

There are various possible performance indicators to evaluate the quality of job fulfillment of technical systems. Further improvement of the system behavior is enabled by the conclusion that the relevance of and the relationship between these performance dimensions depend on the current situation.

Mechatronic systems integrate electronic and mechanical systems supplemented by information processing capabilities. With actors, sensors and information processing mechatronic systems have the basic abilities to implement rational behavior. In this case, they may be called intelligent.

Planning as an important mean to realize rational and thus intelligent behavior is rarely used in the context of mechatronics. This thesis contains fundamental concepts to apply the planning methods from artificial intelligence to mechatronic systems. In focus of the work are in particular the integration of continuous processes into discrete planning languages, planning under uncertainty, and multiagent planning. The developed methods and concept are evaluated on application examples from the "Neue Bahntechnik Paderborn."