

**SID 2025**

Sibiu Innovation Days

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# Shaping the Future with Generative AI: From Ideas to Value Creation



Lasse Berntzen



# About myself

- Professor, Information Systems
- Department of Business, Marketing and Law, USN School of Business
- Teaching AI management, Business Analytics
- Research on Energy Systems, Sustainability, AI
- Affiliated with **Center for Security, Crisis Management and Emergency Preparedness**



ChatGPT

NOV 30  
2022

# Generative AI – The big race

ChatGPT

Google Gemini

Microsoft Copilot

Grok

Perplexity

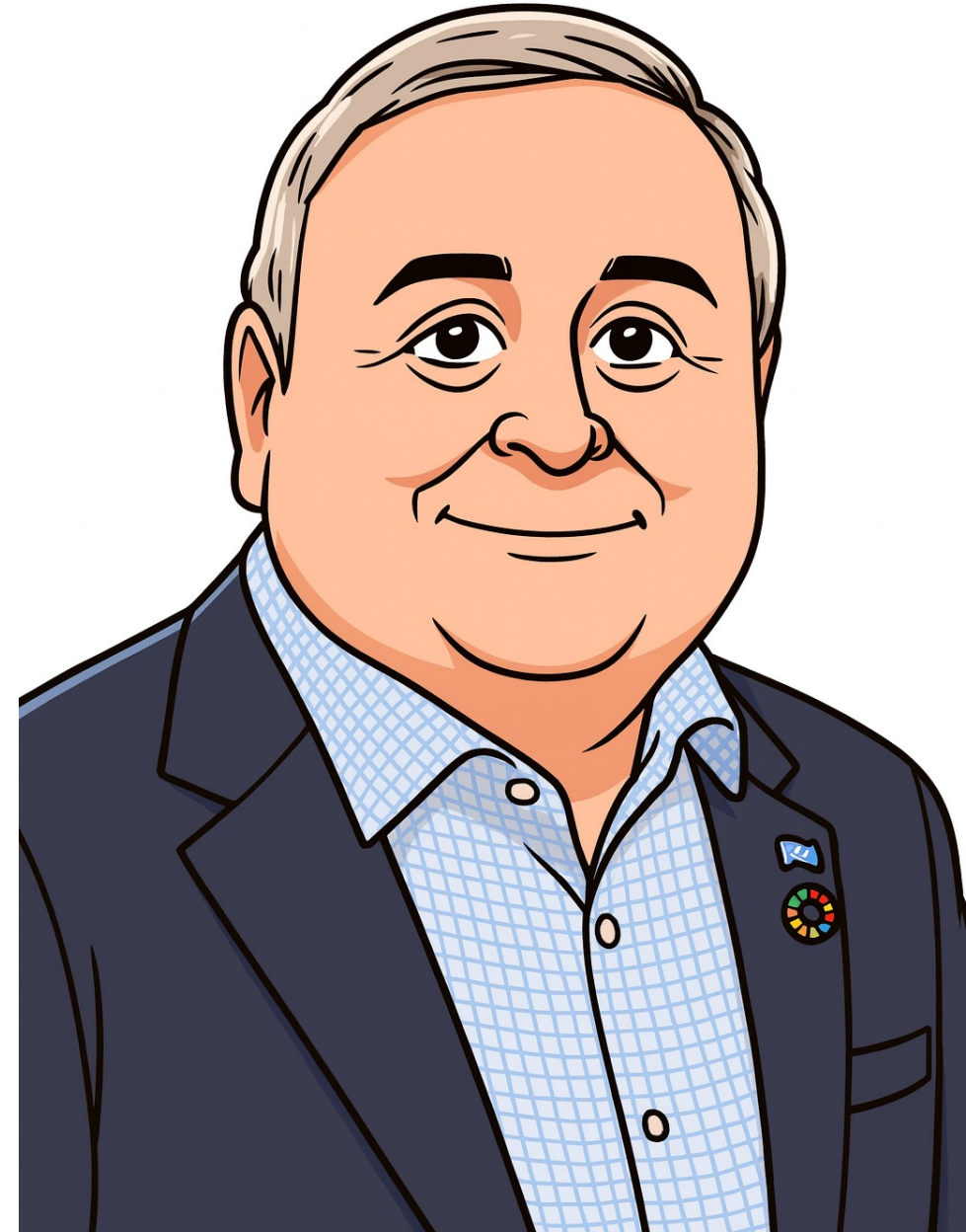
DeepSeek

Data  
Computing power



# What is Generative AI?

- Branch of artificial intelligence focused on creating new content
- Learns patterns from large datasets and produces outputs that resemble them
- Examples: text, images, music, video, code





# How Does Generative AI Work?

- Based on machine learning models, especially deep neural networks
  - Common approaches:
    - Transformers (e.g., GPT for text)
    - Diffusion models (e.g., DALL·E)
    - GANs (Generative Adversarial Networks)
  - **Generates by predicting the most likely next element (word, pixel, note, etc.)**
-

# Generative Adversarial Networks

Two neural networks compete:

- A *generator* creates fake data (e.g., images)
- A discriminator tries to distinguish between real and fake data

Adversarial training:

- Both networks improve through competition, the generator gets better at faking, and the discriminator gets better at detecting.

The goal is to make generated data so realistic that the discriminator can no longer tell it apart from real data

# Opportunities and Challenges

## **Opportunities**

- Efficiency & productivity
- Personalization at scale
- New creative possibilities

## **Challenges**

- Bias & misinformation
- Intellectual property concerns
- Trust, transparency, and regulation



# Generative AI

- So how can Generative AI be used to solve real-world problems?
- Two projects:
  - Automating decision making in a Norwegian municipality
  - Creating emergency planning scenarios with ChatGPT



# Part 1: City of Sandefjord

**Using Artificial Intelligence for  
decision making for care services  
provision**

# City of Sandefjord



- Population: 65 574 (2023)
- Located 120 km south of Oslo
- Yearly number of decisions regarding care services: 70.000



# Automating decision making in a Norwegian municipality



SANDEFJORD  
KOMMUNE

HØYSKOLEN GOKSTAD



Universitetet  
i Sørøst-Norge

# Introduction

Municipalities handle thousands of care service decisions annually.

The city of Sandefjord makes around 70.000 decisions regarding care

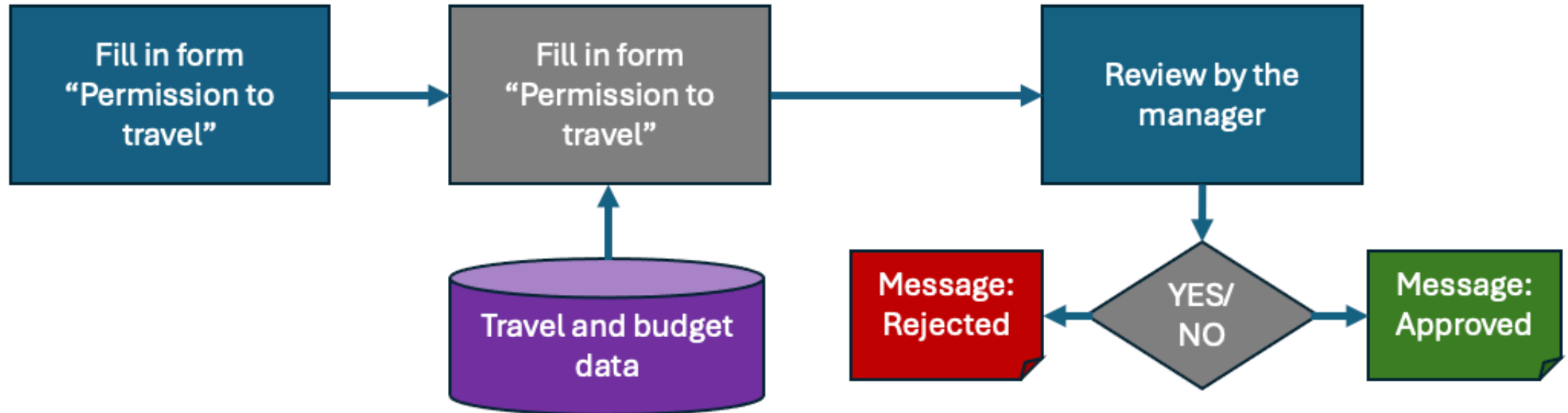
Focus on: RPA for routine tasks, AI-driven tools, Ethical considerations.

# Division of Responsibilities



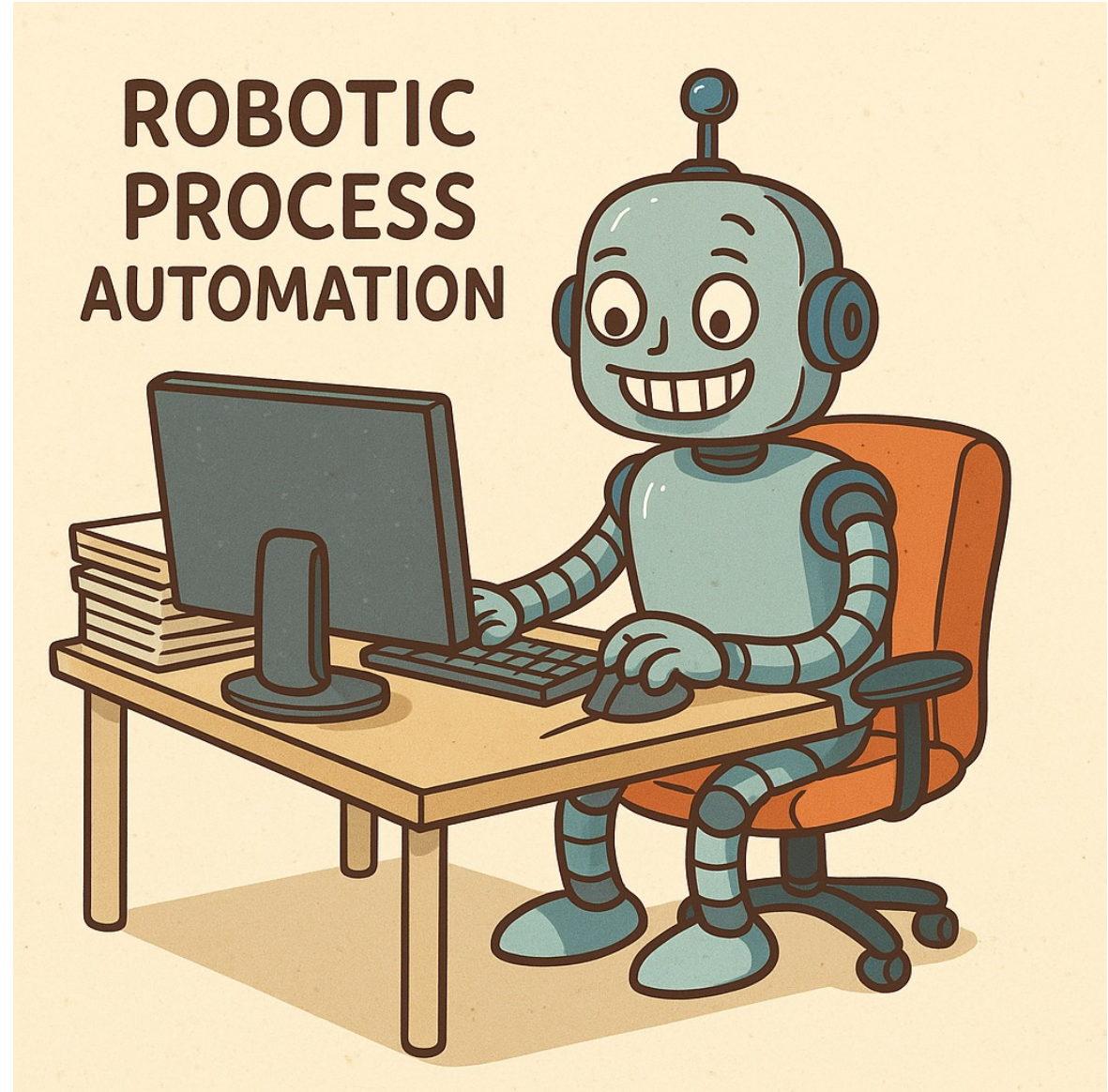


# Process Automation

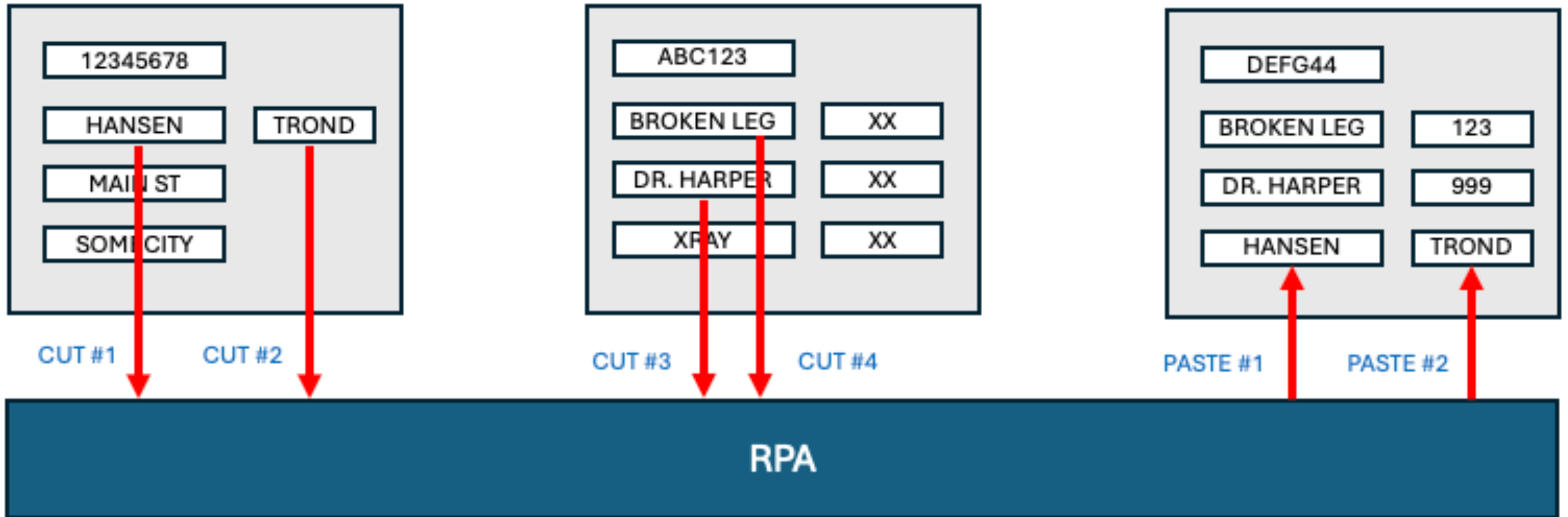


# Robotic Process Automation

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# Robotic Process Automation



# Intelligent process automation

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Many companies are using robotic process automation (RPA), which automates back-office structured workflows and makes decisions with rules.

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But increasing numbers of vendors and their customers are combining RPA with machine learning for better decision-making; this is sometimes called “intelligent process automation.”

# Methodology

Review of existing  
procedures and guidelines

Observation

Interviews with employees

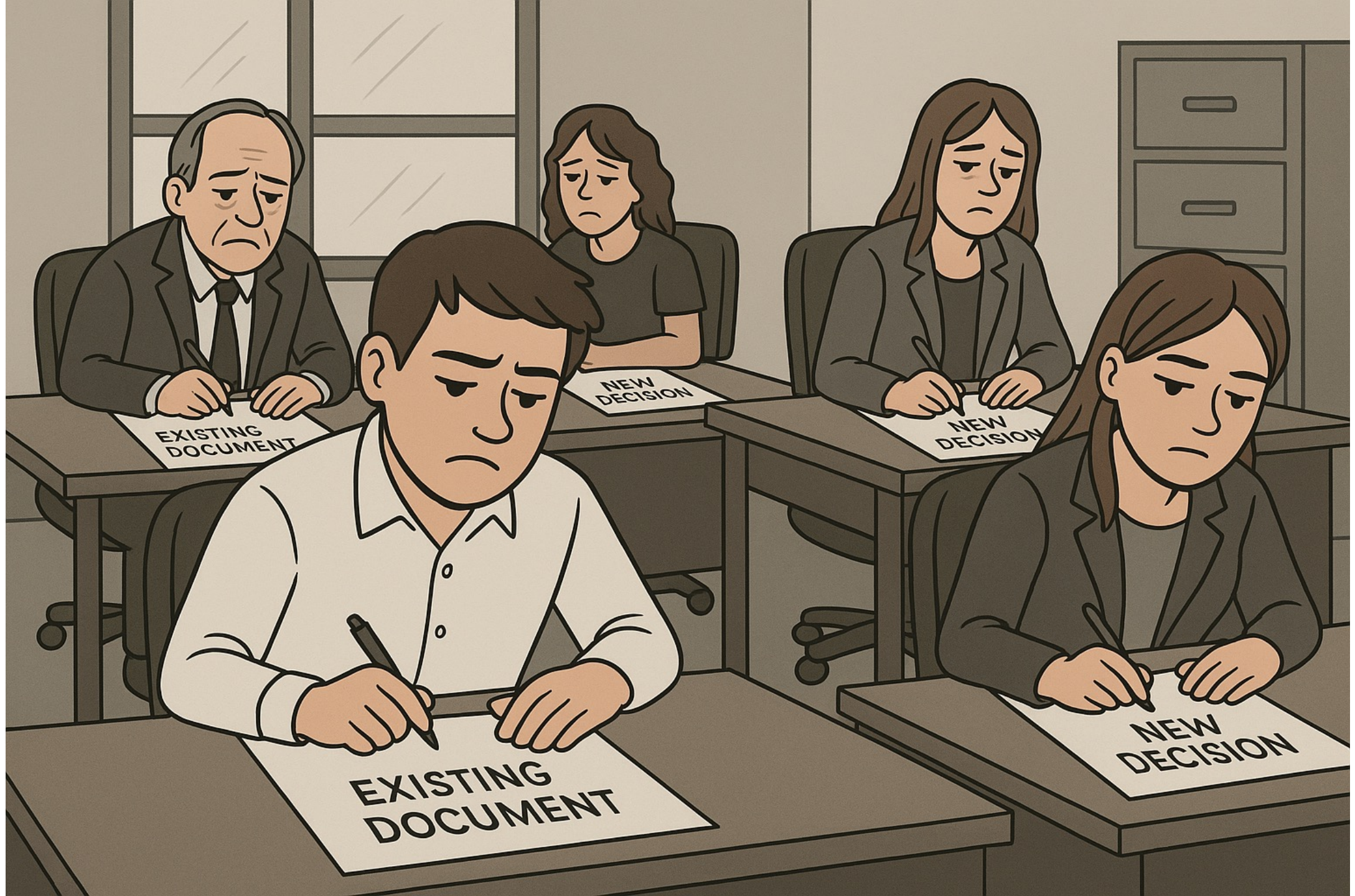


A dark, textured sphere, possibly a stone or a piece of wood, sits on a dark, textured surface. A sharp, dark shadow is cast to the right of the sphere. The background is a uniform dark gray with a fine, grainy texture.

# Some Findings

Interviews with Employees





# Mapping of current processes

Steps in today's decision-making

Repetitive tasks

Routine work

Time-consuming processes

Low-hanging fruits



# Automation Potential

*“(...) many clicks, searching address lists to find the correct zone responsible for carrying out the service, significant lag in the journal system; the system freezes, and it can take up to 30 seconds between each click.”*

*“(...) The dream would have been if AI could automatically enter all information from the application or assessment, and sort these. That would save us a lot of time. (...)”*



# Attitudes Towards AI

*“I have no experience with artificial intelligence. I am positive about trying it out in my job, hoping, among other things, that it can ease my workday in terms of writing the decision letters. The concern may be whether my job will become redundant over time.”*

*“Initially, a positive view. It can increase efficiency and allocate resources where it is more appropriate. But concerned that AI will be used instead of staff in contact with patients. They need warm hands.”*





# Perceived Risks and Ethical Considerations

- *“(...) As well as to safeguard human dignity. Automated systems must respect the patients'/users' dignity and autonomy and ensure that decisions are made with regard to individual needs and preferences.”*
-



# The Role of Professional Discretion

- *“Professional discretion is absolutely necessary in all casework. Justifications must always be based on individual assessments. There are also no established inclusion or exclusion criteria for receiving a service. Each case must always be assessed individually, and we must, in each case, determine whether a service is necessary and justifiable.”*
-



# Perceived Impact of Automation

*“Automation can have a significant impact on my workday and the quality of services. Advantages include faster case processing, increased efficiency, and better resource utilization.”*

*“There must be personnel who manually override the system.”*



# Successful Adoption Prerequisites

- *“Thorough training, involving the employees in the implementation process (...) and promoting a positive attitude towards technology.”*
-



# Not All Can Be Automated

- *“I believe it is still important to meet the user and assess their need for assistance. I do not think this should be done by a machine. This is because we work with humans, many of whom are in vulnerable positions, and I believe it is best to maintain human contact.”*
-

# Practical Implications

- Design automation around human judgment: RPA and AI should support, not replace, professional discretion.
- Involve end users early: Successful implementation requires that employees be involved in system design, testing, and training.
- Prioritize socio-technical fit: Systems must not only be efficient, but also socially acceptable, ethically grounded, and usable within the context of human routines and expectations.



# Introducing RPA for simple tasks

## Robotic Process Automation

Clear rules

Collect necessary data and ensure correct and consistent information

Draft decisions based on rules

Deterministic

# Development of AI-based decision- making tools

Analysis and predictions

Using lessons learned from  
previous decisions

Experience-based

Present alternatives

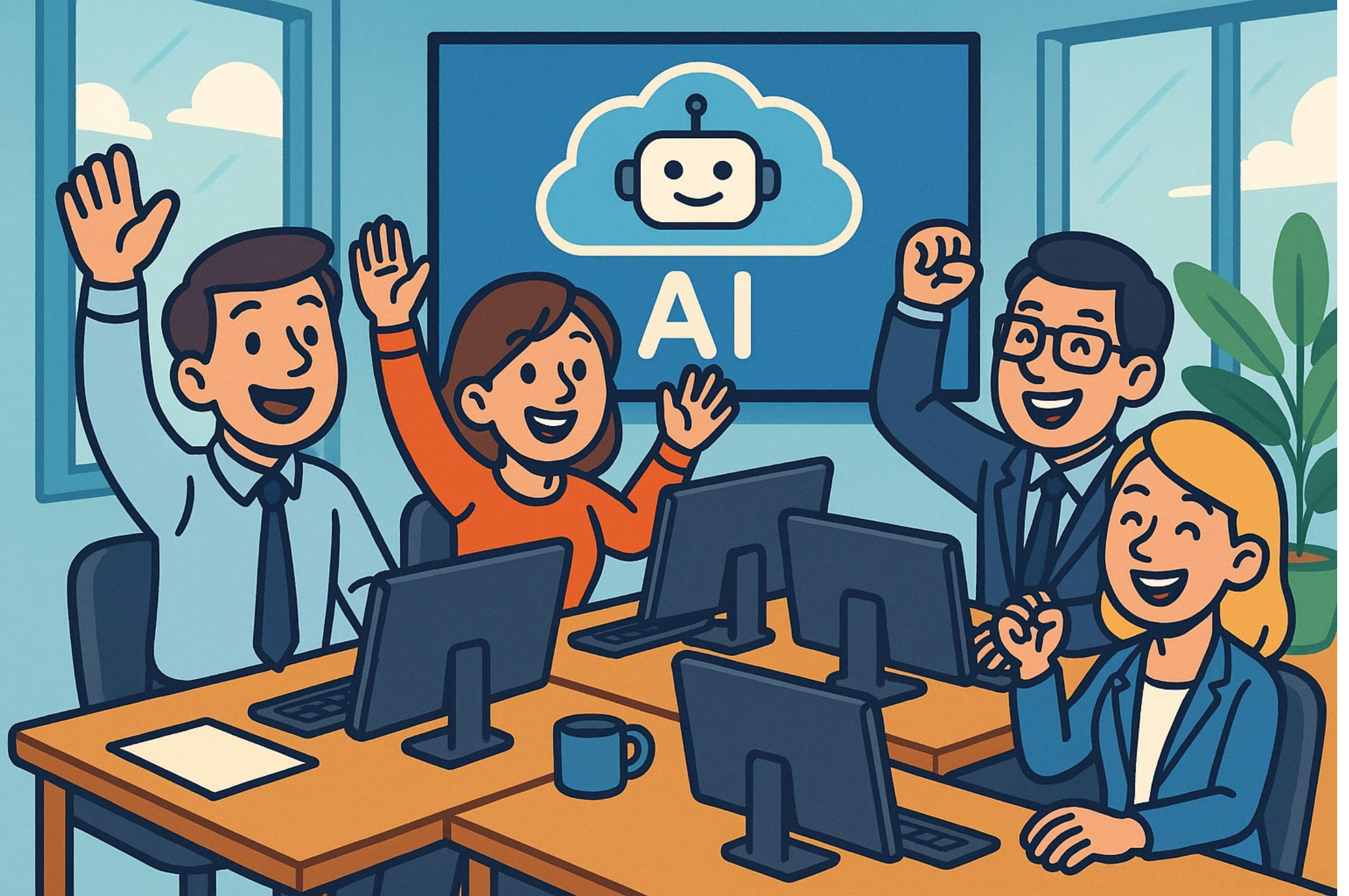
# Prediction

Predict possible  
bottlenecks

Data-driven: Time of year,  
infection rate for flu, etc.

Both patients and  
caretakers







A 3D-rendered image of a golf course green. A white golf ball is positioned on the grass, slightly to the left of a hole. The hole is a circular depression in the grass, revealing a dark interior. The grass is a vibrant green with a detailed texture. The text "Proof-of-Concept" is overlaid in white, sans-serif font across the middle of the image.

Proof-of-Concept



## Hjemmehjelp Søknadsskjema

**Navn:**

Peter Solberg

**Startdato:**

22 . 01 . 1998



**Sluttdato:**

24 . 01 . 1999



**Antall timer per uke:**

24

**Registrert inntekt:**

140

**Individuell begrunnelse:**

Grunnet av lav kompetanse til å kunne opprettholde egen helse til akseptabel standard.

## Avslag på Hjemmehjelp

**Navn:**

Peter Solberg

**Dato for vedtak:**

22.06.1998



**Begrunnelse for avslag:**

Vi finner ikke grunnlag for å skaffe deg hjemmehjelp.

Generer Vedtak

**Generert Vedtak**



# Ethical Issues

# Ethical Issues

Fair allocation

Bias

# Ethical and trustworthy



Establish responsible AI policies and governance structures.



Ensure fairness, transparency, and explainability.



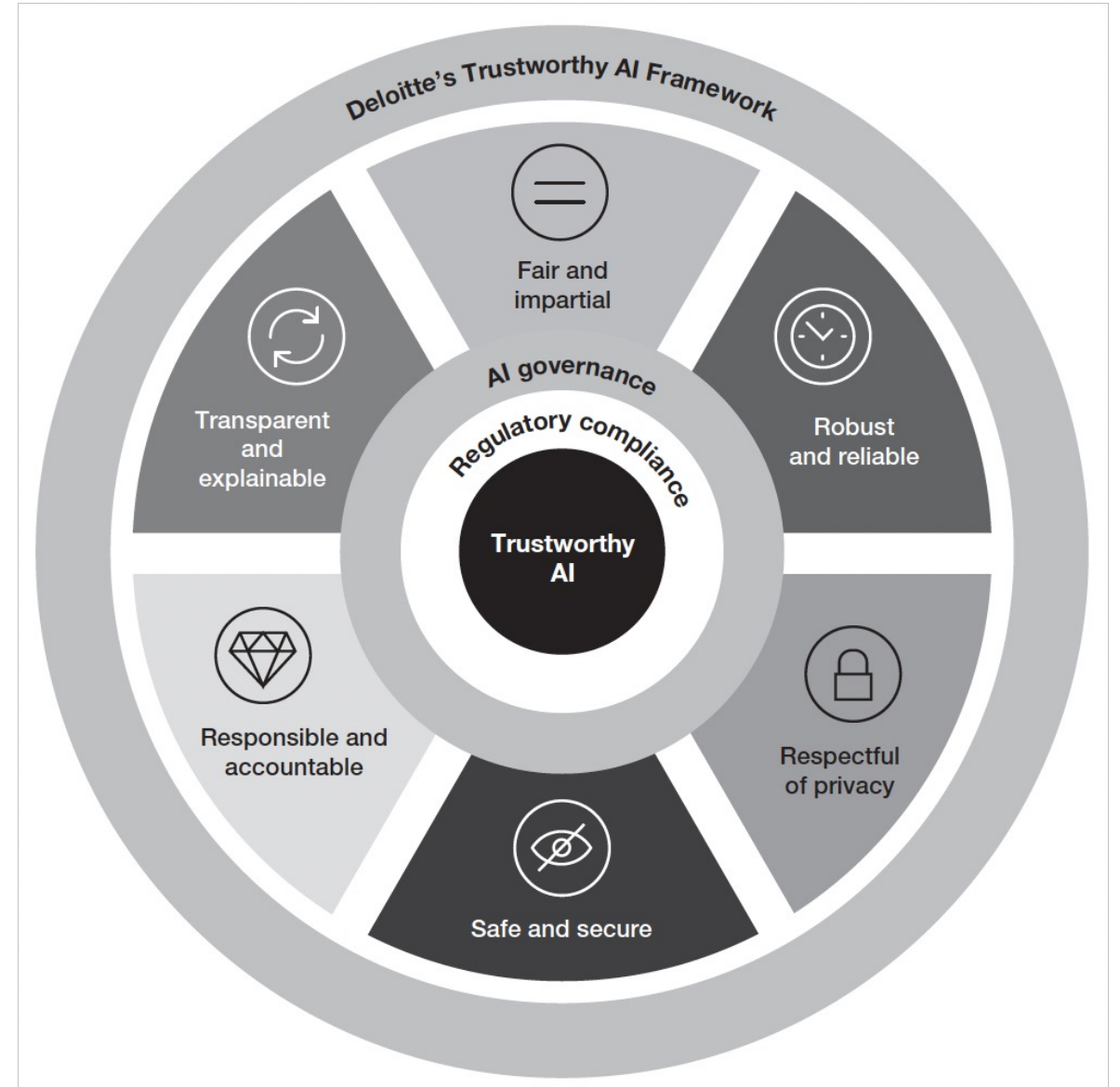
Implement model documentation and review processes.



Foster a culture of ethical AI innovation.

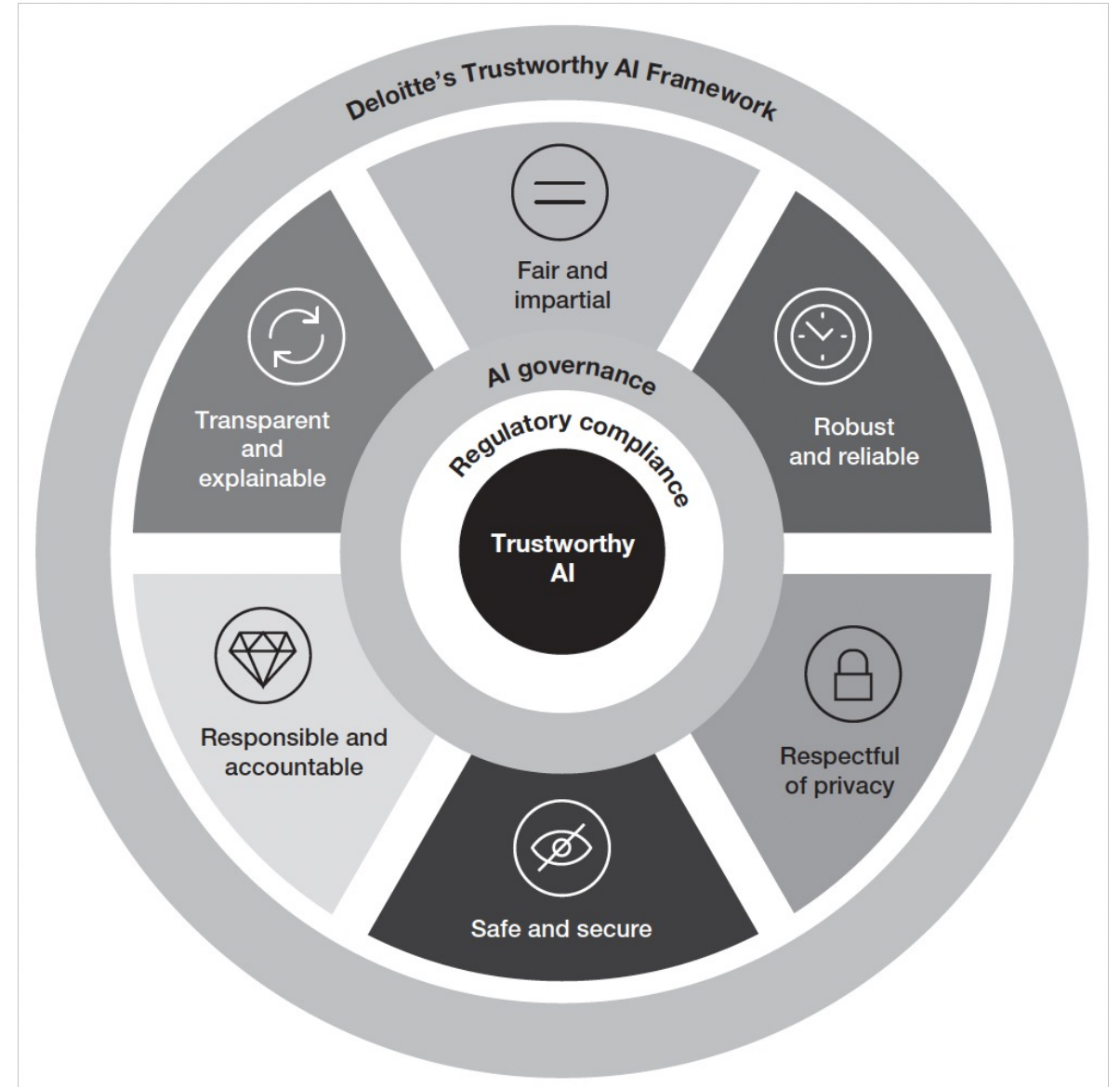
**Fair and impartial.** Assess whether AI systems include internal and external checks to help enable equitable application across all participants.

**Transparent and explainable.** Help participants understand how their data can be used and how AI systems make decisions. Algorithms, attributes, and correlations are open to inspection.



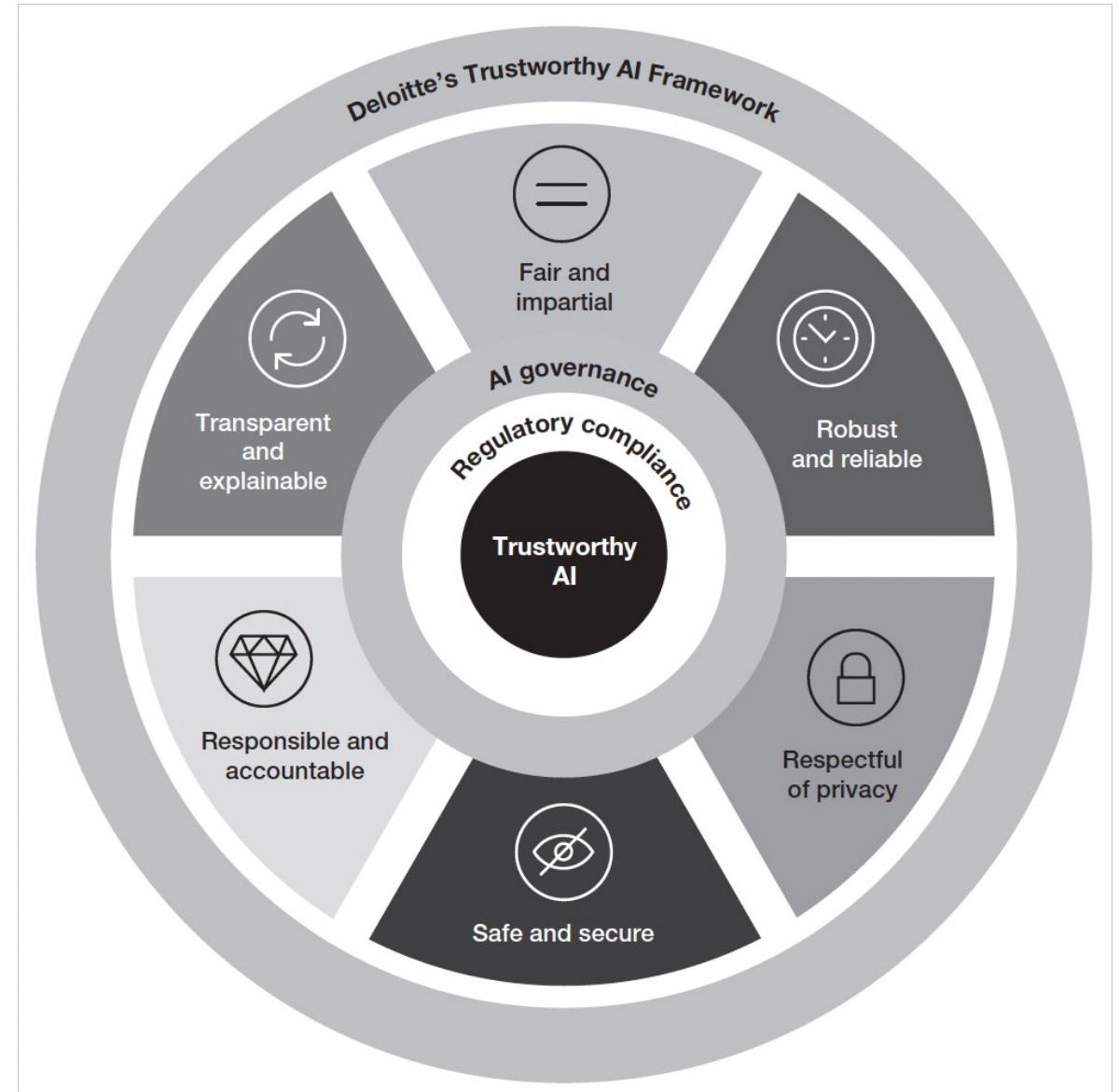
**Responsible and accountable.** Put an organizational structure and policies in place that can help clearly determine who is responsible for the output of AI-system decisions.

**Safe and secure.** Protect AI systems from potential risks (including cyber risks) that may cause physical and digital harm.



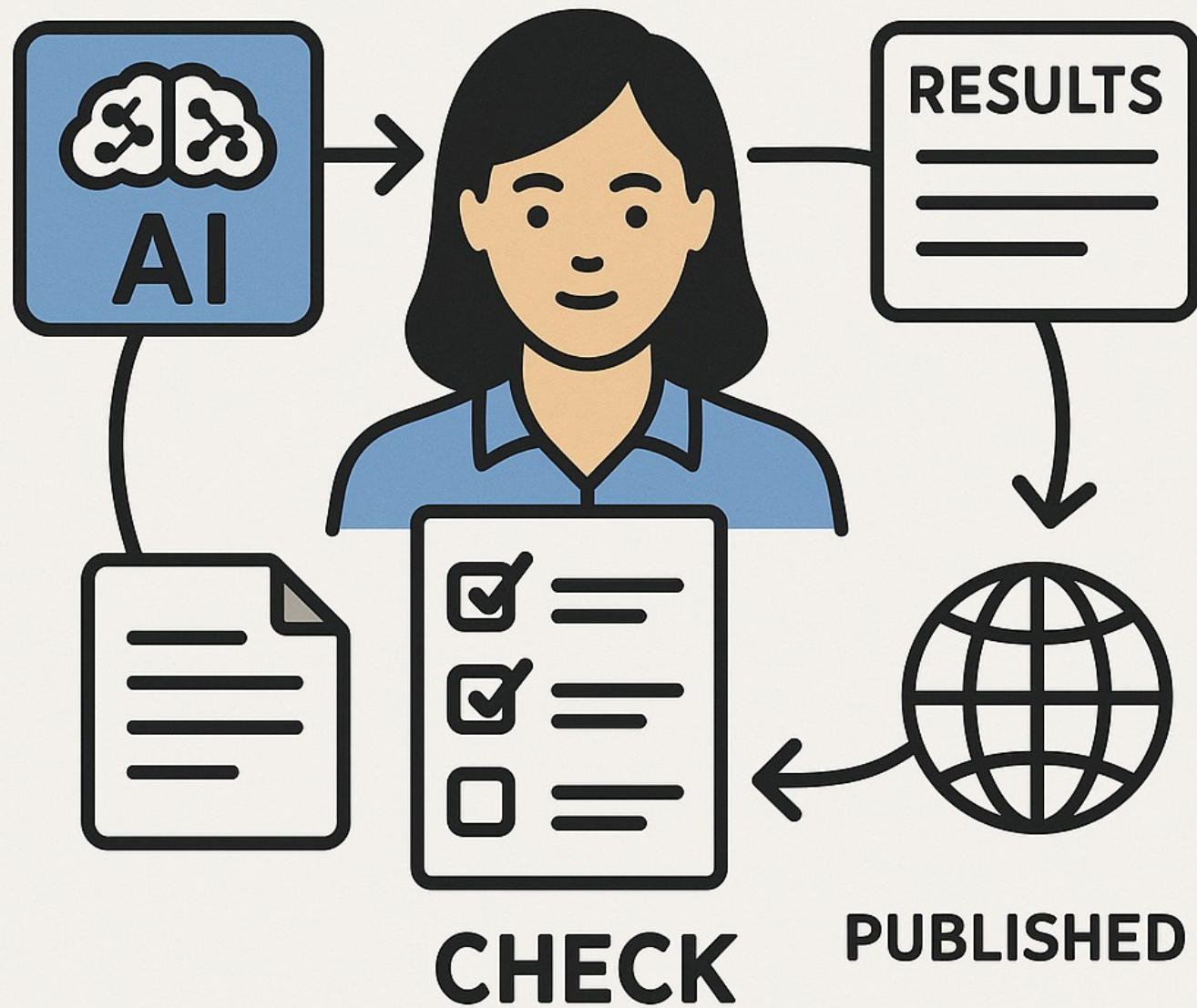
**Respectful of privacy.** Respect data privacy and avoid using AI to leverage customer data beyond its intended and stated use. Allow customers to opt in and out of sharing their data.

**Robust and reliable.** Confirm that AI systems have the ability to learn from humans and other systems and produce consistent and reliable outputs.



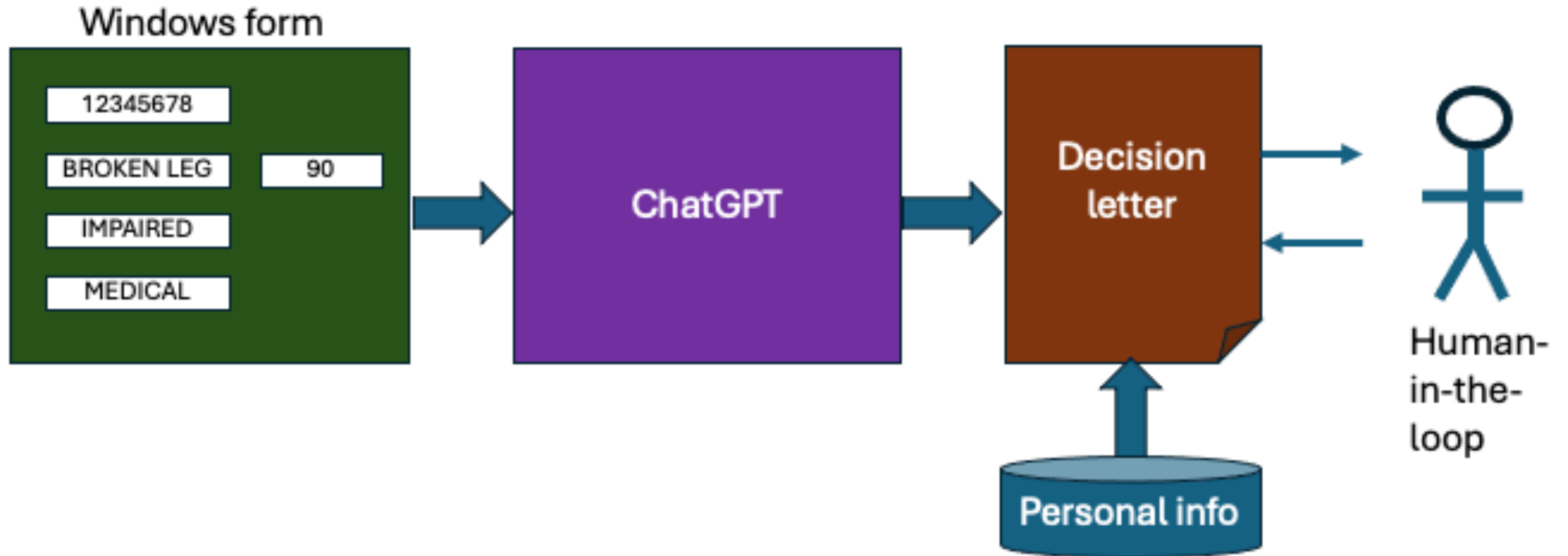


# HUMAN IN THE LOOP





# Human-in-the-Loop



A blue ballpoint pen with a silver-colored tip and clip is positioned diagonally across the frame. It rests on a document featuring a bar chart with several blue bars of varying heights. The background is a light blue grid. The text "Creating Additional Value" is overlaid in white, centered horizontally and slightly above the middle vertically.

Creating Additional Value

# Automated compliance and control

Monitor that laws and  
regulations are complied  
with in decisions

Report deviations

# Dashboard

Monitoring production

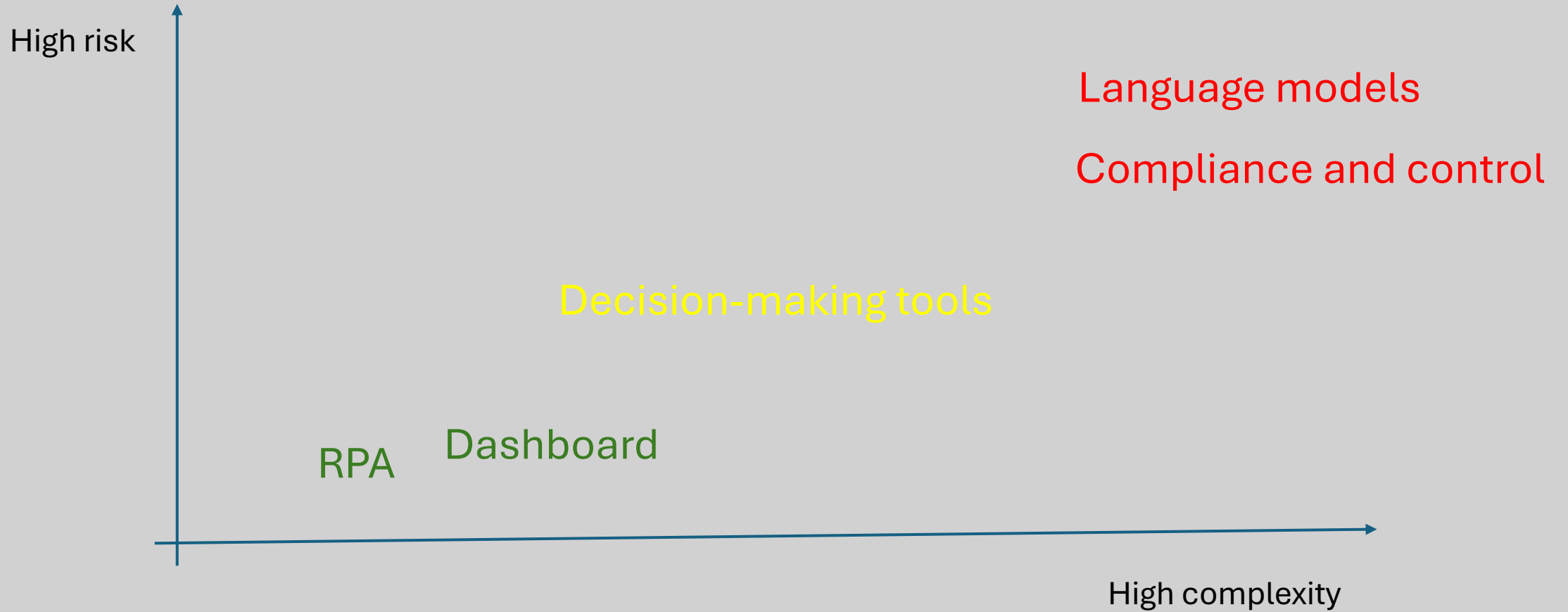
Identify bottlenecks

Processing time

Complaints

Feedback from employees

# Risk profile





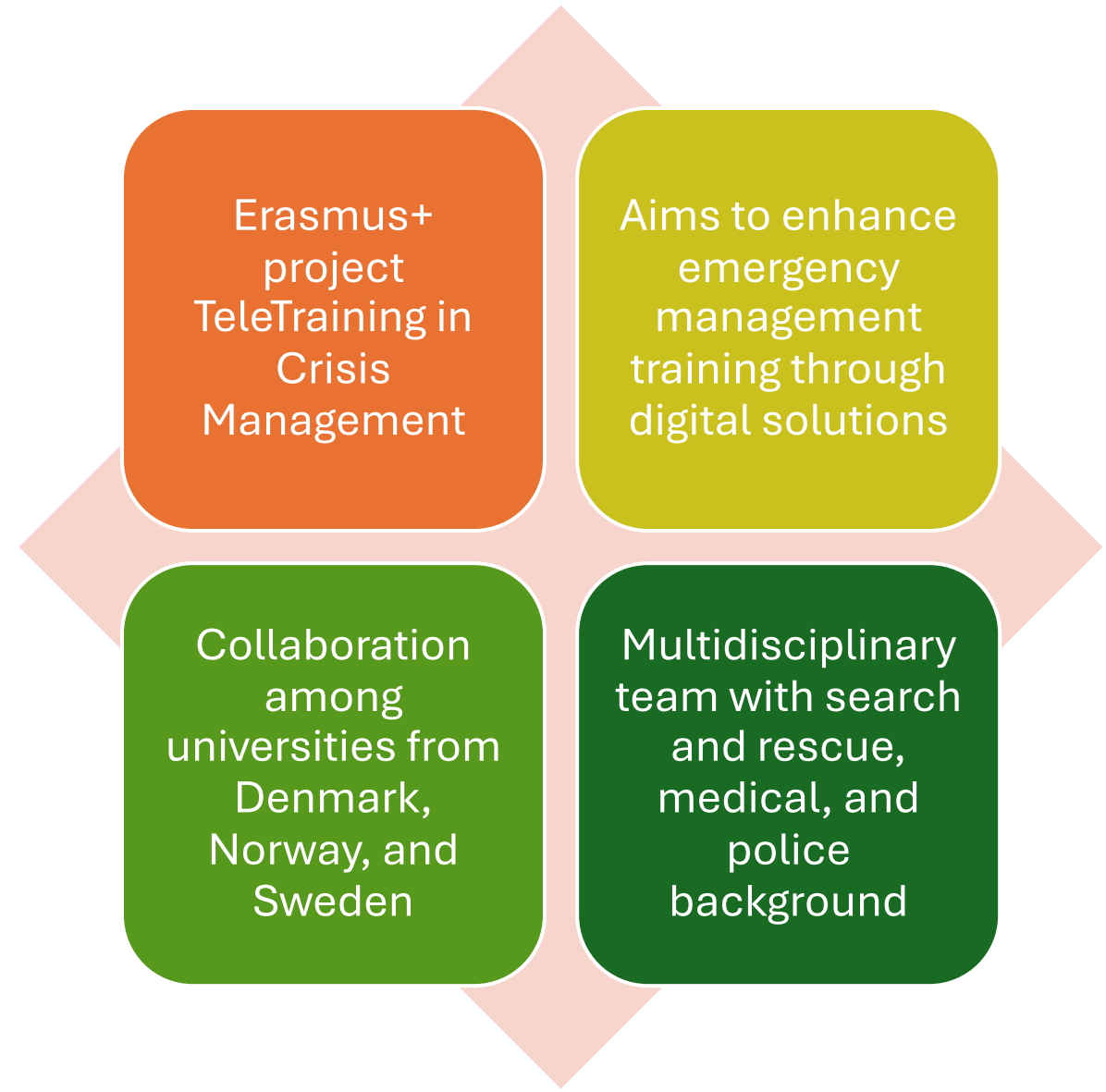
## Part 2: Teletraining

**Using Artificial Intelligence to Support  
Emergency Management Training**  
Creating Efficient and Realistic Scenarios  
with ChatGPT



Lene Sandberg (DK). Marius Rohde Johannessen (N), Lasse Berntzen (N), Jarle Løwe Sørensen (N), Laurits Rauer Nilsen (DK), Eric Carlström (S), Amir Khorram-Manesh (S)

# Introduction



## Purpose and scope

Explore the potential of AI to improve training programs

Use AI-driven tools like ChatGPT for dynamic crisis training scenarios



# Scenario description - Part 1

Emergency water landing of a  
passenger flight

International waters near  
Gothenburg

Involvement of Danish, Norwegian,  
and Swedish emergency services



## Scenario description - Part 2

Challenges: Cross-border  
coordination and real-time  
decision-making

Need for standardized  
protocols and  
communication platforms

# Scenario description - Part 3

## Training Objectives:

1. Enhance cross-border collaboration

2. Improve real-time situational awareness

3. Train for complex, multinational crises

# Emergency management training

**Emergency management differs from traditional management in several ways.**

1. The situation is often elusive, and decisions frequently need to be made based on uncertain information.
2. Data is also high volume, high velocity, and in different formats (audio, video).
3. Spatial data is of particular interest, visualized in a Geographic Information System (GIS).

# Emergency management training

- Focus on realistic scenario generation
- Use of AI to create adaptive crisis scenarios
- Challenges: Multinational coordination and decision-making
- Importance of digital communication platforms
- Benefits: Improved training realism and crisis preparedness
- Enhanced coordination across borders

# Joint Rescue Coordination Centre

Police

Fire and  
rescue

Health

Armed  
Forces

Civil  
Defense

Volunteers

# ChatGPT prompt

- *Please help create a scenario for emergency management training.*
- *A flight from Oslo to Copenhagen was forced to land on the water around 100 km northwest of Gothenburg.*
- *There are fresh breezes and rain, and the sea temperature is around 15 degrees Celsius.*
- *The extent of the damage is unknown.*
- *A Mayday signal was sent at 14:15.*
- *There is no more information at the present time.*



# Scenario overview

At 14:15, a Mayday signal was received from a commercial flight en route from Oslo (OSL) to Copenhagen (CPH), indicating an emergency situation requiring an immediate water landing. The aircraft went down approximately 100 km northwest of Gothenburg, in open waters.

Weather conditions at the time of the incident:

- **Wind:** Fresh breezes (approx. 30–40 km/h)
- **Rain:** Moderate to heavy rainfall
- **Sea Temperature:** 15°C
- **Visibility:** Limited due to weather conditions

**Initial Status:**

- The extent of damage to the aircraft is **unknown**.
- The number of survivors is **unknown**.
- Communication with the flight **ceased** after the Mayday call.
- Search and Rescue (SAR) operations need to be **initiated immediately**.

# Example of situation update (1)

## **SITUATION UPDATE – REQUEST FOR ADDITIONAL SAR RESOURCES – 14:45 CET**

From: Joint Rescue Coordination Center (JRCC)  
Gothenburg

To: All SAR Units & Authorities Involved

**Request for Additional SAR Assets:**

# Example of situation update (2)

## 1. Air Support (Urgent)

Swedish and Norwegian SAR Helicopters

Request immediate dispatch of 2–4 SAR helicopters from:

- Swedish Air Force (F7 Såtenäs) – Nearest base (~20 min ETA).
- Norwegian 330 Squadron (Sola Air Base) – (~40 min ETA).
- Danish EH101 SAR Helicopters (Skrydstrup) – If needed (~50 min ETA).

Task: Immediate extraction of survivors from water.

# Example of situation update (3)

## 2. Maritime Response

- Rescue Vessels & Coast Guard Ships
- Deploy high-speed rescue boats from Gothenburg & nearby coastal stations.
- Request support from Swedish Navy (Karlskrona Base) for larger assets if needed.

# Example of situation update (4)

## **3. Fixed-Wing Support**

### Additional Reconnaissance & Support Aircraft

- Request Swedish Air Force Gulfstream IV (SIGINT) to assist in debris tracking.
- Request Norwegian P-8 Poseidon maritime patrol aircraft (if available).



# Example of situation update (5)

## **Immediate Actions:**

- Directing first SAR helicopter to survivor location (~ETA 14:55).
- Marking survivor locations with emergency beacon drops.
- Relaying coordinates for coast guard and navy vessels.
- Critical: Survivors are exposed to 15° C water—risk of hypothermia within 1–2 hours. Immediate extraction is top priority.



# AI integration in training

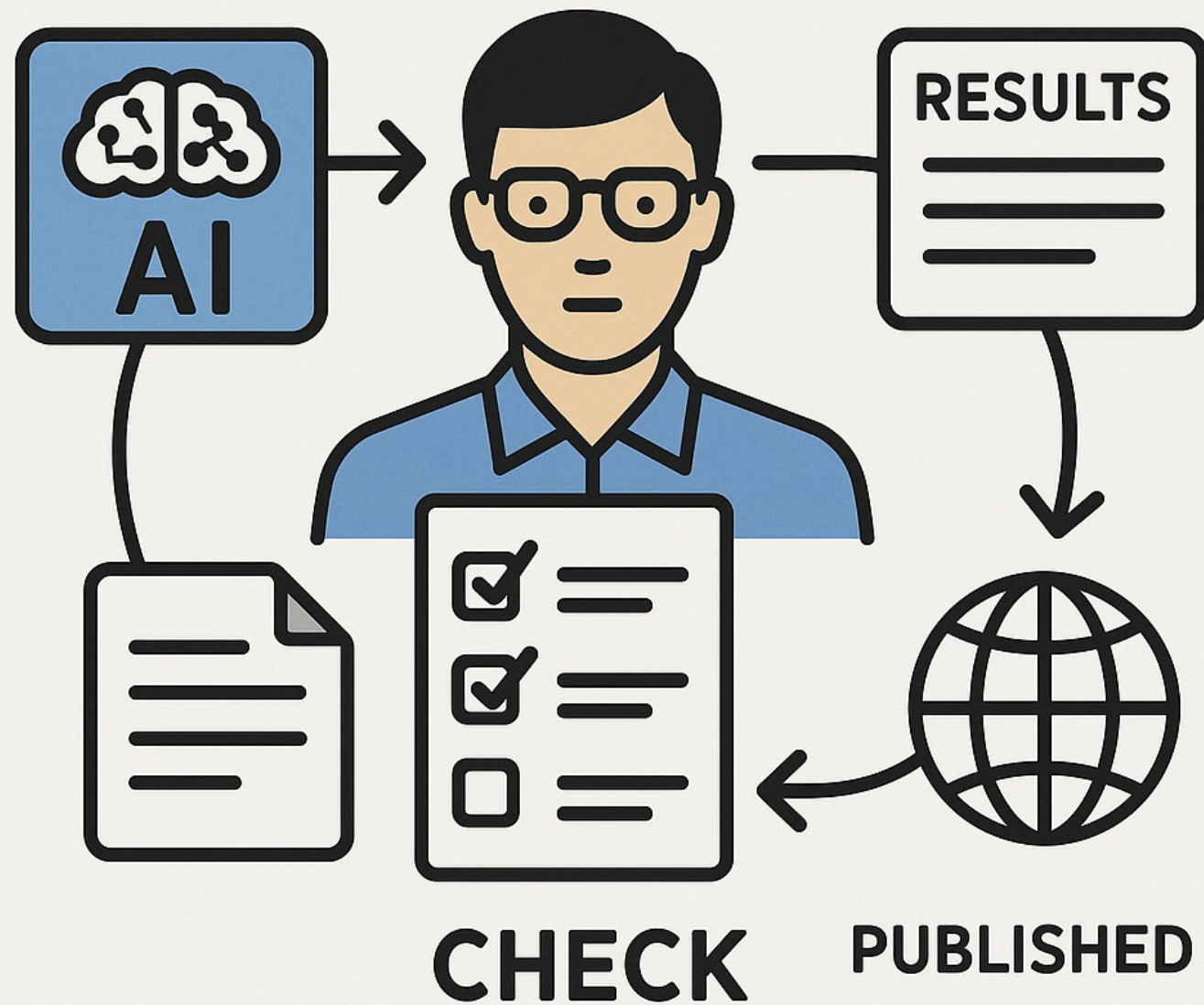
- Benefits: Realistic scenario generation, situational updates, decision support
- Role of ChatGPT in dynamic training exercises and real-time scenario updates



# Discussion

- How AI improves training realism and decision-making in crisis situations
- Limitations: Human oversight is essential to validate AI-generated content

# HUMAN IN THE LOOP





# Conclusion

- AI can enhance emergency management training by providing realistic, adaptive scenarios
- Future work: Real-time data integration and more diverse crisis scenarios



# Final Comments

# On Innovation



Most  
innovations fail

And  
companies  
that don't  
innovate die

[Henry Chesbrough: Open Innovation, Harvard Business School Press]

# Success Factors

- Leadership vision and commitment
- Clear goals to be achieved
- Experiment to show proof-of-concept
- Agile development – MVP (Minimum Viable Prototype)
- See employees are a resource
- Provide sufficient training
- Success is 20% technology, 80% humans

# Value Creation



I have shown two examples where AI is used to create substantial value by removing “waste”



Lean thinking



Sandefjord: Get rid of repetitive tasks, improve quality



Teletraining: Not spending time on planning for outcomes that never will happen

# To Summarize

“Generative AI succeeds when technology, ethics, and human judgment work together.”



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Questions and  
answers

Thank you for your  
attention!

Any  
questions?

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