

In 2022, we returned to the development of the simulator. The goal was to implement usable simulator software to get feedback from users and their possible requirements. We used the Unity3D engine.

We started our work by implementing simple schematic models. We designed them to cover commonly used variants / X linear stage, Z linear stage, XYZ stage, XPT stage ... /.

The user can set the axis travel length / encoder settings / in the <name>.smrenc file. In this way, he can design the expected functions relative to the actual trajectory positions of the planned machine. The functions are programmed interactively using the node editor.

The next step was the possibility to integrate an external model into the simulator. The .glb format was chosen and a model preparation mechanism was implemented. The output is the actual model in .glb format and a .json file containing the necessary parameters /kinematic string, scale model, physical lengths and their transformation to encoders/.

Since the primary goal was to be able to define positioning and relate the set positions to other simulated technology / using user DLLs /, the simulator does not use physics.

We applied the physics functions only when simulating a specific pick and place operation, when the simulated pieces were moved.

The class "NodePosition" contains variables for the kinematic description of the variable number of axes and their combinations. The actual processing in the current beta version is concentrated on covering the most common combinations.

The beta version is ported as a WebGL application at:
<http://industry40.online/>