SUMMARY

The main tasks of this thesis were performed thanks to the VLF toolkit. The Festo system was chosen as observed object. This paper advises and explains the advantages of digital tools use. After approximately 300 hours of studying, researching and elaboration, I can say with confidence that all main objectives were achieved. However, the most important thing which was done is that I formalized the workflow for the use of digital tools and proposed some suggestions for its improvement. I hope that my work will somehow will help in further development of manufacturing digitalization. During the whole working process, the following list of tasks was completed.

1) Literature review about digital tools, Industry 4.0, and overview of COVID-19 effects on manufacturing;
2) VLF toolkit is described and presented in the convenient way;
3) Description of the Festo system assets and processes;
4) Modelling of the Festo system ontology in OntoGui software;
5) Partial integration between results from OntoGui and VEB.js application is done;
6) Performance evaluation of Festo system is done in JMT software;
7) Virtual scene with all main assets of Festo system (Storage, Transporter and CNC) is built. The code for visualization is provided in the first appendix of this thesis;
8) Transportation motions are created in virtual environment. The code of animation is provided in the second appendix of this work;
9) The workflows for the use of digital tools (at least the VLF toolkit) is formulated.
10) Suggestions for improvement of digital tools are proposed;
11) All the activities described higher were reported in this Bachelor thesis.
12) Additionally, I took part in the 3rd VLFT project in cooperation with students from different EU countries (this activity was not described in the main body of my thesis, because this possible part could be regarded as the additional information, which can be missed for this work).

The tasks, which can be done while further development, which were out of this thesis scope:

1) Proposals of different layouts of Festo system in OntoGui, JMT and VEB.js software;
2) Application of evaluation results to the real production cell at the Taltech lab;
3) Improvement of transporting animation in VEB.js;
4) Creation of processing animation (turning in CNC, picking and loading by a robotic arm) in VEB.js;
5) Development of the VLF toolkit possibilities;
6) Expansion of the VLF toolkit;
7) Evaluation of other digital tools for broader digitalization;

8) Propositions of other toolkits for didactic purposes;

9) Builds of different workflows for the use of digital tools.

In conclusion, I would like to add that all initial requirements were met. This thesis increases the interest in the digital manufacturing tools and explains how to use it in the right way to get practical outputs.