Digital Tools for Strategic Planning (DOORSTEP)

Advanced Systems Engineering
Prof. Dr.-Ing. Roman Dumitrescu
Research Group Advanced Systems Engineering

What Advanced Systems are

**Autonomous Systems:**
Autonomous machines and systems solve even complex tasks independently without human intervention.

**Dynamically-connected systems:**
The increasing degree of networking machines and facilities results in complex system networks.

**Market offerings and business models are changing in the context of digitalization due to an increasing share of data.**

**Product-Service-Systems:**

**Socio-technical Interaction:**
Multimodal and intuitive usability despite increasing complexity of technical systems.
Research Group Advanced Systems Engineering
What our Research Group works on

Strategy
How can ADVANCED SYSTEMS be strategically planned?

How will the environment for ADVANCED SYSTEMS develop in the future?

Which methods and tools can support the development of ADVANCED SYSTEMS?

How do companies have to position themselves in order to tap the potentials of ADVANCED SYSTEMS?

Foresight

Autonomous

Service-oriented

Socio-technical

Connected

Development Methodologies

 organisation

How can ADVANCED SYSTEMS be strategically planned?

How will the environment for ADVANCED SYSTEMS develop in the future?

Which methods and tools can support the development of ADVANCED SYSTEMS?

How do companies have to position themselves in order to tap the potentials of ADVANCED SYSTEMS?
Engineering Process of Market Offerings: the 4-Cycle-Model

1. **Foresight**
   - Success potentials and business options of the future

2. **Product Discovering**
   - Product and Service Ideas
   - Requirements

3. **Conceptual Design of the Product**
   - Strategy conforming, holistic concept of the product system

4. **Conceptual Design of the Service**
   - Strategy conforming, holistic concept of the service system

5. **Production System Development**

6. **Service Development**

7. **Product Development**

8. **Business Planning**
   - Business strategy
   - Business model
   - Product strategy
   - Business plan

9. **Strategic Product Planning**

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**Project Group 'Digital Tools for Strategic Planning'** | **Prof. Dr.-Ing. Roman Dumitrescu**
Research Project DizRuPt
The idea behind the project

- **Digitalization** is one of the key trends for the manufacturing industry.

- Companies are increasingly offering their customers **digitized products**.

- Not only the customers but also the suppliers can benefit from the **data generated during production**.

- Data on product usage can be used in **product planning**.

- **Suitable data** must be recorded and made available for this purpose.
## Research Project DizRuPt

### The goal of the project

- **Instruments** for data-based retrofit and generation planning
- Enable companies to utilize **usage data** from their products in **strategic product planning**
- **Transfer of results** beyond the funding period

## Objectives

1. Identification of **product hypotheses**
2. Improvement of methods for the **analysis of usage data as well as development data**
3. Identification of new functions and features in the **strategical planning of product generations and retrofittings**
4. **Organizational implementation** of data-based retrofit and generation planning
5. **Consistent tool support** for computer-aided application of the methodology
Goals and Requirements

- Within DizRuPt, the project team applies methods of strategic product planning.
- As reference, we use the above mentioned 4-Cycle-Model.
- The goal is to identify and implement successful digital tools to support the process of product planning.
- Depending on the degree of maturity of the developed tools, we will also draw up a business plan.

Your profile
- Experience in working in project teams
- Experience in programming
- Proficient knowledge of Systems Engineering
- Very good academic performance
- Knowledge of the German language is a bonus

"We work with real data provided by real companies!"
Design of our Project Group

- Mixed Project Group for CS as well as CE Students
- Kick-off: October 8, 2019 at 2 p.m.
  Heinz Nixdorf Institute, Room F0.225

- Send your application documents (cover letter, CV, grade table, references) to Maurice.Meyer@hni.uni-paderborn.de & Melina.Massmann@hni.uni-paderborn.de
- Deadline: September 15, 2019 (end of “Assignments & Preferences“ Phase)
- Further information about the application process: https://cs.uni-paderborn.de/en/studies/study-elements/project-groups/