Master Thesis Proposal: Using 3DExperience to enrich the VR experience when building a new factory
Title

Background
Industry has shown a growing demand on Visual Experience, using VR in order to view the planned layout of a factory, or to demonstrate the intended process of automation. The capital investment is very high when building a new factory (green field), and also to modify an existing one (brown field). VR gives one more dimension to the experience, and that is the size of things. By modelling something in 3D and looking at it on a computer screen will not give understanding of sizes. One way to solve this is to put a manikin next to the object to understand size.

Problem Description
Chalmers has access to one of the markets most modern factory modeling solution available today – the 3DExperience platform. This thesis project will focus on the evaluation of functionality to use VR to increase the visual experience of factories. This project will start out by evaluating IHD and ICE, which are the viewing packages in 3DExperience for VR. The project will then continue by evaluating and testing the 3DExcite module, which is a scripting module to enable dynamic simulations and to enable interaction by the environment. The focus will be on demo-data provided on factories with full robotic automation. The goal is to interact with the robot cells. Furthermore, another goal in the project is to build a demonstration cell that can be used after the project is finished, both for demonstration, but also for a lab in the MPR213 course next year.

Suggested Work Process
1. Litterature review to collect the scientific state of the art for VR in automation industry
2. Collect demo data and setup a collaborative space on the Chalmers 3DExperience server.
3. Evaluate IHD and ICE for robot automation industry
4. Evaluate 3DExcite and build an interactive demonstrator for a robot automation cell
5. Document a step-by-step process to be used in a robotic lab at the robotic coruse MPR213

Special Requirements: JavaScript
Student Background: Thesis project will be examed at IMS
Number of students: 2
Duration: Starting Fall 2020, 20 weeks
Examiner: Henrik Kihlman, IMS
Supervisor: Henrik Kihlman, henrik.kihlman@chalmers.se