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TRINITY Centria Use cases and modules

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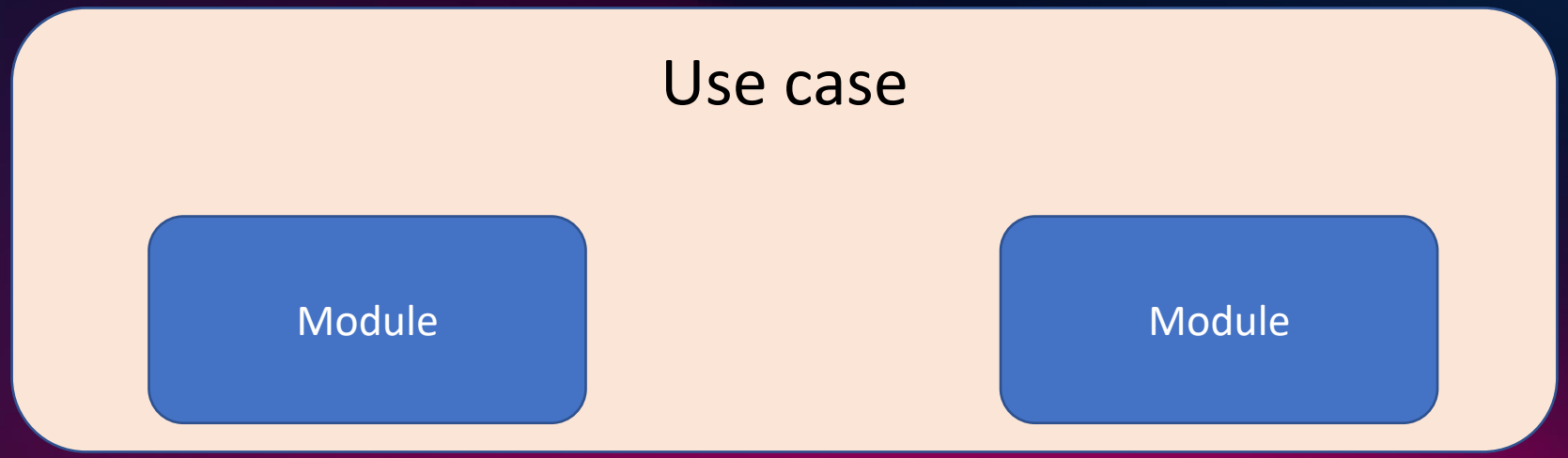
Topics of this presentation

1. Basics of Trinity module / use case structure
2. Presentation of Centria modules
3. Presentation of use cases
4. Digital twins for robot cell remote control

Trinity modules and Use Case basics

- Each Trinity partner has created modules
- By combining these modules different use case scenarios can be compiled
- Centria has prepared four modules and two use cases for Trinity
- Our use case ideas are based on needs and ideas from local companies



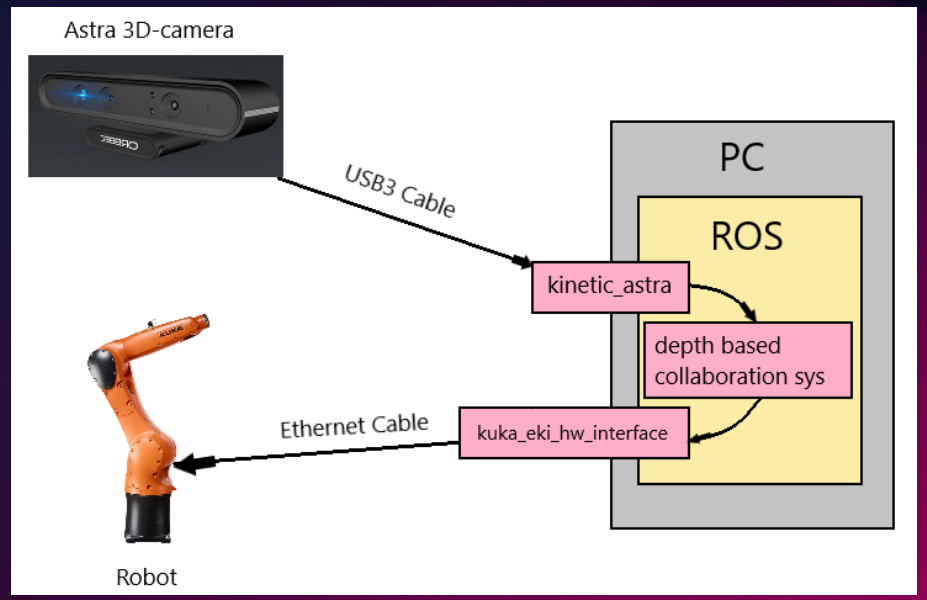
Module: Safe Human Detection in a Collaborative Work Cell

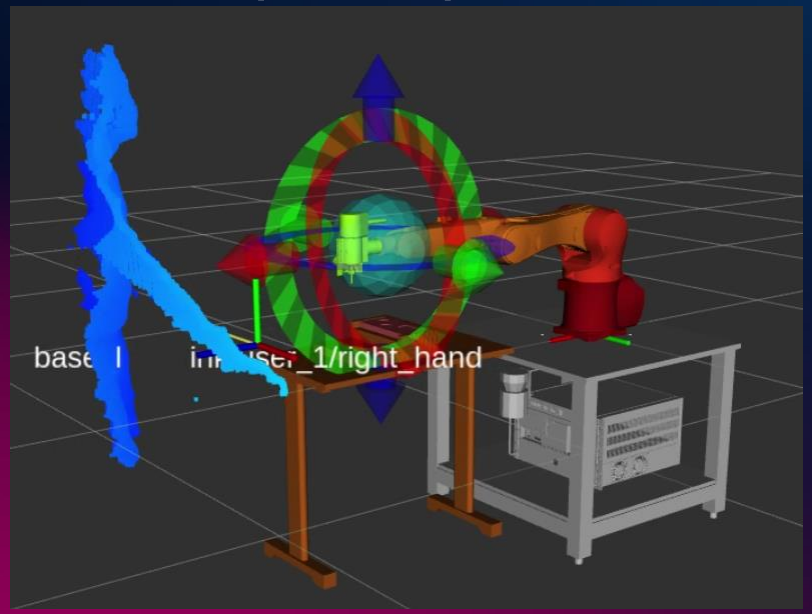
- Hybrid safety system with multiple devices
  - Sick and Pilz laser scanners (safety approved)
  - Sick microvawe radar (safety approved, latest technology)
  - Omron and Sick safety light curtains(safety approved)
  - Quuppa indoor positioning system (additional safety)
  - 360 camera and CNN for person detection (additional safety)
- Any appropriate safe combination of these can be chosen

Centria hybrid safety system

Module: Dynamic Robot Trajectory Generation Based on Information from 3D-camera

- Multiple 3D-cameras supported (Intel RealSense, Orbec, Kinect, …)
- Flexibility on software (RoboDK, AUTOMAPPS, ROS)
- Adds vision capability to robot controller
- Robot controller is able to dynamically create new trajectories for new workpiece
- Also creation of new trajectories in case of obstacles in robot path is possible

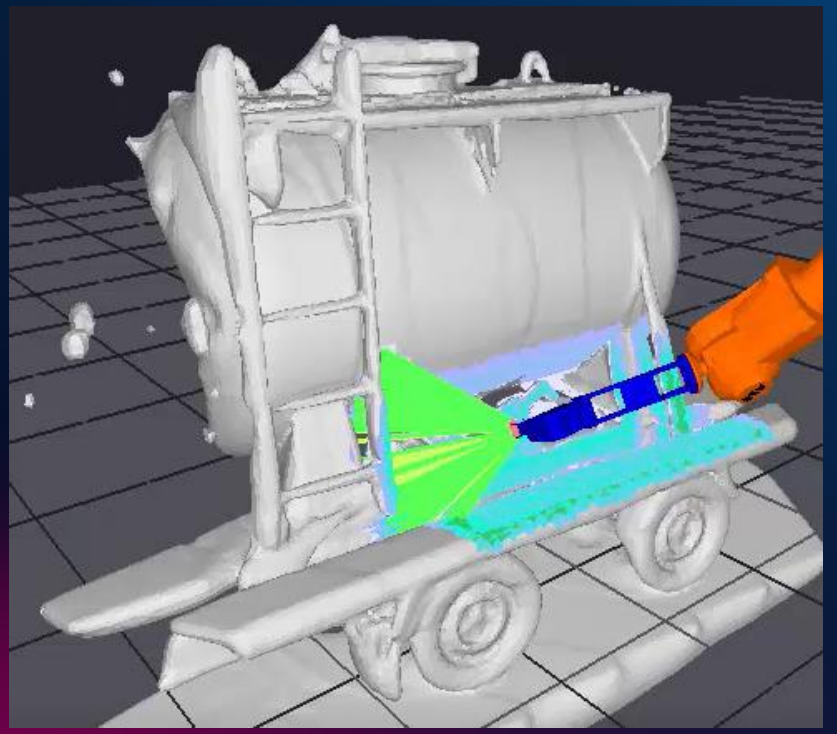


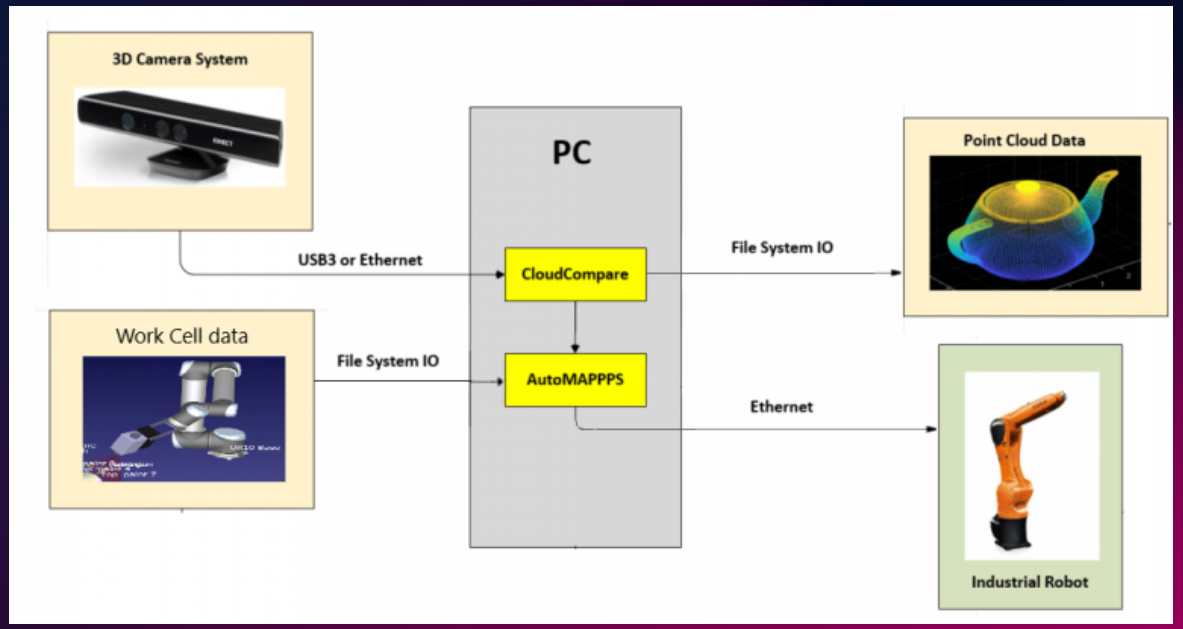


trinity ENGAGE WITH AGILE MANUFACTURING

Module: Online Trajectory Generation for Industrial Robot with 3D Camera

- Multiple 3D-cameras supported (Intel RealSense, Orbec, Kinect, PhotoXi, Artec Leo…)
- Reactive trajectory generation using AUTOMAPPPS

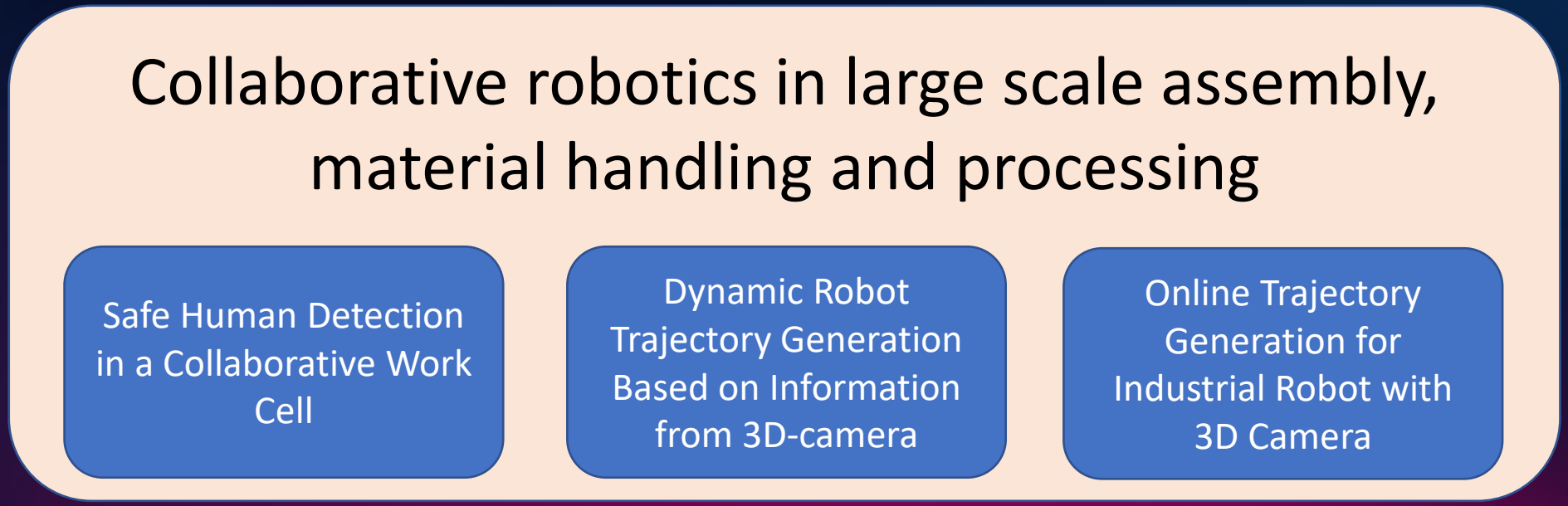




Module: Digital Design Content Based Robot Trajectory Generation

- Data necessary for robotized workpiece production can be integrated into the workpiece design at the design phase.
- This is an agile way for automating manufacturing processes and speeds up production phase.

Use Case: Collaborative robotics in large scale assembly, material handling and processing



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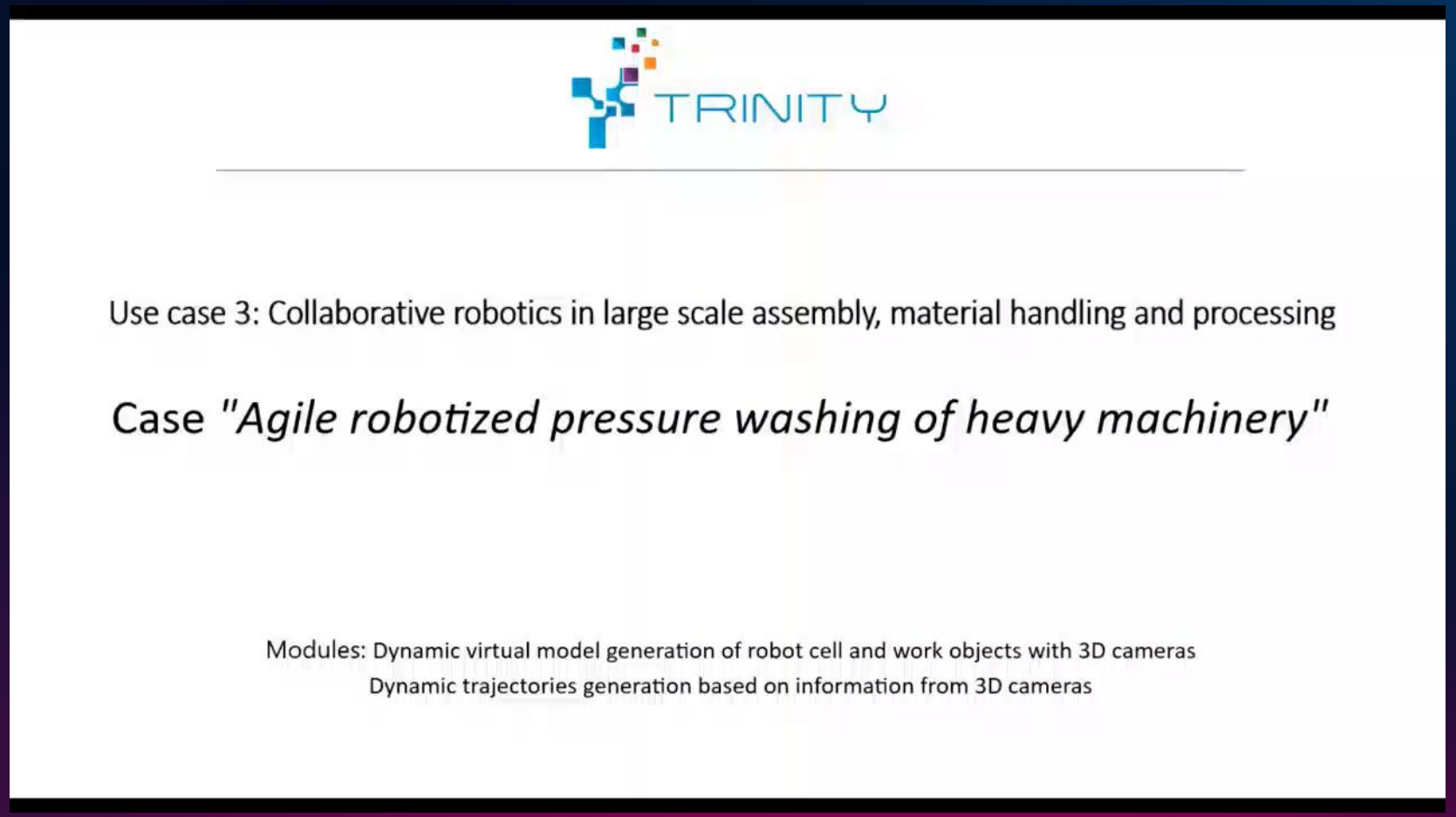

Use Case: Integrating digital context to the digital twin with AR/VR of the robotized production

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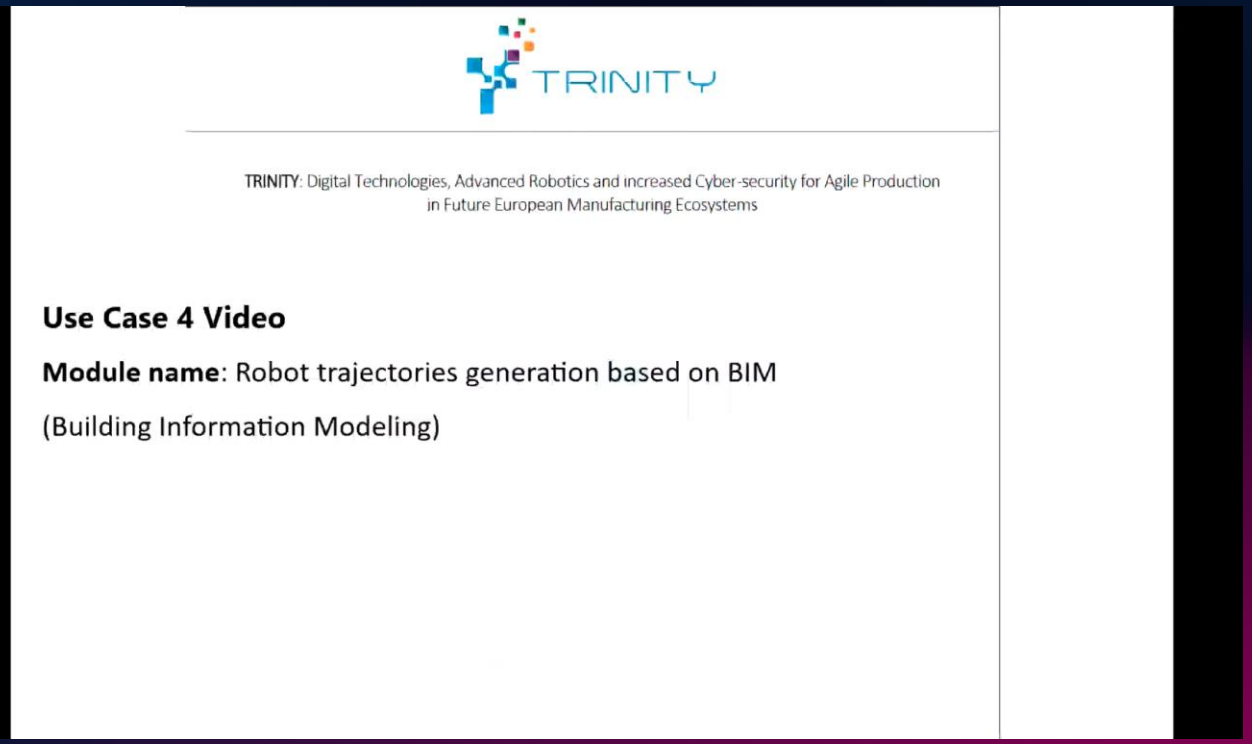
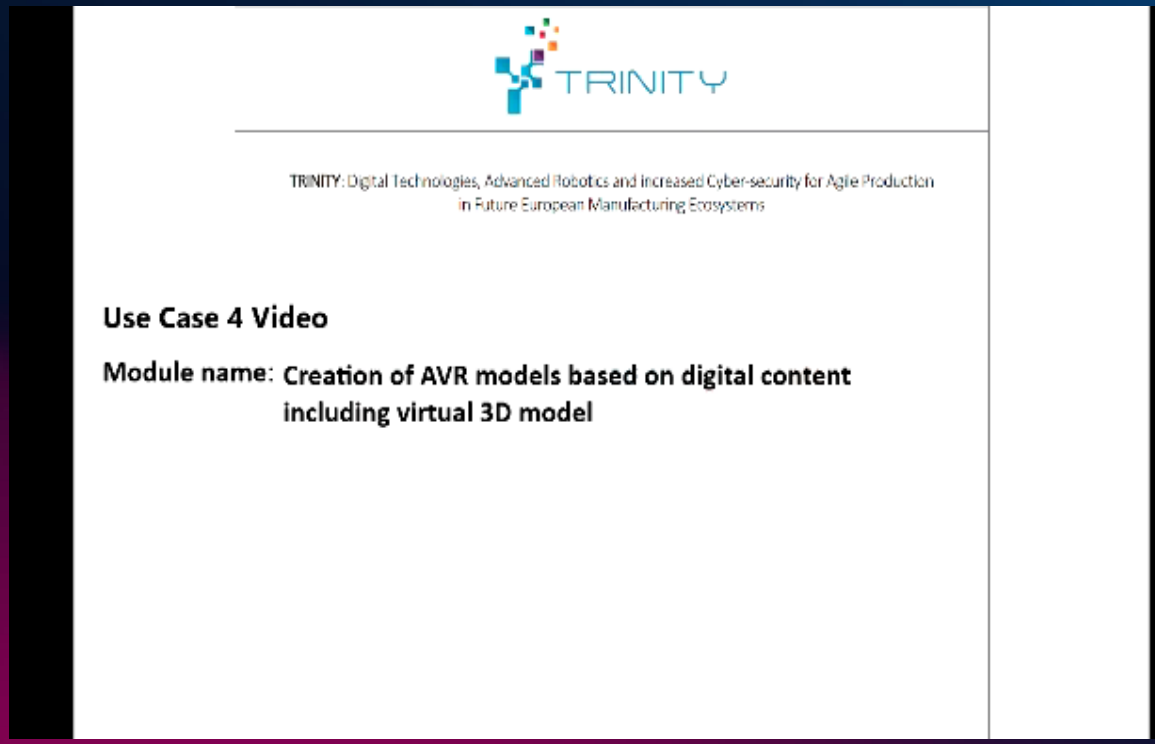
Safe Human Detection in a Collaborative Work Cell

Digital Design Content Based Robot Trajectory Generation

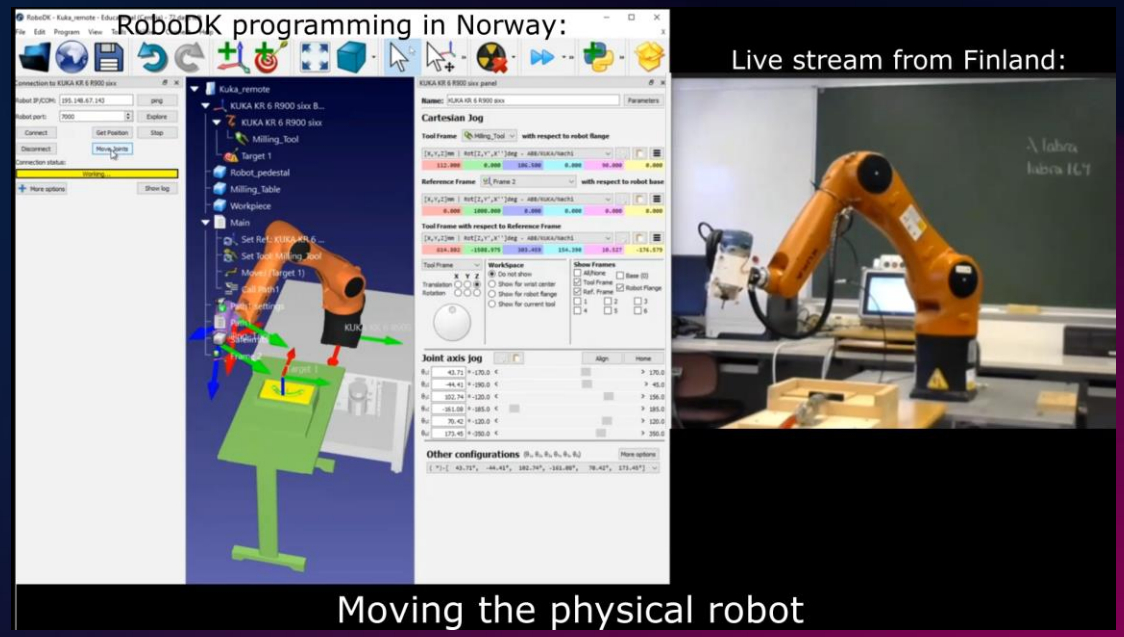
Use Case: Integrating digital context to the digital twin with AR/VR of the robotized production

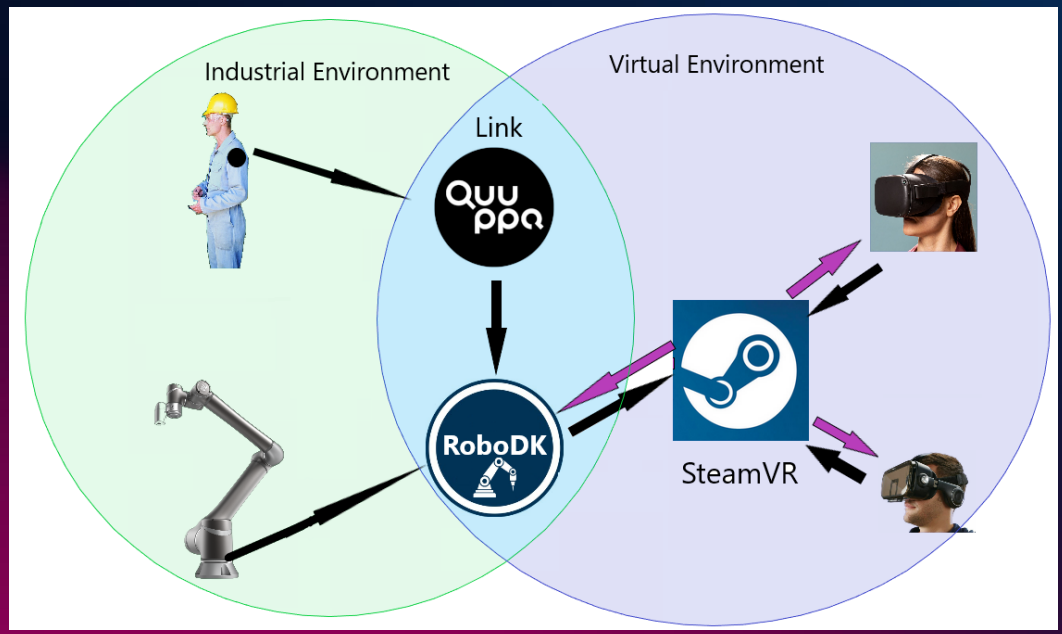




Digital twins for remote collaboration

- Digital twins of robotic cells can be utilized in collaboration between organizations
- Centria has been researching this with University in Narvik, Norway



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