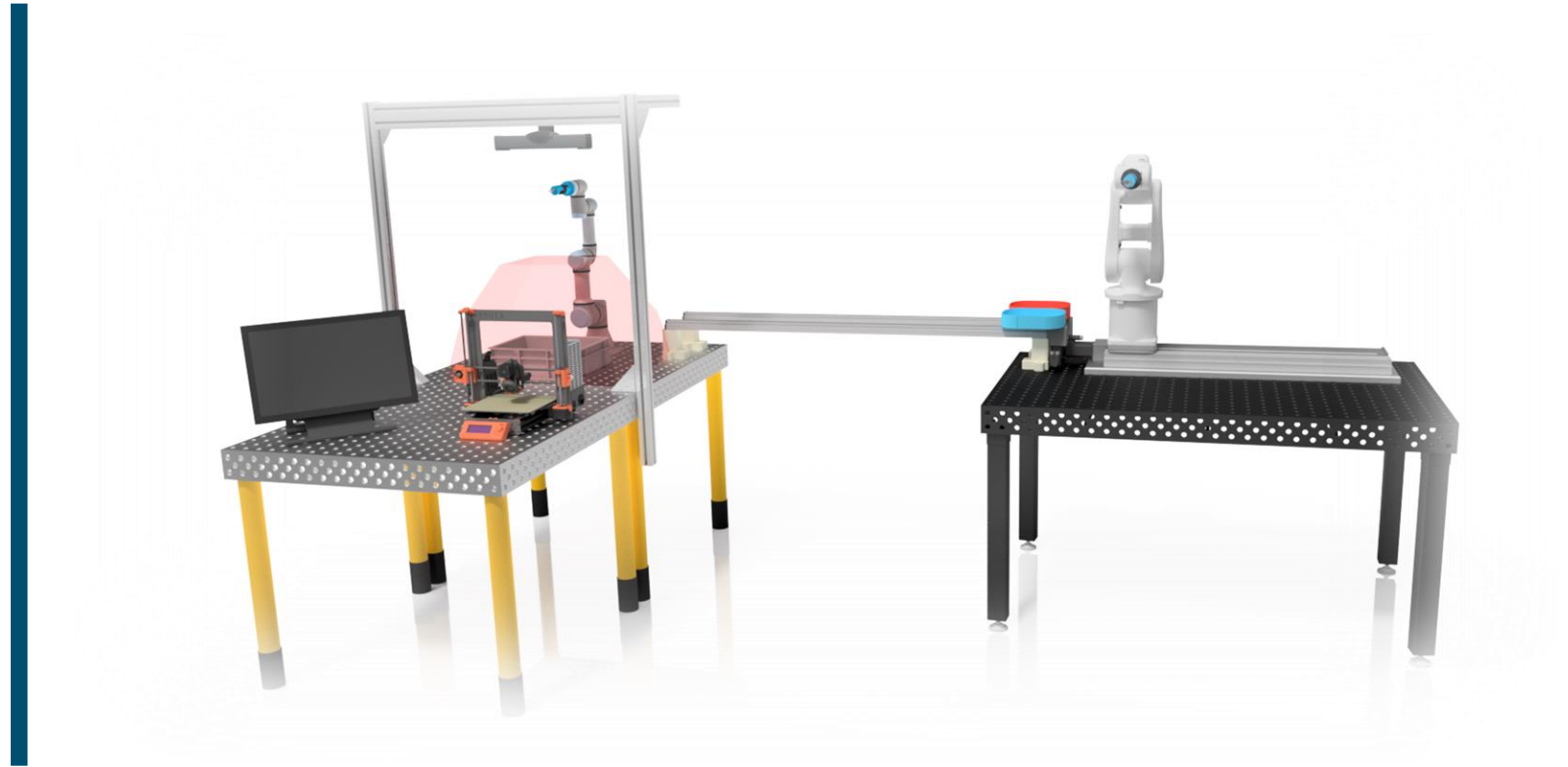


Individual way of robotics simulation

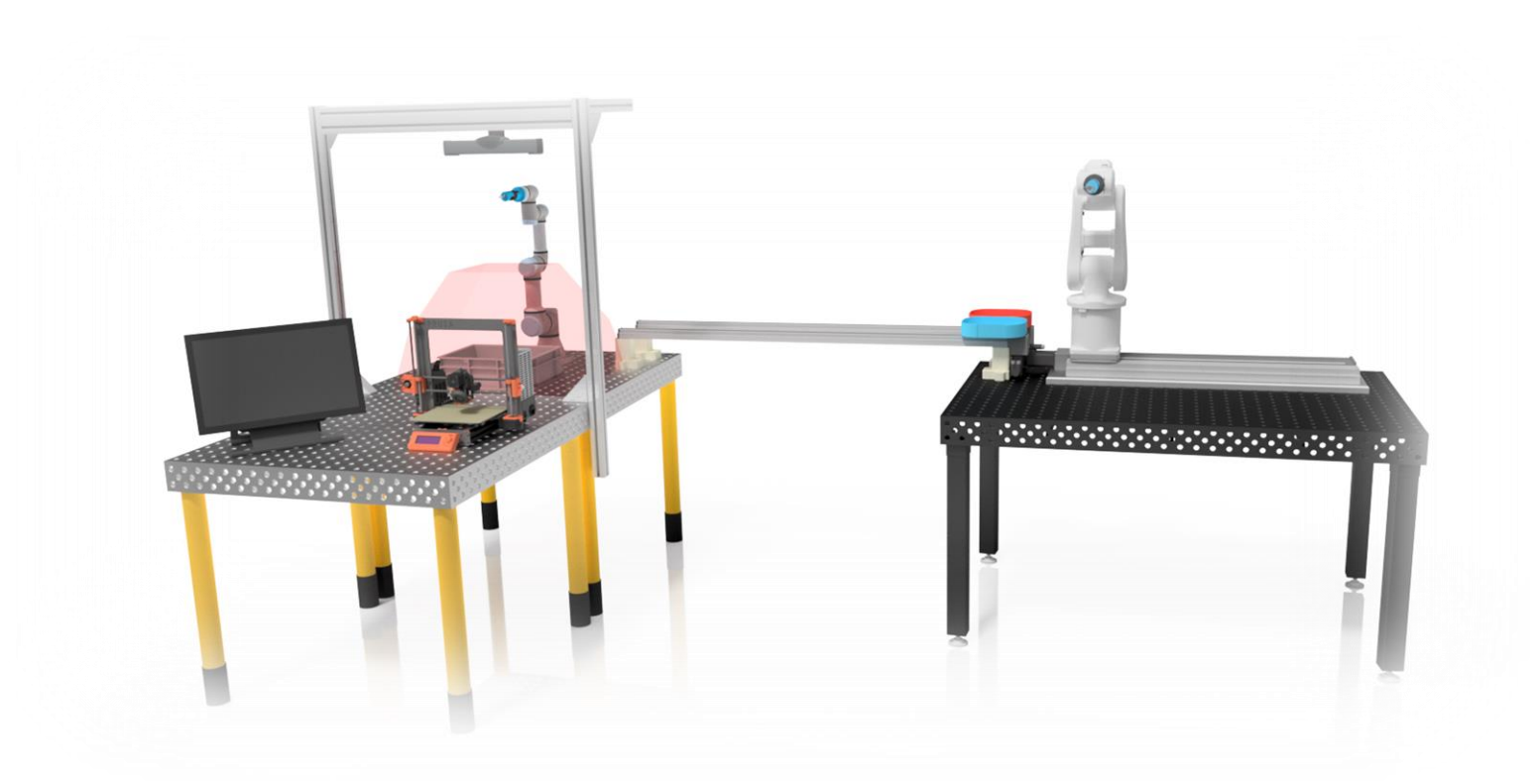


Unity3D

Thank You!



Questions?





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