Systems and Control Seminar
Fujita and Hatanaka Group
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# Predictive control in the time of networking and communication – a personal perspective

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**Prof. Rolf Findeisen**
**Otto-von-Guericke-Universitat Magdeburg**

Abstract

Advances in communication have led to a rapid change of today's world. While this offers many possibilities, there are also several challenges which need to be tackled. Can one guarantee safety and performance of network control systems subject to communication errors, delays, and failures of sensors and actuators? Is it possible to design control systems with plug and play capacity? How can one guarantee privacy of the controlled subsystems while exchanging information? We will outline that predictive control is a well suited control approach to tackle some of these challenges focusing on three areas: the efficient and easy implementation of predictive control on the omnipresent embedded computation hardware, the control under resource limitations and network effects, and the control on the network level, outlining a contract based control approach which allows a structured, yet flexible hierarchical design. Specifically, we outline some solutions related to our work, that provide possible solutions to the considered challenges.