SCiO Systems and Complexity in Organisation

SysPrac25

Organisational control through cybernetic key performance indicator systems in medium-sized companies – a doctoral project

Carola Ritzinger-Roll

Session type: Talk

CMR 1
Day one • 14.10 – 14.35

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Organisational control through cybernetic key performance indicator systems in medium-sized companies

- a doctoral project

03. September 2025

Carola Ritzinger-Roll

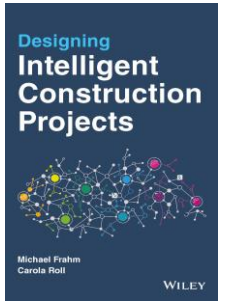
Main focus of interest & external promotion

- Main Occupation: Strategy and Sustainability Manager / Quality Manager / Organisational Developer / internal auditor
- Main focus of interest: Viable system model, quality management, lean management
- Since winter term 2024: part-time doctoral programme
- Doctoral supervisor:

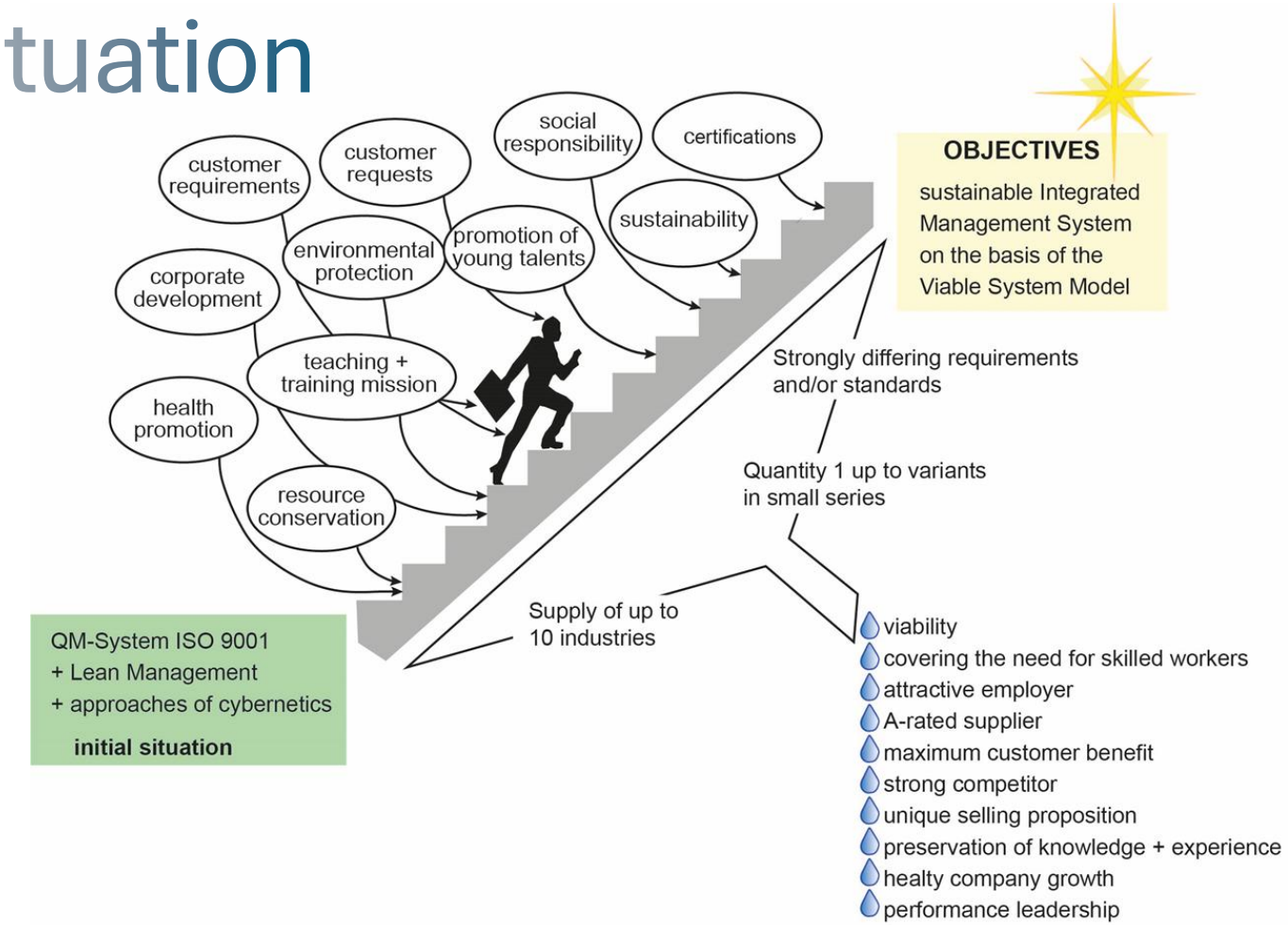
Prof. Dr. Andreas Größler

University of Stuttgart
Institute of Business Administration

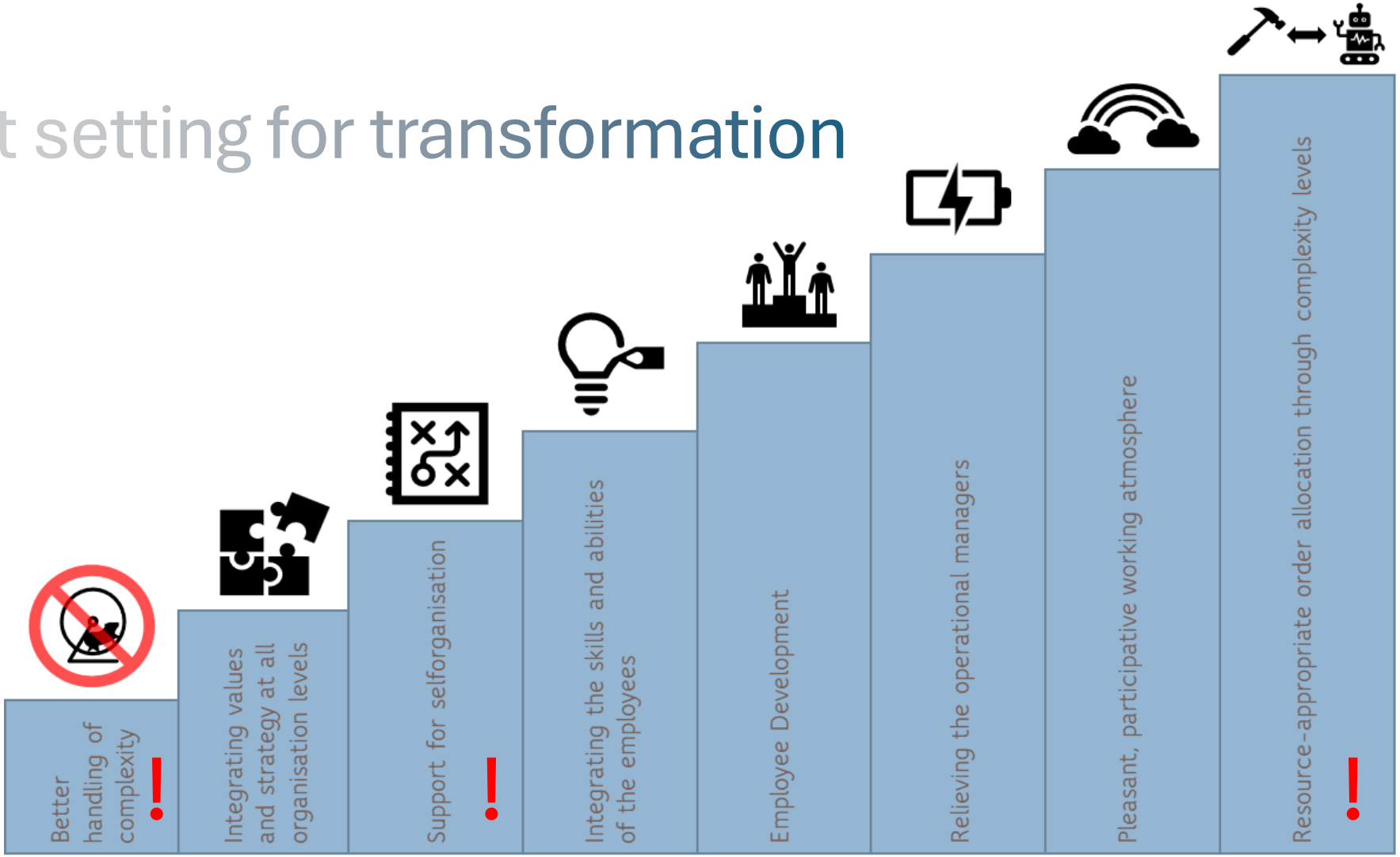
Department X: Production management



Initial situation



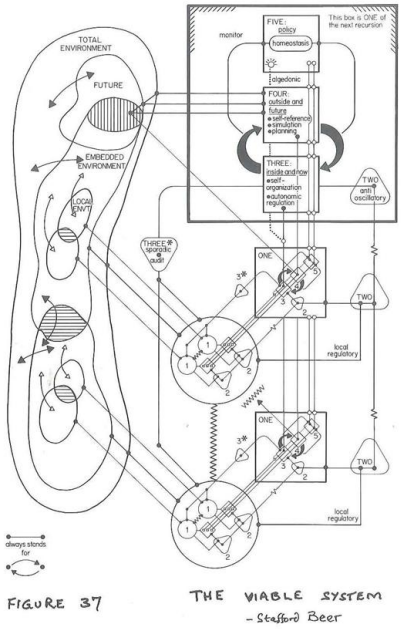
Target setting for transformation



Topic of the dissertation

- Title: **Organisational control using cybernetic key performance indicator systems**

- Subtitle:
  Effects of organisational transformation to the Viable System Model (VSM)
  on work and process performance in a medium-sized manufacturing company



„The Viable System“ acc. to Stafford Beer
Source: Beer, 1985, S. 136

Research questions

- What impact does the transformation of the organisational structure to the Viable System Model have on **work and process performance** in medium-sized manufacturing companies?
- Subquestions:
  - In which **areas (work performance, product quality, process quality)** can significant **changes** be achieved through the transformation to cybernetic organisational structures?
  - What proportion of the changes relate **explicitly to optimised handling** of the **complexity** flowing into the company?
  - Which **system elements** or **functions** have led to this optimised **handling of complexity**?
  - How can the results achieved **be adapted** by other companies?

Objectives

- Objectives
  - To **demonstrate** the general **functionality** and **practical applicability** of Stafford Beer's Viable System Model (VSM) in a **corporate context**
  - To **quantify** the effects on organisational control that can be achieved by applying the model in practice
  - If the implemented cybernetic organisational structure proves to be beneficial for work and process performance: potential adaptation by (medium-sized) manufacturing companies
- Generalisation of findings

Relevance of the topic

- **Control** of increasing **complexity** in the day-to-day business of manufacturing companies using management cybernetics through recursion and an evolutionary approaches.
- **Maintaining** corporate **controllability** despite high complexity, dynamics and limited predictability
- Targeted **cybernetic** organisational **control** as the best possible response to current business challenges using **key performance indicator systems**
- Optimisation of **work and process performance** through the transformation of traditional organisational structures
- Achieving more **sustainable strategy integration** through the application of VSM

Preliminary outline

- Problem
- Relevance of work

Introduction

- State of research:

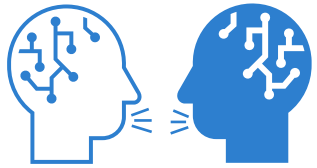
Structural/process organisation,
organisational structures,
types of manufacturing organisations,
viable system model,
complexity in processes,
service provision processes,
work/process performance,
performance evaluation using data analysis

Theoretical Section

- Literature analysis
- Exploratory preliminary study (qualitative expert interviews)
- Data analysis of the company's own key performance indicator system
- Qualitative investigation: semi-structured interviews(panel) in the company under investigation
- Qualitative investigation: semi-structured interviews in external companies (control group)

Empirical Section

- Evaluation of results
- Critical analysis
- Conclusion
- Verification/falsification



Critical discussion

- Results achieved
- Generalisation potential
- Optimisation measures
- Further research needed

Summary

Systematic Literature Research – relevant terms

- Viable System Model, VSM, organisational structure, process organisation, organisational models, organisational forms, organisational structure, organisational control, organisational transformation, communication in organisations,

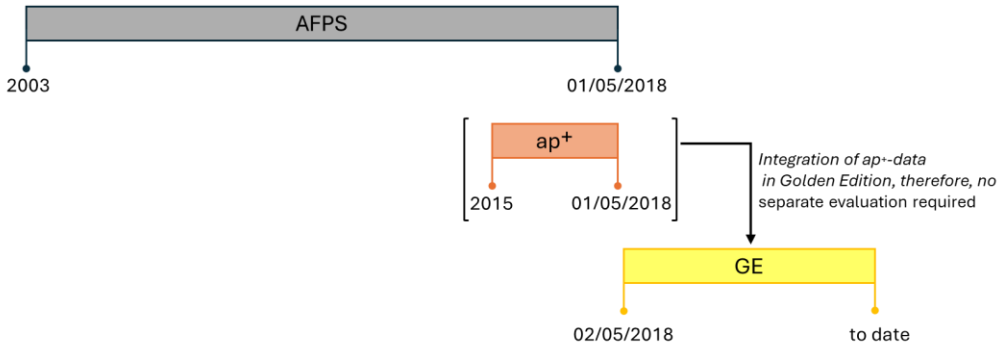
  work performance, process performance, complexity, complexity management, variety, cybernetic key figures, cybernetic key figure system, medium-sized companies/manufacturing companies

- Derivation of preliminary considerations for empirical research

Empirical evidence

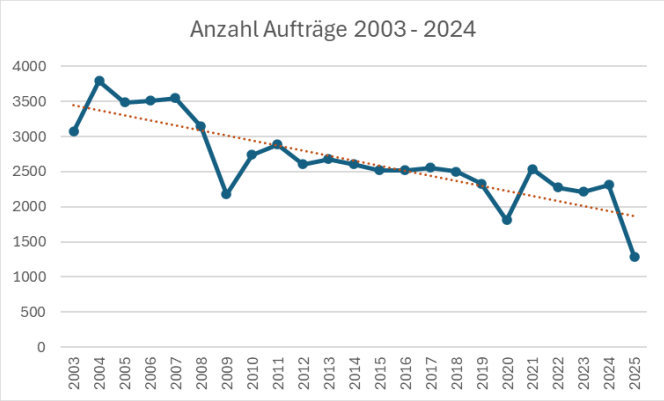
- Evaluation of historical company data to determine development in terms of complexity

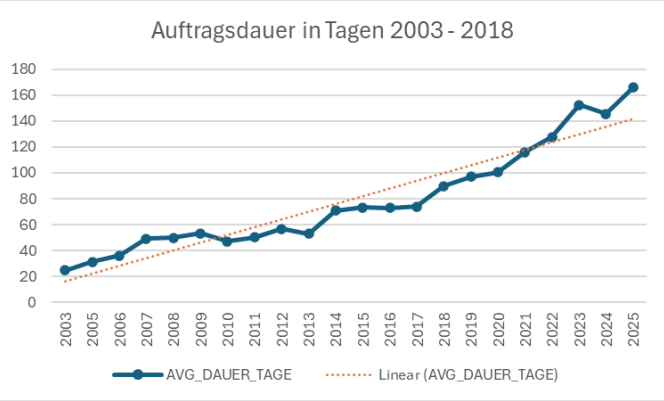
- Number of orders per year
- Start and end dates of orders (duration)
- Development of commission numbers
- Hull number xx35... -> conclusion on customer development
- xx../123 -> how many orders per year are assigned to which commissions (status of the customer or the assigned industry)
- Number of resources per order
- Number of parts list levels
- Number of external checks
- Number of revisions in absolute terms per year
- Number of revisions as a proportion of all orders per year
- Number of revisions per project (reference to main assembly)
- Number of logs added (e.g. paint log, NDT)
- How many/which industries are created in the system?
- How many orders are assigned to which industry per year?
- How many text-based notes are there in total per year?
- How many text-based notes are there per year per industry?

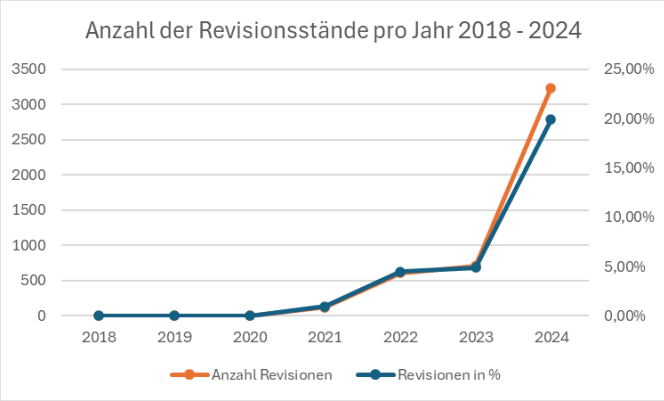


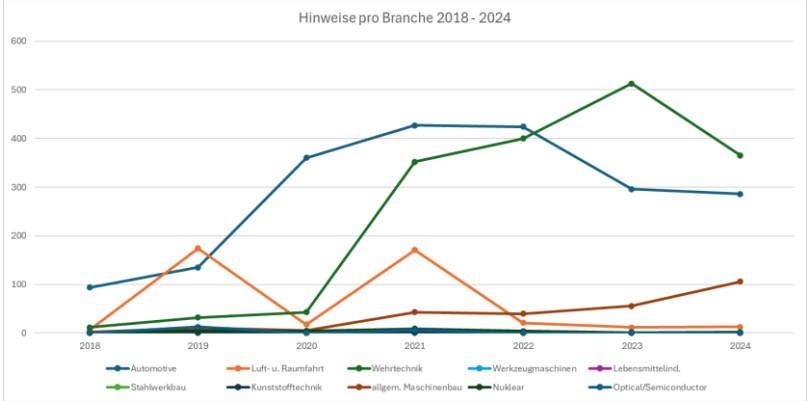
Chronological overview of the ERP systems used in the company and database for data analysis

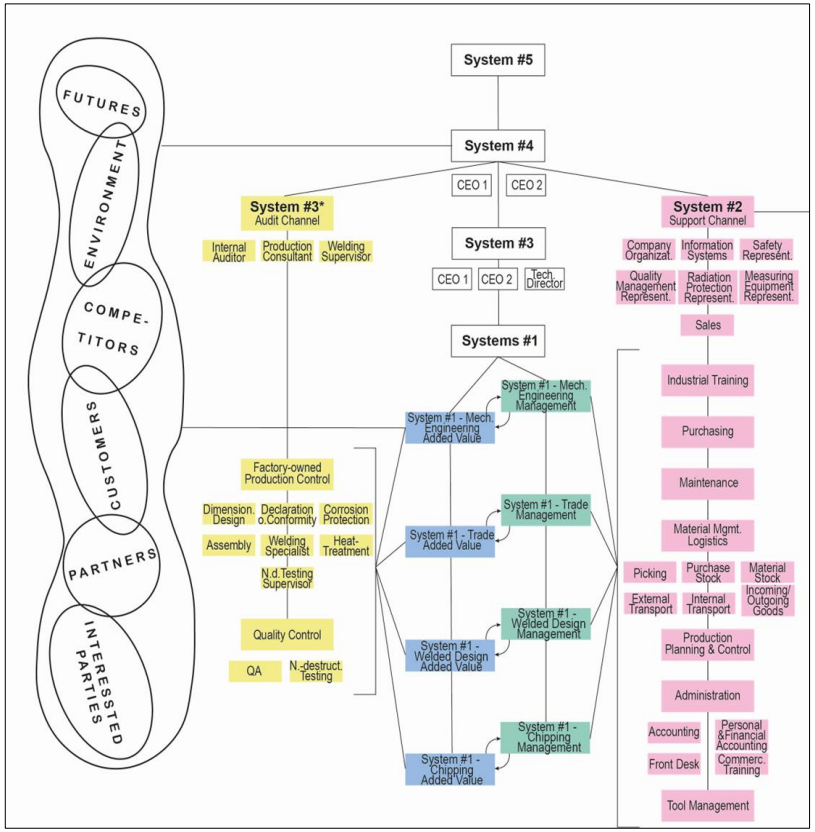
Empirical evidence

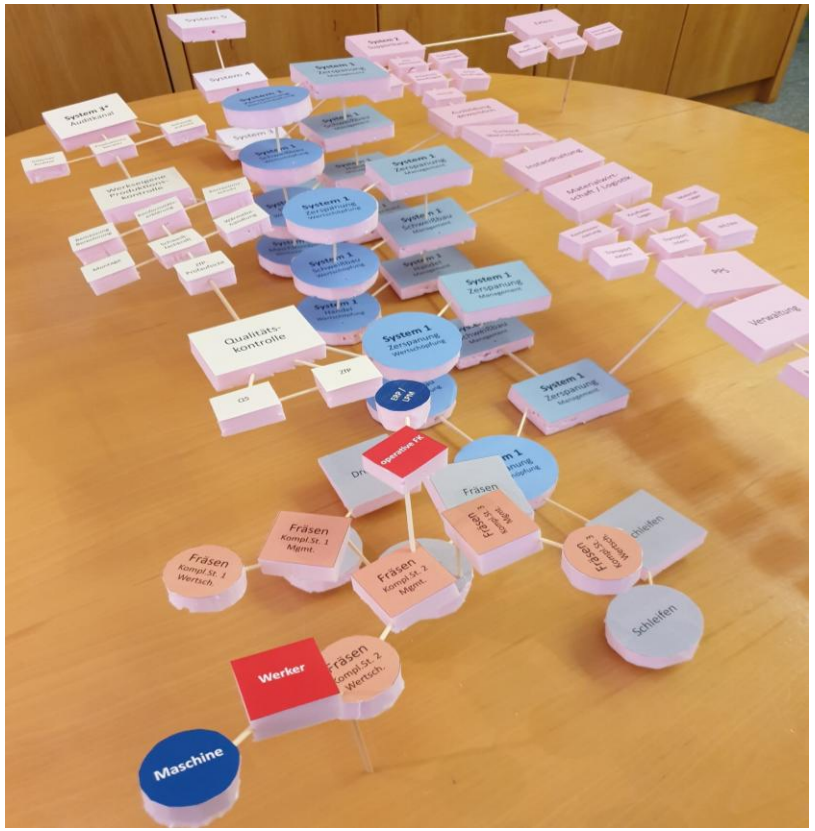


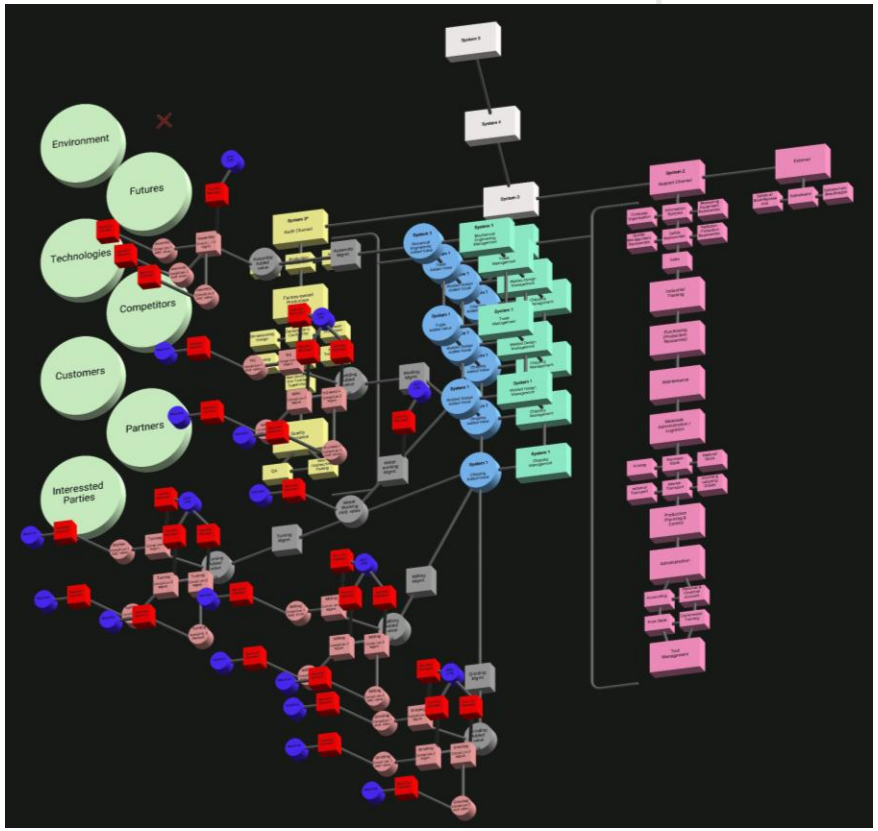












THANK YOU VERY MUCH for your attention!

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