The current thesis work was carried out in KONE Supply Operations of Finland (SOF) in Hyvinkää from August 2016 until May 2017. The aim of the thesis was to create parametric configurable 3D model for KONE heavy goods (GDS) elevator cabin. The main purpose of this was to industrialize GDS cabin engineering process for KONE SOF mechanical engineering team to reduce the design process time and cost.

Prerequisite for starting the thesis work was the thorough understanding of design and manufacturing process of the GDS cabin. In order to obtain that, the training was carried out in KONE Hyvinkää elevator factory where the actual GDS cabin assembling was participated. In addition, there were several visits to KONE's sub-suppliers manufacturing facilities to observe and to familiarize with the different outsourced GDS cabin parts manufacturing process. After the study period the top down design 3D parametric model for GDS cabin was modelled. The thesis related model was developed by using design software Creo 2.0 from company PTC (formerly Parametric Technology Corporation) [1714]. In the modelling process the metric measurement system SI was used.

Firstly, all the model component skeletons were designed, then the raw cabin model was constructed with linked skeletons. Under the raw cabin model the balustrade, side and front wall assemblies were created. Beforehand one master wall panel part was designed that was later integrated to other 146 panels. Finally, all the created panels were given KONE material numbers and assembled to wall assemblies. Thesis work included also all the manufacturing drawings that were created to all of the parts and assemblies.

The full parametric model solution that was set in the thesis task will be ready to be used in KONE by the end of June 2017 with all the components, assemblies and drawings. Beside the model there will be written engineering instruction for KONE SOF mechanical engineering unit. As the modelling process has taken more time than it was planned at the beginning of the process, the current GDS model is missing KONE standard balustrade, handrail, skirting and buffer rail assemblies. All these global accessories assemblies are available in KONE material library and will be added to the model.

To conclude, the thesis work has been successful – the fully working configurable parametric 3D model for GDS cabin has been developed. In addition, as an outcome of the thesis, additional suggestion were made for future GDS model improvements that will be taken under consideration. The next steps for the future development for this model would be to reduce overall raw cabin weight without losing construction strength. One of the possible options is to diminish wall panel thickness. Another possible development would be to test possible cabin height with over CH >= 4000 mm. For these developments, the process should continue with finite element analysis (FEA). Then, with the FEA results, the finite element method (FEM) analysis with prototype testing should be carried out.

These possible developments have not been include to current thesis due to the high volume of work and resources.

As a result of this thesis, KONE SOF GDS cabin engineering processes will be less time consuming, which saves time and money for both KONE and its customers. In addition, due to automated process, also the production quality will improve that will increase KONE's competitive advantage in the market.