

# Use case I: Collaborative assembly with vision-based safety system

Problem/goal	Utilization of safe and intuitive robotics in human-robot collaboration.
Potential users	SMEs for novel safety systems and co-bot potential in assembly.
NACE	29.3 Manufacture of parts and accessories for motor vehicles
Description	Demonstration of a vision-based safety system for human-robot collaborative assembly of diesel engine components. A dynamic 3D map of the working environment (robot, components + human) is continuously updated and used for safety and interaction (virtual GUI). This robot working zone is projected onto a flat surface via projection.
Hardware	Universal Robots (UR5), Robotiq gripper, Kinect, Intel Realsense, projector
Software	Open source software (ROS, MoveIt)
Standards	Considered: ISO/TS 15066:2016, ISO 10218-1/2
Possible benefits	Studies with collaborative robots, human-robot interaction, pose recognition and handling of complex objects (engine block components), dynamic 3D safety zone in shared workspace
Partners	Tampere University (Finland), LMS (Greece), EDI (Latvia)
More info	<a href="https://www.dropbox.com/s/xlatmas4w6r2rx7/user_studies_grid.mp4?dl=0">https://www.dropbox.com/s/xlatmas4w6r2rx7/user_studies_grid.mp4?dl=0</a>



Projection-based safety zone around robot



Diesel engine components for assembly

