Preventive Quality Management for mobility services using data analytic methods

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Technological and social trends lead to a fundamental change in the automotive industry. Emerging trends like Carsharing show, that future customers will not be focussing the product »car« but the service »mobility«, which corresponds to the individual needs for comfort and budget. Providing the newest models and features is crucial to fulfil customers' expectations. Therefore, manufacturers have to enter alliances with partners especially in the consumer industry. While these partners are providing their own services and features to the customer, fleet operators are facing the object to ensure a smooth integration and operation of these services and features in the car. To exploit the potentials and to prevent customer dissatisfaction, fleet operators are facing the challenge of monitoring existing as well as new services to ensure their reliability even without traditional testing, integration, and control in the factory.

At TU Berlin, we developed a holistic hedging strategy for mobility services, using data analytics. As a first step, current and future features have to be identified from a customers' perspective and described in use cases. Key performance indicators (KPI) need to be developed for each use case. Therefore, we describe a method to detect relevant KPI, possibly causing customer dissatisfaction. To ensure the reliability of the identified KPI we discuss several methods to control data quality. Based on this data a trend and forecast model can be installed for a continuous monitoring of the KPI. We present a trend and forecast model that enables a preventive identification of upcoming abnormalities to quickly respond with correlated measures to prevent customer dissatisfaction. In the end, we discuss a decision model, which uses the provided data and enables automated reactions. In a first proof of concept this approach was successfully applied in the automotive industry.