Design Thinking for Artificial Intelligence

Prof. Dr. Benjamin van Giffen, University of St.Gallen
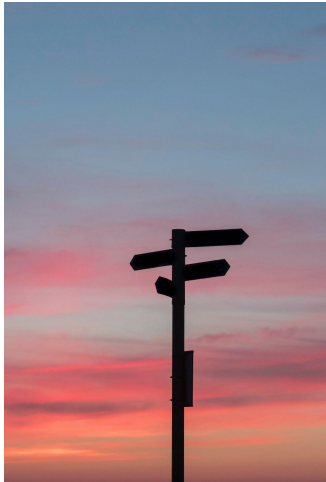
Management of AI
Research Lab

Design Thinking for AI is a focus area of the Research Lab for the Management of Artificial Intelligence at the University of St.Gallen. Visit our website: ***www.ai.iwi.unisg.ch***

Artificial Intelligence generates exciting value potentials for organizations.
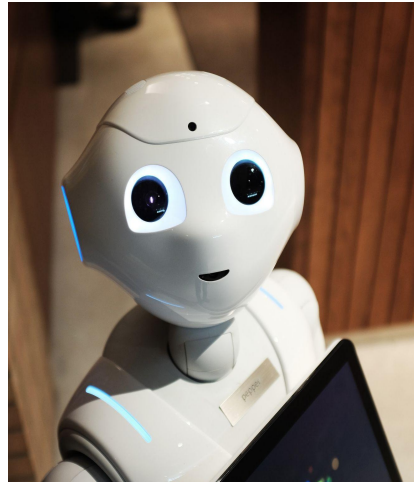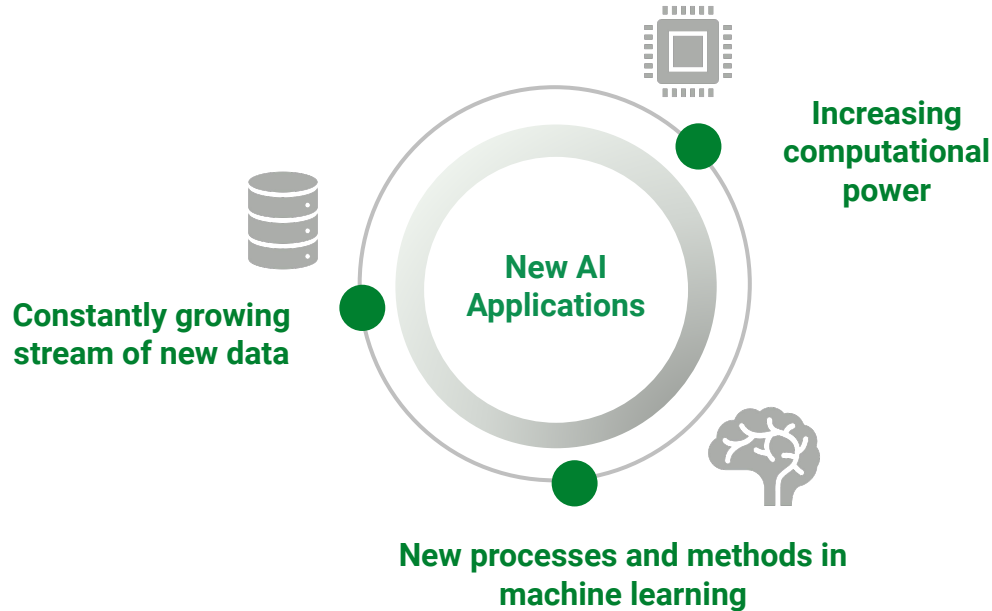
Decision support
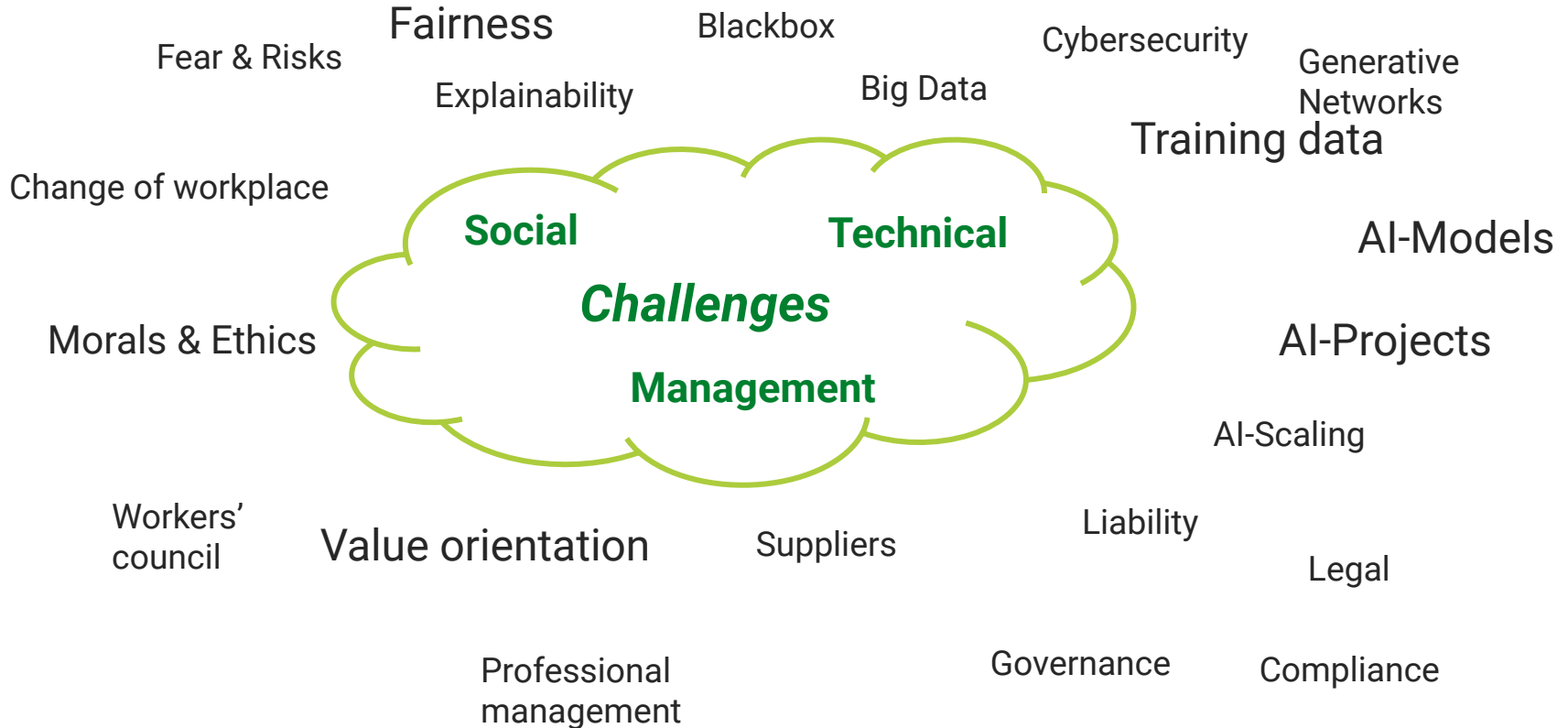
Automation

Customer & Employee Engagement

New Product & Service Offerings

AI innovations are driven by three important trends: data, computing power and new methods, and algorithms.

Increasing computational power

Constantly growing stream of new data

New AI Applications

New processes and methods in machine learning

AI generates a new social, technical and managerial challenges.

Fairness

Fear & Risks

Blackbox

Cybersecurity

Generative Networks

Explainability

Big Data

Training data

Change of workplace

Social

Technical

AI-Models

Challenges

Morals & Ethics

AI-Projects

Management

AI-Scaling

Workers' council

Value orientation

Suppliers

Liability

Legal

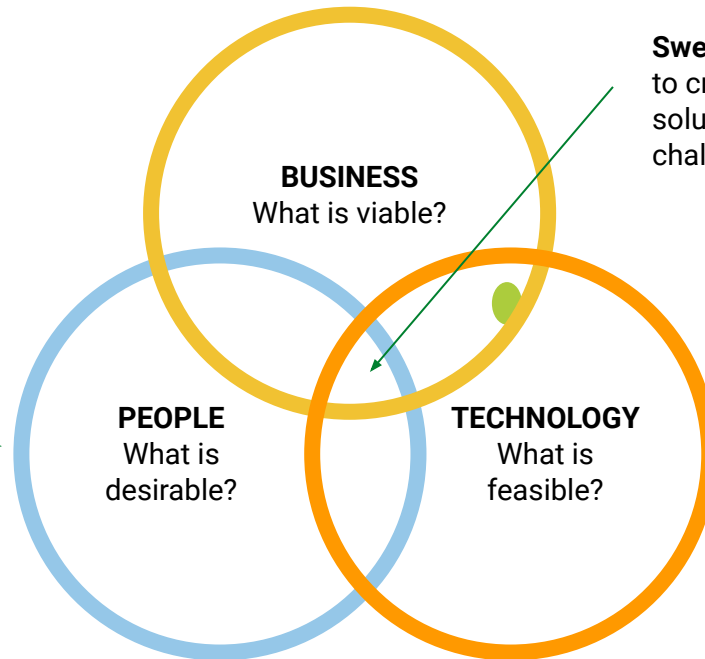Professional management

Governance

Compliance

Why Design Thinking
for Artificial Intelligence?

AI challenges us on several levels and this is where a human-centered approach helps.

The strong business expertise of the University of St.Gallen helps in evaluating the viability of ideas

BUSINESS
What is viable?

PEOPLE
What is desirable?

TECHNOLOGY
What is feasible?

Sweetspot: Design Thinking helps to create relevant and innovative solutions to your AI-driven challenge

Design Thinking is a methodology that starts by exploring human needs, followed by rapid prototyping, iterative improvement cycles, and interdisciplinary team work to design innovative products, processes, and services.
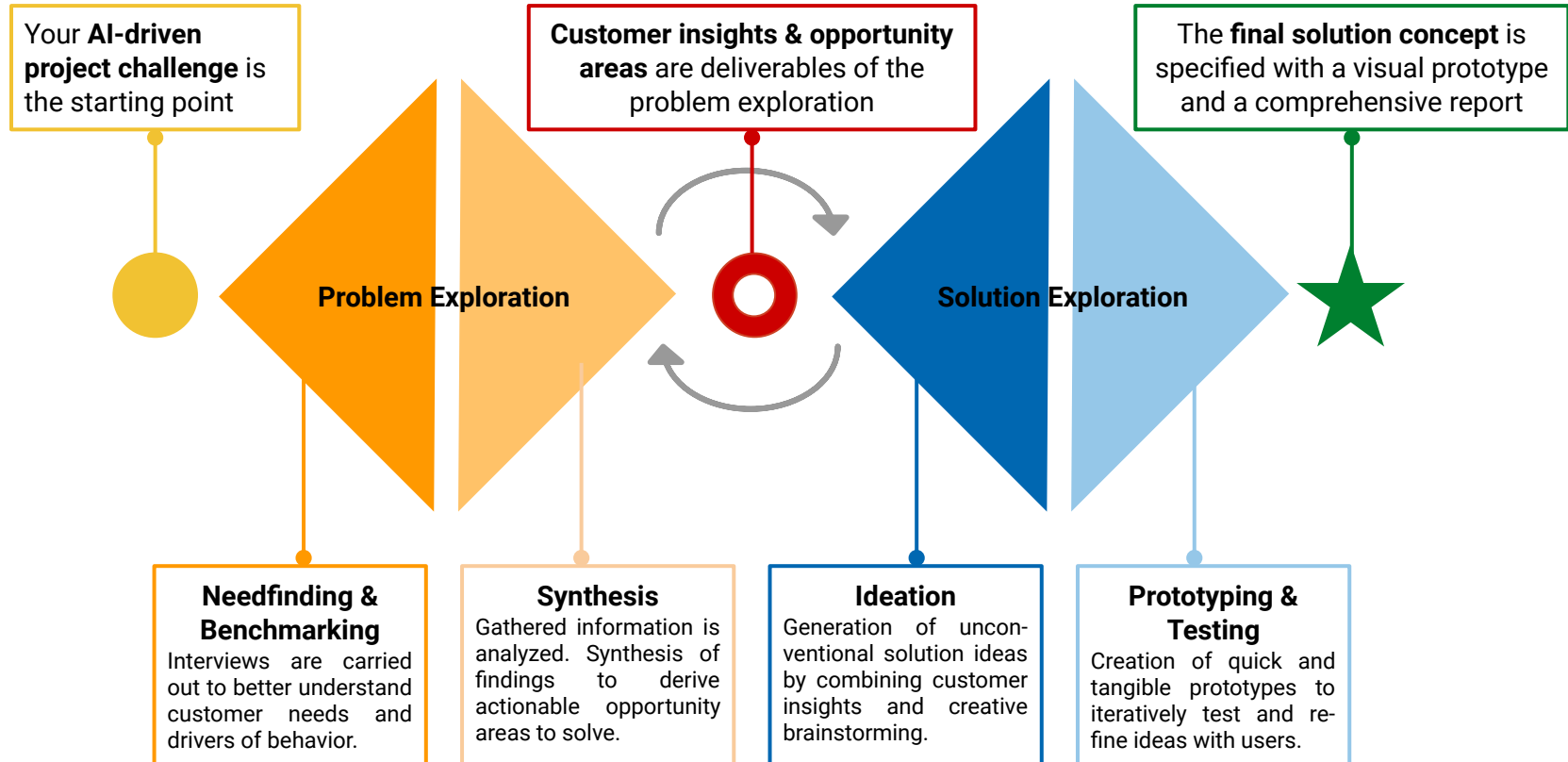
AI is often used for a variety of algorithmic and statistical methods to make (reasonably) intelligent predictions.

AI offers state-of-the-art technology

The solution is derived through the iterative Design Thinking process

DT4AI

Your **AI-driven project challenge** is the starting point

Customer insights & opportunity areas are deliverables of the problem exploration

The **final solution concept** is specified with a visual prototype and a comprehensive report

Problem Exploration

Solution Exploration

Needfinding & Benchmarking
Interviews are carried out to better understand customer needs and drivers of behavior.

Synthesis
Gathered information is analyzed. Synthesis of findings to derive actionable opportunity areas to solve.

Ideation
Generation of unconventional solution ideas by combining customer insights and creative brainstorming.

Prototyping & Testing
Creation of quick and tangible prototypes to iteratively test and refine ideas with users.

Course setup and didactical concept

**Learning objectives**
Students will...

... gain knowledge about **Design Thinking** AND **Artificial Intelligence** (AI)

... learn **how to apply Design Thinking** methods for an **AI-driven business problem** provided by a corporate partner

... **work closely** together with a r**enowned company**

... understand the basics of user research by **applying interview and observation techniques**

... understand the central **role of Design Thinking** for structured prototype development by **conducting rapid prototyping and early user testing**

The course setup of "Design Thinking for AI" at a glance
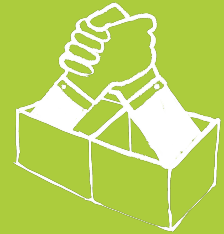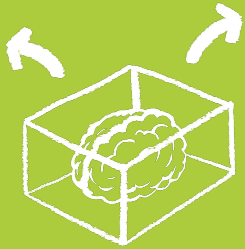
APPROACH

Design Thinking for AI combines human-centered methodology and state of the art technology to create relevant and innovative solutions

STRUCTURE

1 AI-driven challenge

6 students to tackle a design challenge in our

3 months course in

virtual & physical learning spaces to boost creativity and teamwork

OUTCOME

1 solution concept to solve the design challenge

Customer insights to deepen the understanding of the problem

Tested prototypes to sharpen the solution vision

PEOPLE

Students with open minds and high motivation

Lecturers & researchers with industry and research experience

Industry experts with AI experience and domain knowledge

✖ Based on Covid-19 developments the course can also operate purely on virtual interaction

We have a couple of principles throughout the course

Ownership   You **own and manage** your real-world project

Budget   You have a budget for doing **research, prototyping, and travel**

Structure   You can rely on a **professional support system** on your team journey

Fair grading   We reward **teamwork, dedication, passion** and **quality**

Teamwork can take place in a digital and/or non-remote setup

Design Thinking Loft,
1st floor (left)
University of St.Gallen
Blumenbergplatz 9
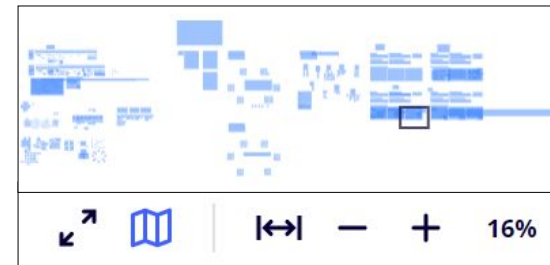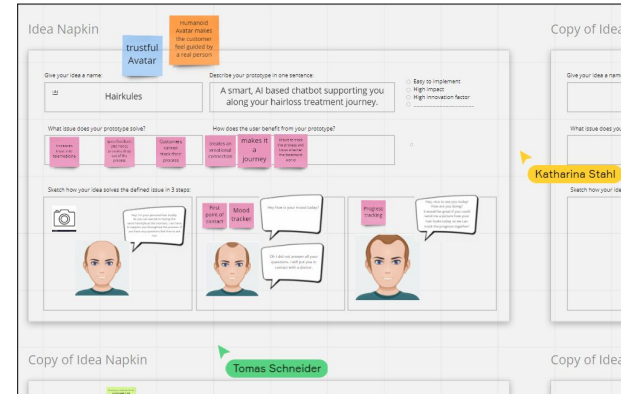9000 St.Gallen
Switzerland

Teaching Innovation

How can we effectively move from a highly interactive, physical to a digital & hybrid setup?

DT4AI

Physical foam/whiteboards

Virtual, endless whiteboards (Tool: Miro)

How can we effectively move from a highly interactive, physical to a digital & hybrid setup?

Goals

1. Combining **physical and digital** collaboration on the whiteboard.

2. **Scalability** of the course **through virtualization** of spatial work space (whiteboards).

3. Ensuring **real-time social** interactions in group work.

Measure

1. With this in mind, we decided to **implement a virtual whiteboard** (Miro) where **students collaborate virtually in real time**.

2. Different measures and games to **provoke low-threshold switches** between digital and virtual channels.

Result / Effect

Short-term

1. Students learn **new tools** and **get used** to digital/hybrid work setup.

2. Instructors can **pre-structure and prepare** (scaled) group work (e.g. use of templates).

3. Support of **important group dynamic** processes: Creativity, Voting, Visualization, Discussions, Shared decision making.

Long-term

4. Preparation for **scaling the course** (e.g. Computer Science students).

Lessons learned

1. Despite successful use of the hybrid model, there is a **great need for social interaction** in the real world.

2. Our students very much **appreciated the systematic introduction** of the virtual tool.

3. The **step-by-step approach to further features** (implementing group decision processes digitally, evaluating ideas after brainstorming) was **very important for acceptance** (no overload) and should be maintained.

4. **Results are available throughout the entire semester** and can be retracted at any time.

"Tag der Lehre" is a great format to just say thank you Jaqueline and your team at the Teaching Innovation Lab!

DT4AI

Get in contact with us!

DT4AI

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