



Research School for Operations
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Complexity in High-tech Manufacturing

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Manufacturing high-tech systems is a complex process, since it involves many actors that need to work together to streamline the production process. Because of the size and complexity of the supply chain it is not possible to oversee the entire operation and to control it centrally. The process is orchestrated by information sharing and coordination of production planning between upstream and downstream teams. The main topic of the project is how bilateral interaction and information sharing between supply chain actors can lead to a coordinated production plan. This is difficult since actors make decisions based on limited information. Furthermore, high-tech supply chains face high volatility and limited production capacities. The primary coordinating function in the supply chain is production planning, because the production plan serves as forecasts to upstream teams. This project aims to model the production planning and forecasting problem faced by each actor in the high-tech supply chain and to develop mathematical optimization models to plan production, taking into account uncertain downstream forecasts, component availability and production capacity.