Supply networks in the automotive industry are characterized by being both highly complicated and diversified. During the course of globalization, the production, assembly and distribution processes of the parts and products tend to become geographically more and more separated and detached from each other. Among these processes, the delivery and flow of Completely Knocked Down (CKD) is crucial.

At first glance, CKD can be seen as a type of global sourcing. However, CKD is more than a type of distribution to supply an original equipment manufacturer (OEM) with the parts it requires for production. The selection of CKD suppliers is in general strictly centralized, i.e. controlled by the mother company. In other words, an OEM can only purchase CKD parts from the suppliers who meet the requirements of the mother company. Hence, CKD becomes a strategy to balance group interests in globally „localized“ productions.

The main objective of this dissertation is to show how CKD processes can be integrated into general process simulation tools in the automotive industry. OTD–NET (Order to Delivery), a related data based simulation tool jointly developed by the Fraunhofer IML and the automotive industry in 1990s, has been selected to test the integration structure. OTD–NET is a set of dynamic simulation software which enables simulation of all processes from order to delivery.

The various CKD simulation topics presented in this dissertation can benefit international automotive manufacturers and facilitate decision makers to choose the most appropriate CKD strategy during different development stages. The methodology developed in this thesis demonstrates a high practical value for improving the CKD supply network in a global dynamic system.

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Analysis and Development of Tools for Improving the CKD Supply Network in the Automotive Industry

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