

Faculty of Design

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## Option Evaluation in Multi-disciplinary Strategic Design: Using scenarios for system prototyping

Mozuni, Mehdi, Ohlhoff, Maren and Glatzel, Gerhard

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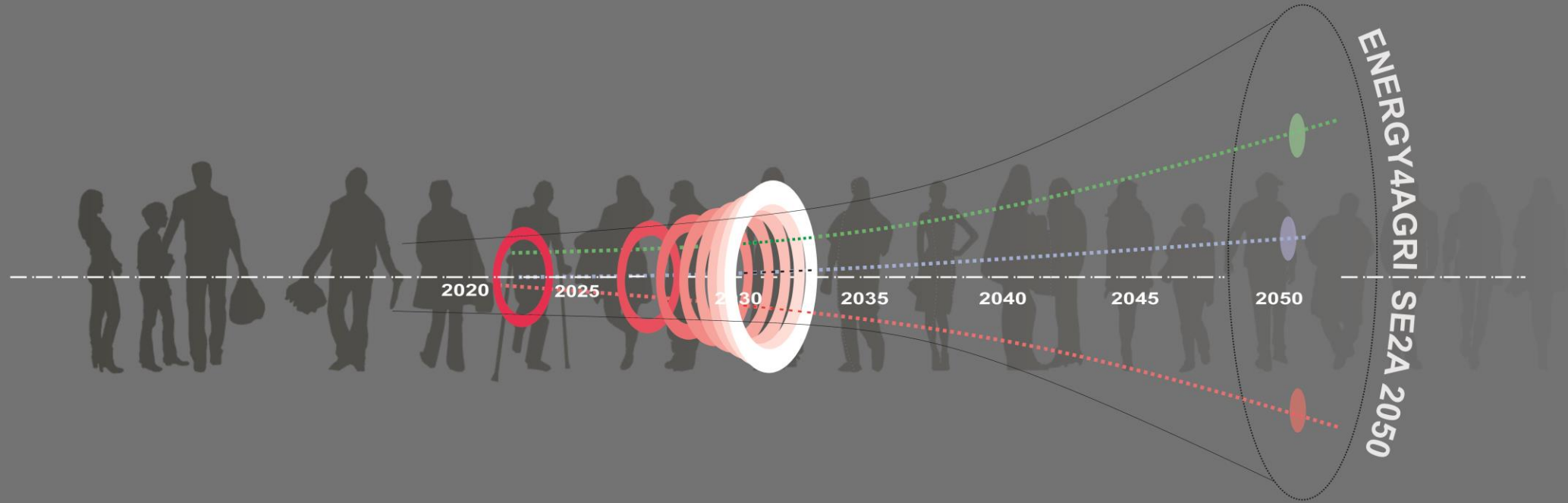
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Option evaluation in multi-disciplinary Strategic Design:

# Using scenarios for system prototyping



Gerhard Glatzel, Maren Ohlhoff, Mehdi Mozuni,

Institute for Design Research | HBK Braunschweig RSD10 Conf. | 27 Oct. 2021

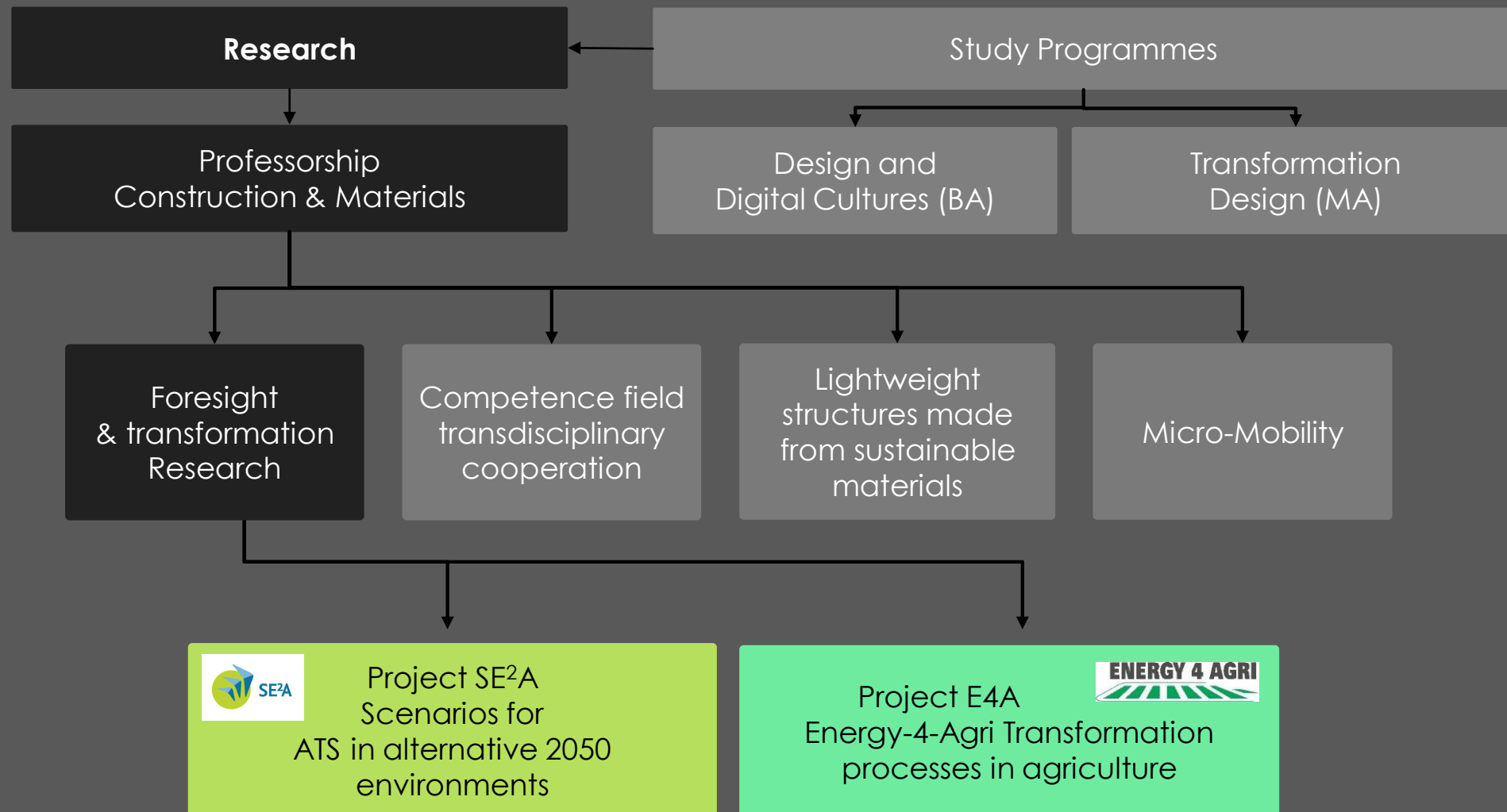
Braunschweig University of Art  
Hochschule für Bildende Künste Braunschweig

INSTITUT  
für DESIGN  
FORSCHUNG



**The University of Fine Arts Braunschweig** (HBK) is a public university in Braunschweig, Lower Saxony. HBK was founded in 1963 and with around 1200 students is the second largest university for fine arts in Germany.

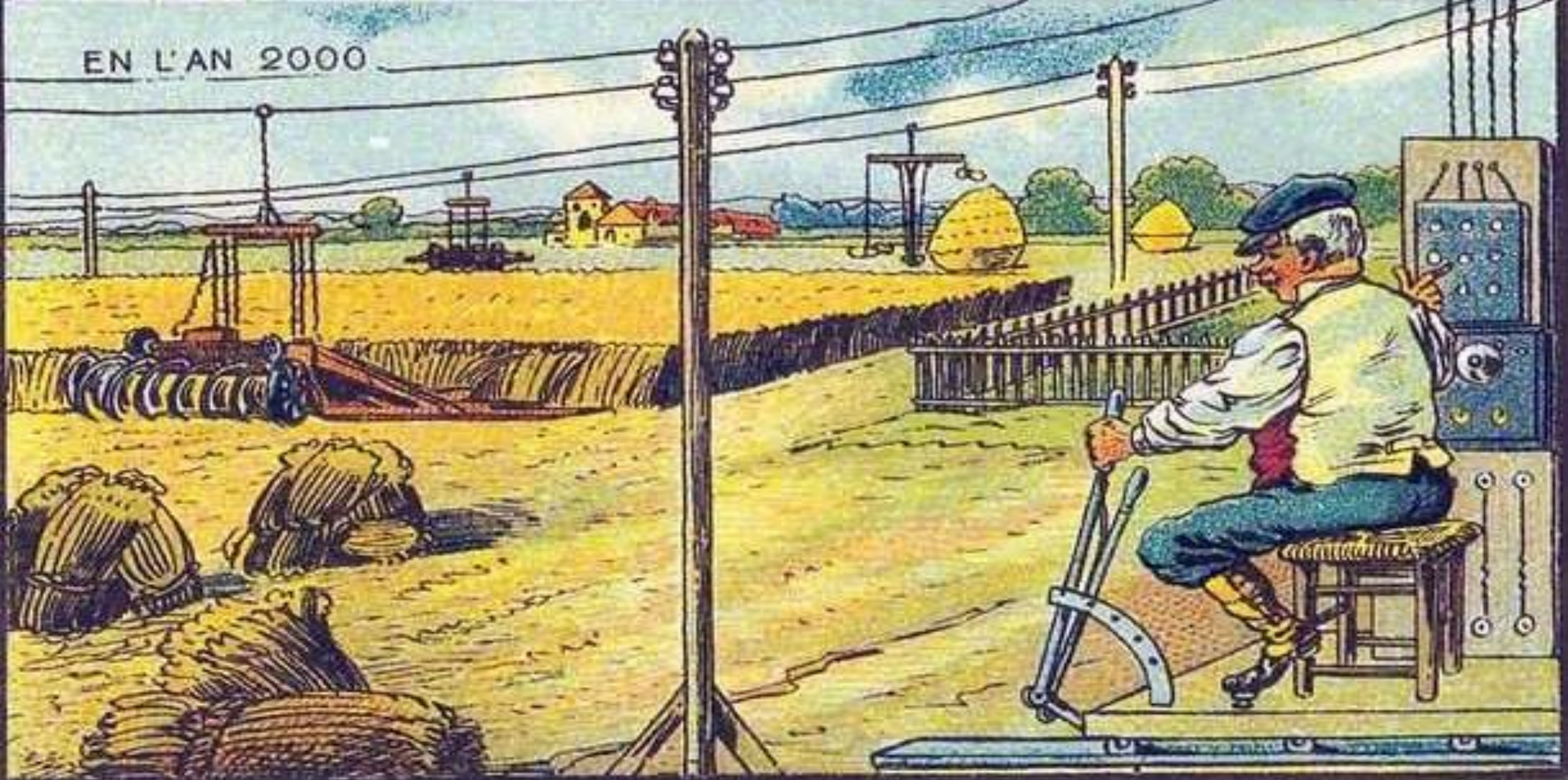
**The Institute for Design Research** (IDF) is a research unit within the HBK that deals with the development of user-oriented design. It emerged in 2019 from the "Institute for Transportation Design" founded at the HBK in 2007. In teaching and research, our approach goes far beyond the conception and design of products and artifacts. It is oriented towards **the design of change in the sense of future-oriented services and systems.**



## Future systems, scenarios and Human-System-Interaction



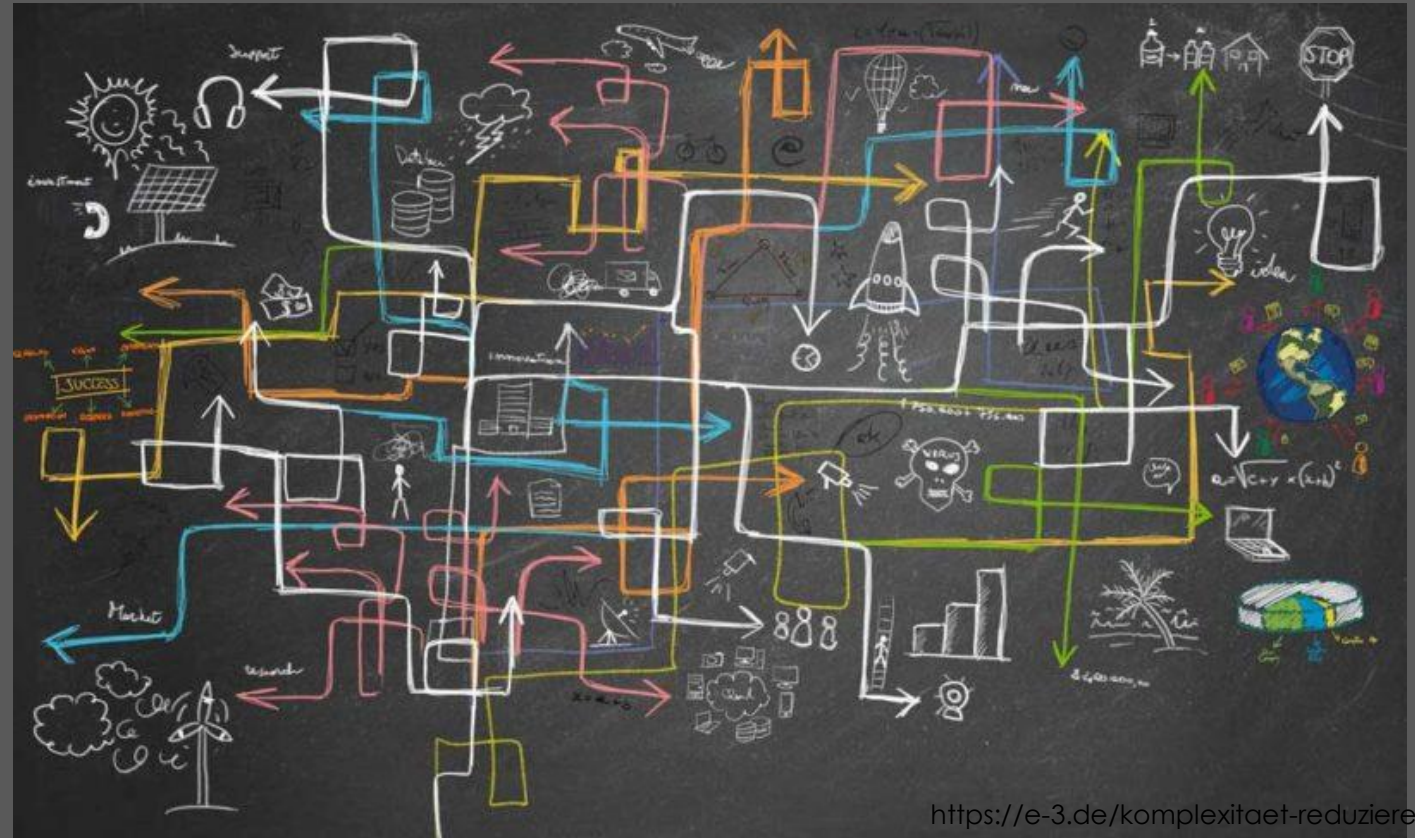
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# Challenges of modeling a future system

- Complexity
- Uncertainty
- Thinking ahead of trends
- Technical decision-making
- Trans-disciplinary communication
- User surveys



<https://e-3.de/komplexitaet-reduzieren/>

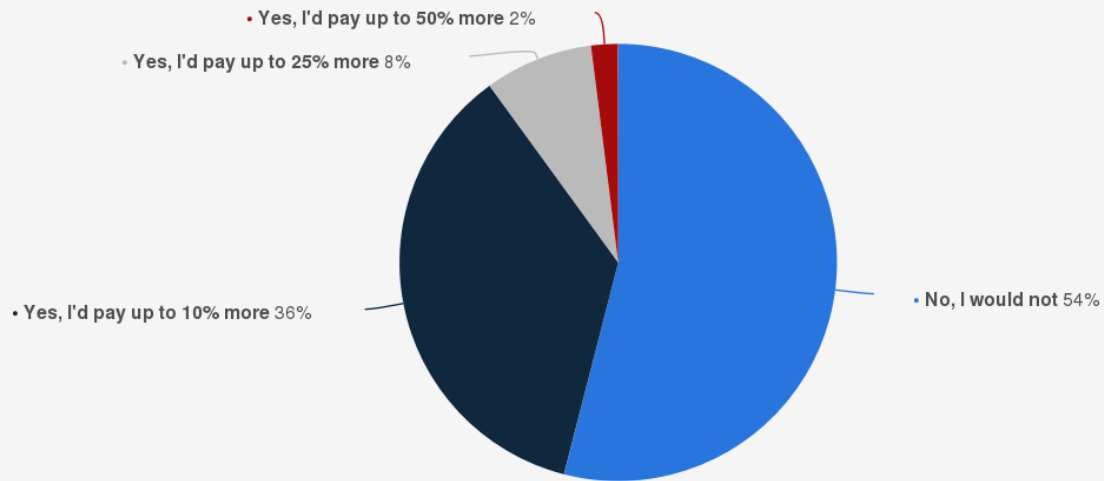
- Q1: Who are the future Users in 2050 whom innovative products and services are engineered and designed for today?  
(Can we even anticipate who they are or should we?)
- Q2: Which User research and test tools can quantitatively and qualitatively shed more light on the preferences of our users from 2030 up to 2050?

## Future-Oriented User Research



# CUSTOMER BEHAVIOUR TOWARDS ENVIRONMENTAL IMPACTS OF FLYING

Would you be willing to pay more for a flight that had a smaller environmental impact than other similar flight options?

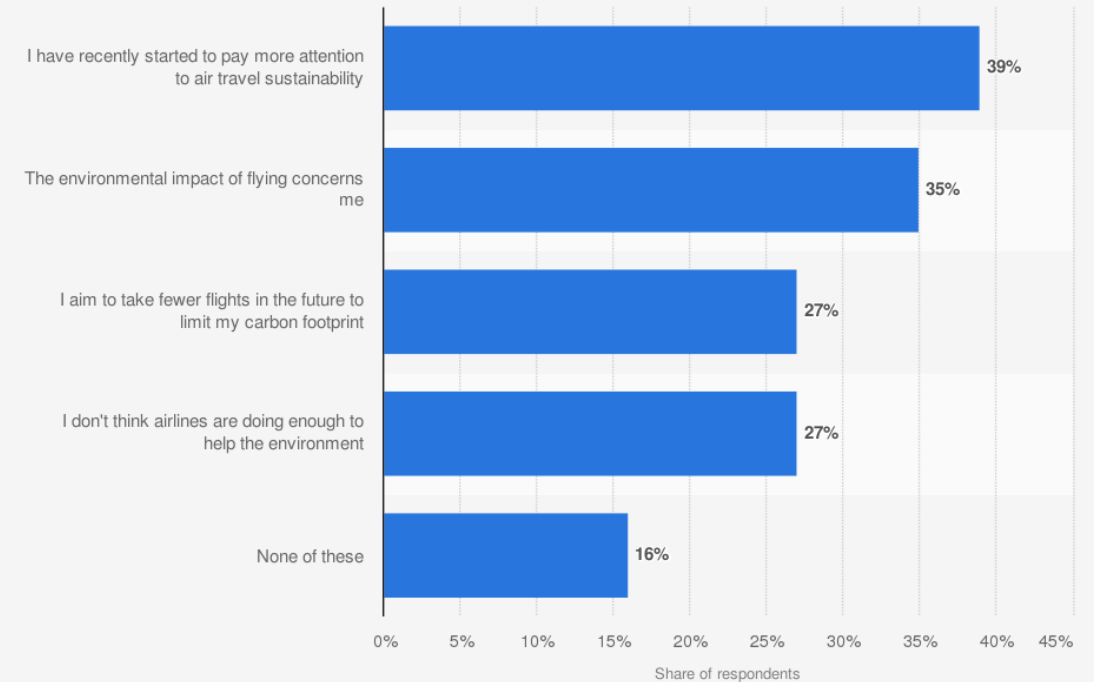


Source  
OAG  
© Statista 2021

Additional Information:  
Worldwide; OAG; January and February 2020; 2,000 respondents

Inmarsat; Yonder; Simple Flying: Environmental Impact of Air Travel Survey, zitiert nach de.statista.com, 2020 [online] <https://www.statista.com/statistics/1186489/attitude-towards-environmental-impact-flying/> [09.08.2021]

What describes your attitude towards the environmental impact of flying?



Sources  
Inmarsat; Yonder; Simple Flying  
© Statista 2021

Additional Information:  
Yonder; October 2020; 9,596 respondents; 18 years and older; people that have taken a leisure or business flight in the past survey

Inmarsat; Yonder; Simple Flying: Environmental Impact of Air Travel Survey, zitiert nach de.statista.com, 2020 [online] <https://www.statista.com/statistics/1186489/attitude-towards-environmental-impact-flying/> [09.08.2021]

## APPROACHES, PROCESSES AND TOOLS ...

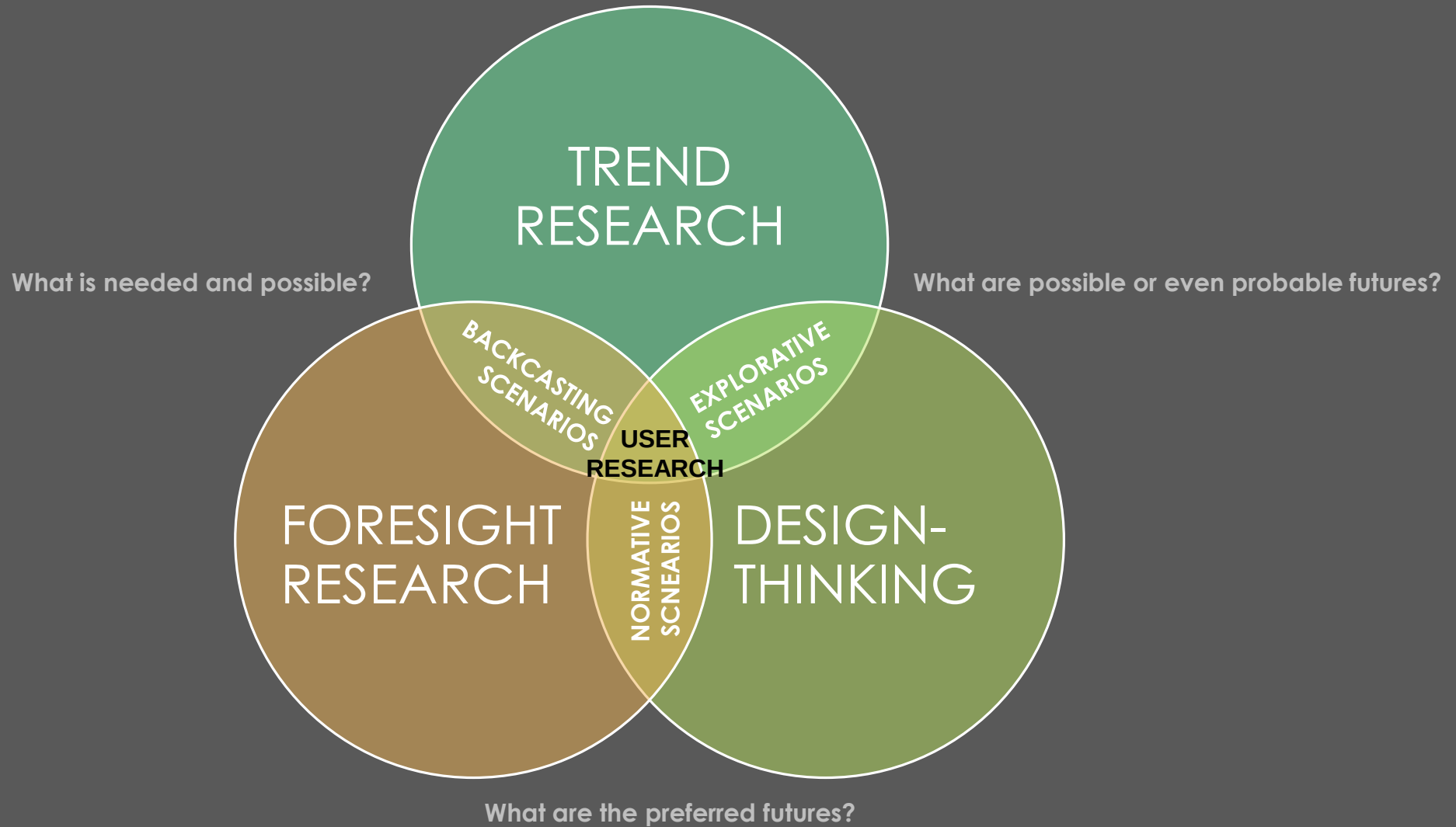
# MORPHOLOGICAL DELPHI METHOD

To generate **scenarios** on the foundation of **consensus knowledge** that create possibilities of how vision can become innovation





# FIELDS of RESEARCH & SCENARIO-TYPES



# SCENARIO-TECHNIQUE

Scenario preparation, determination of the scenario field

Identification of factors, Trend analysis,  
STEEP/PESTLE+ analysis

Identifying key factors and projections

Morphological analysis, generating raw  
scenarios

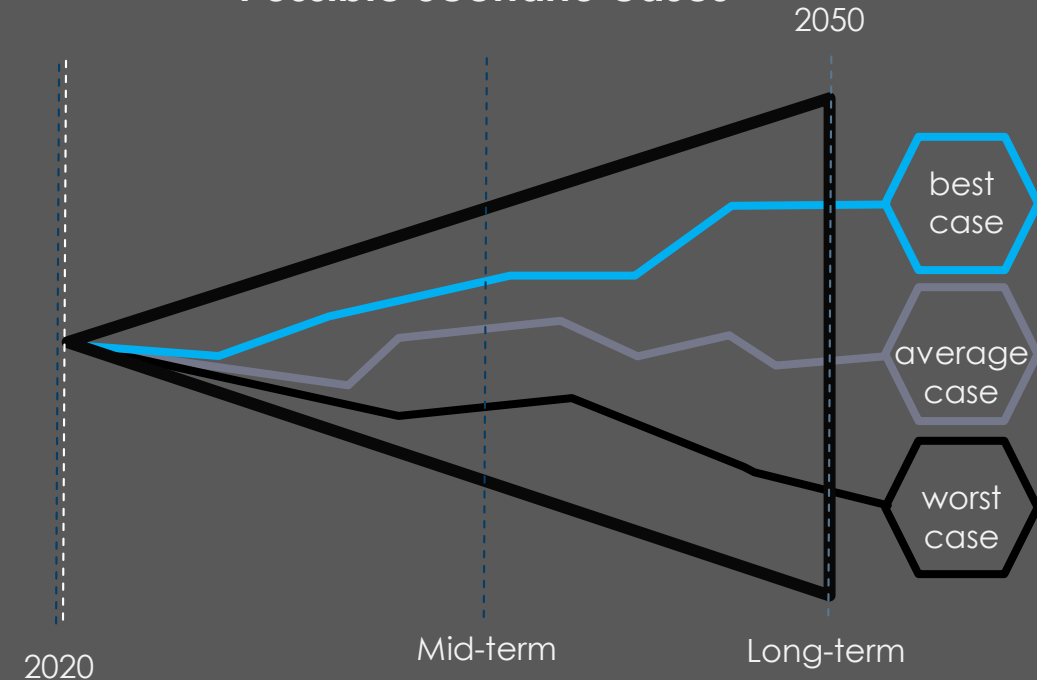
Generate scenario narratives / Visualizing  
scenarios

Elaboration of the scenarios, review and  
further development using scenario  
discussion labs

Testing scenarios with the user

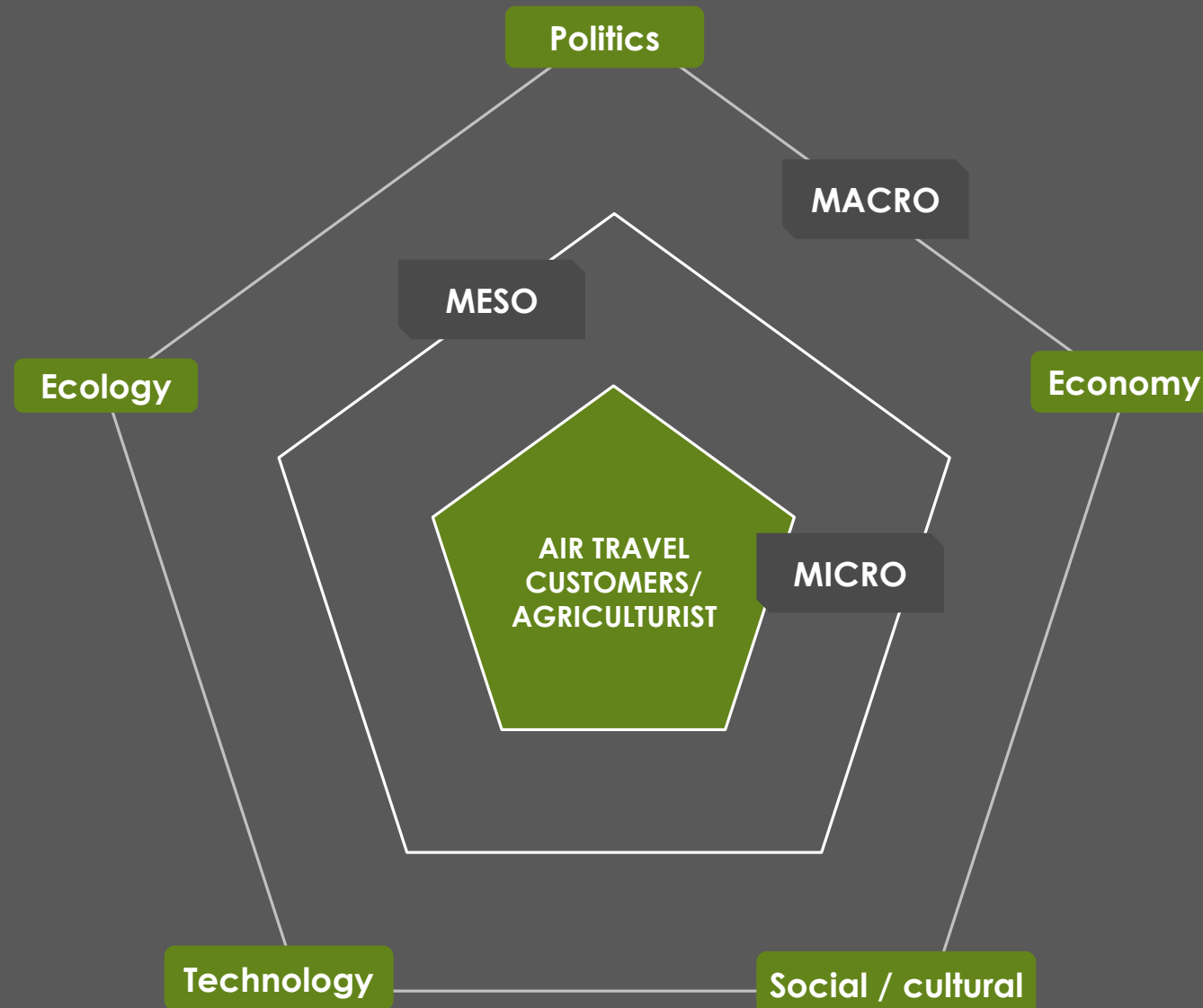
**Results:** Holistic evaluation and back-casting, deriving  
recommendations for action and developing a transformation  
roadmap

## Possible Scenario cases

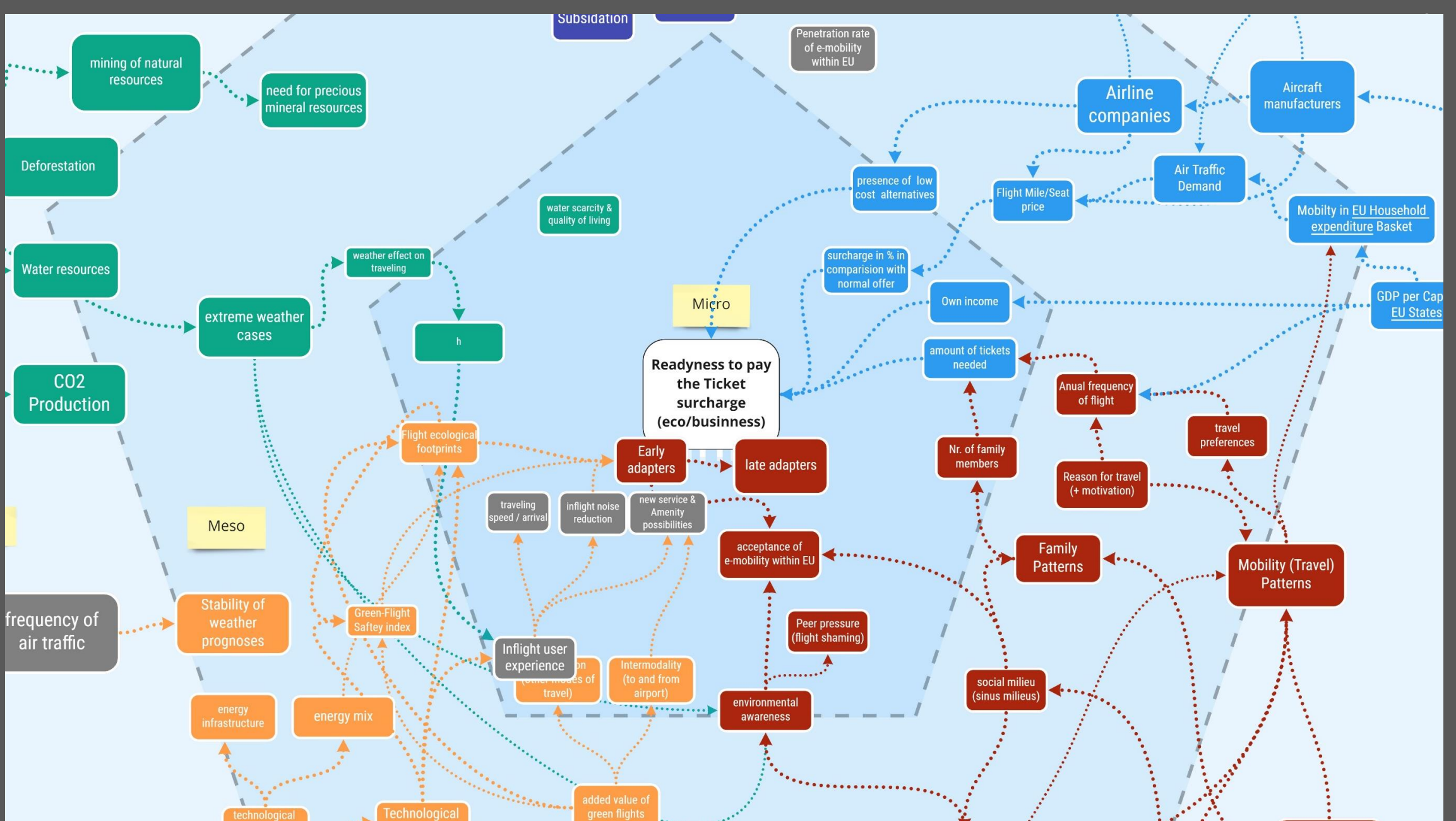


# SCENARIO GENERATION

# MACRO-MESO-MICRO ANALYSIS OF STEEP+ INTERACTIONS

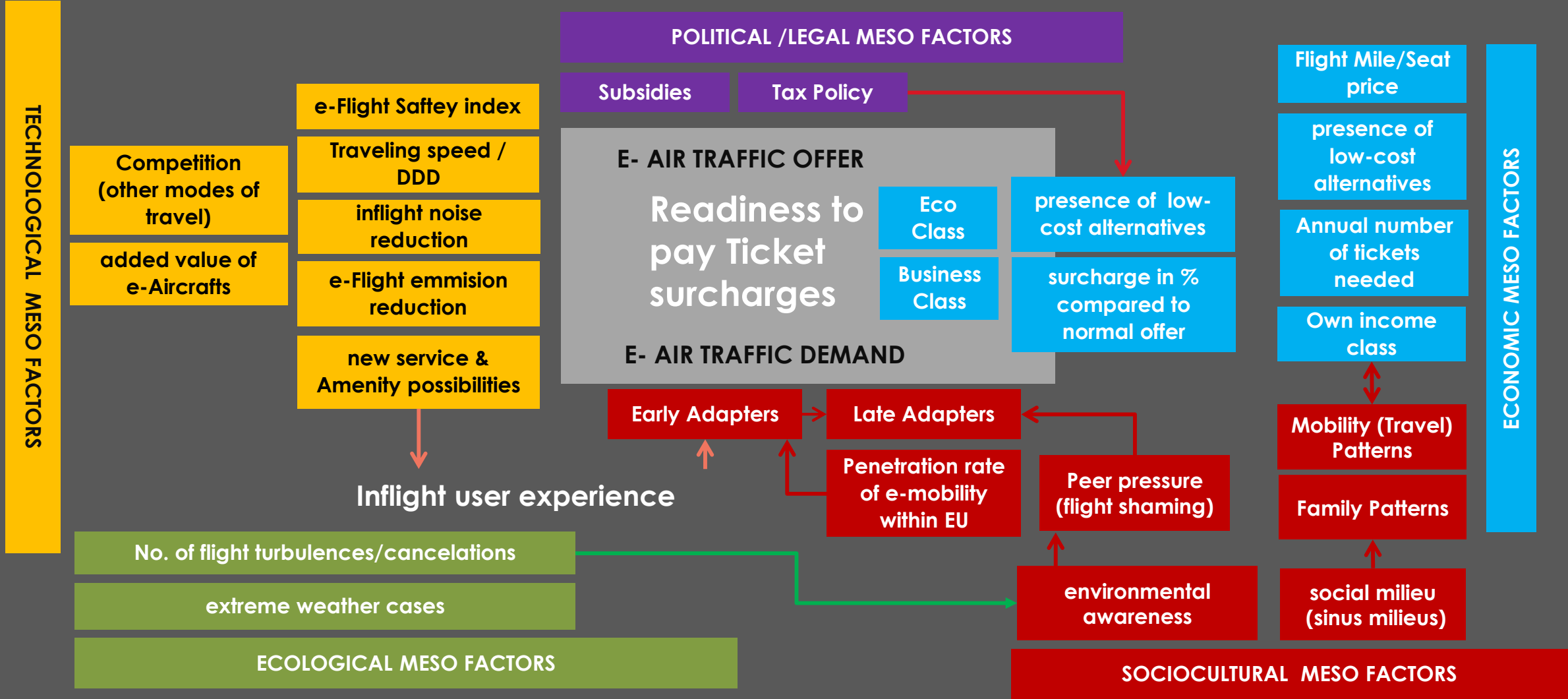




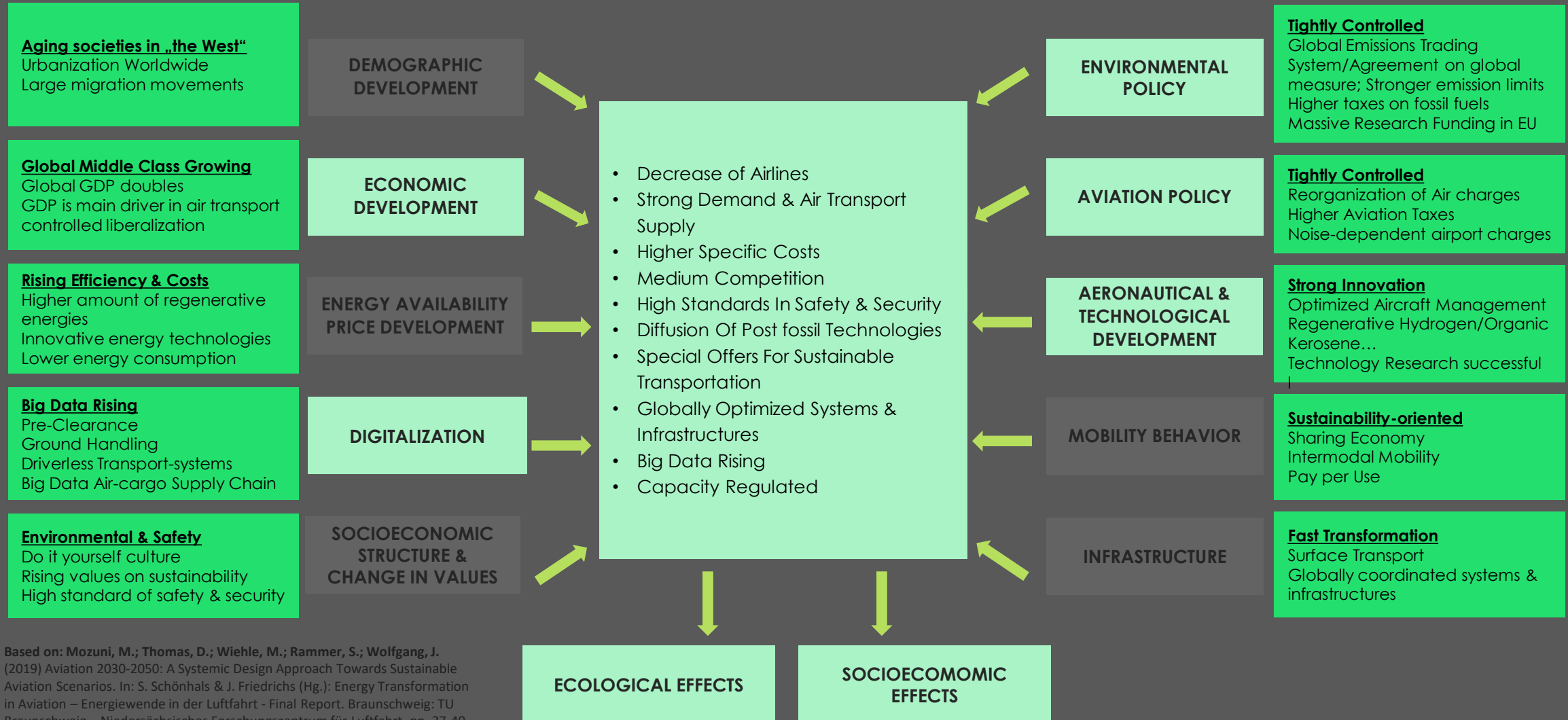


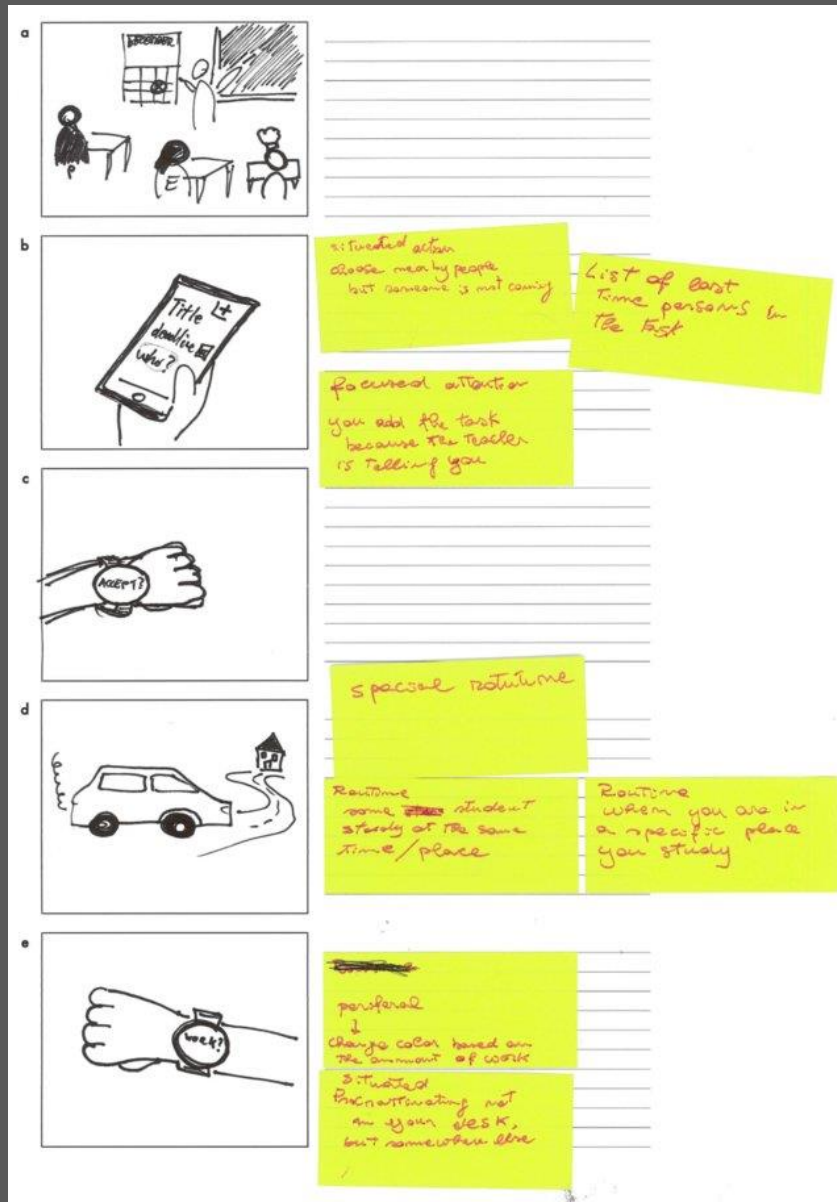
# CUSTOMER –SIDE MICRO DRIVERS- 2050 OUTLOOK

KEY ASSUMPTIONS: NOISE AND EMISSION REDUCTION in E-CIVIL AVIATION REACHED AS PLANNED

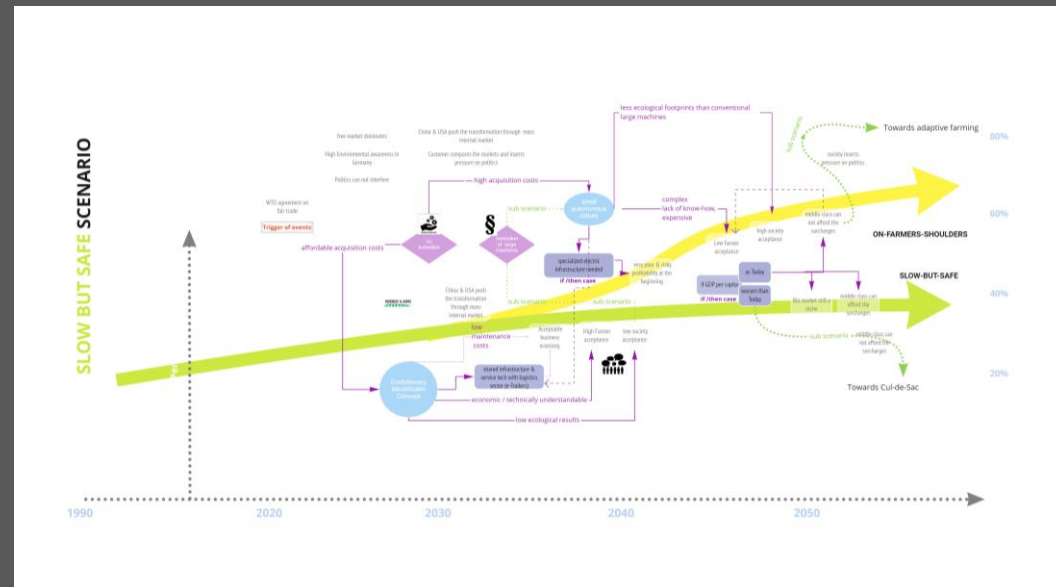
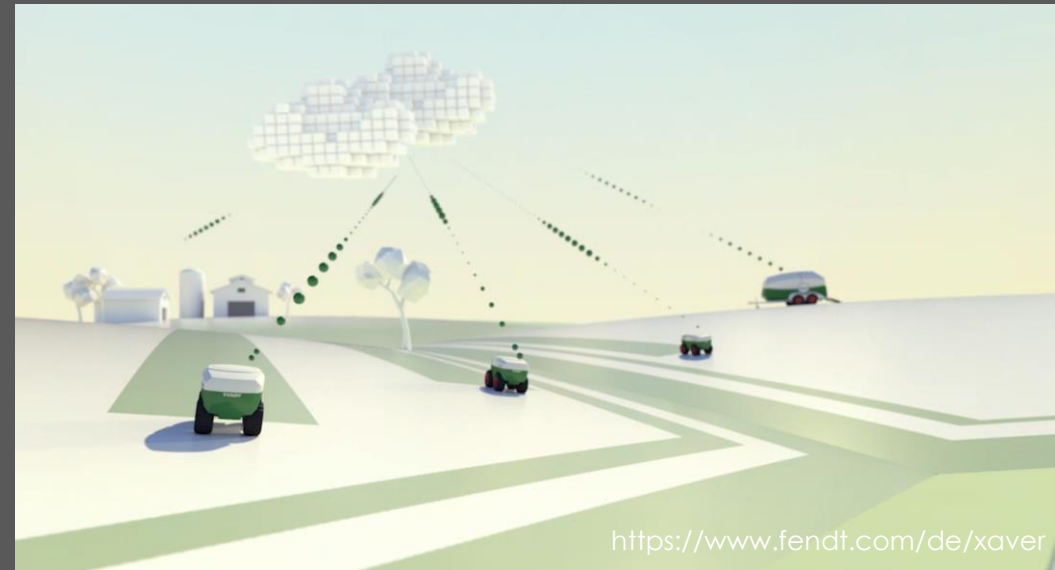


# SAMPLE SCENARIO: PRIMACY OF POLITICS





Ref. @ Germán Leiva Interactive Prototyping of Interactions:  
from Throwaway Prototypes to Takeaway Prototyping



Ref. @ Mozuni, Mehdi , HBK Braunschweig

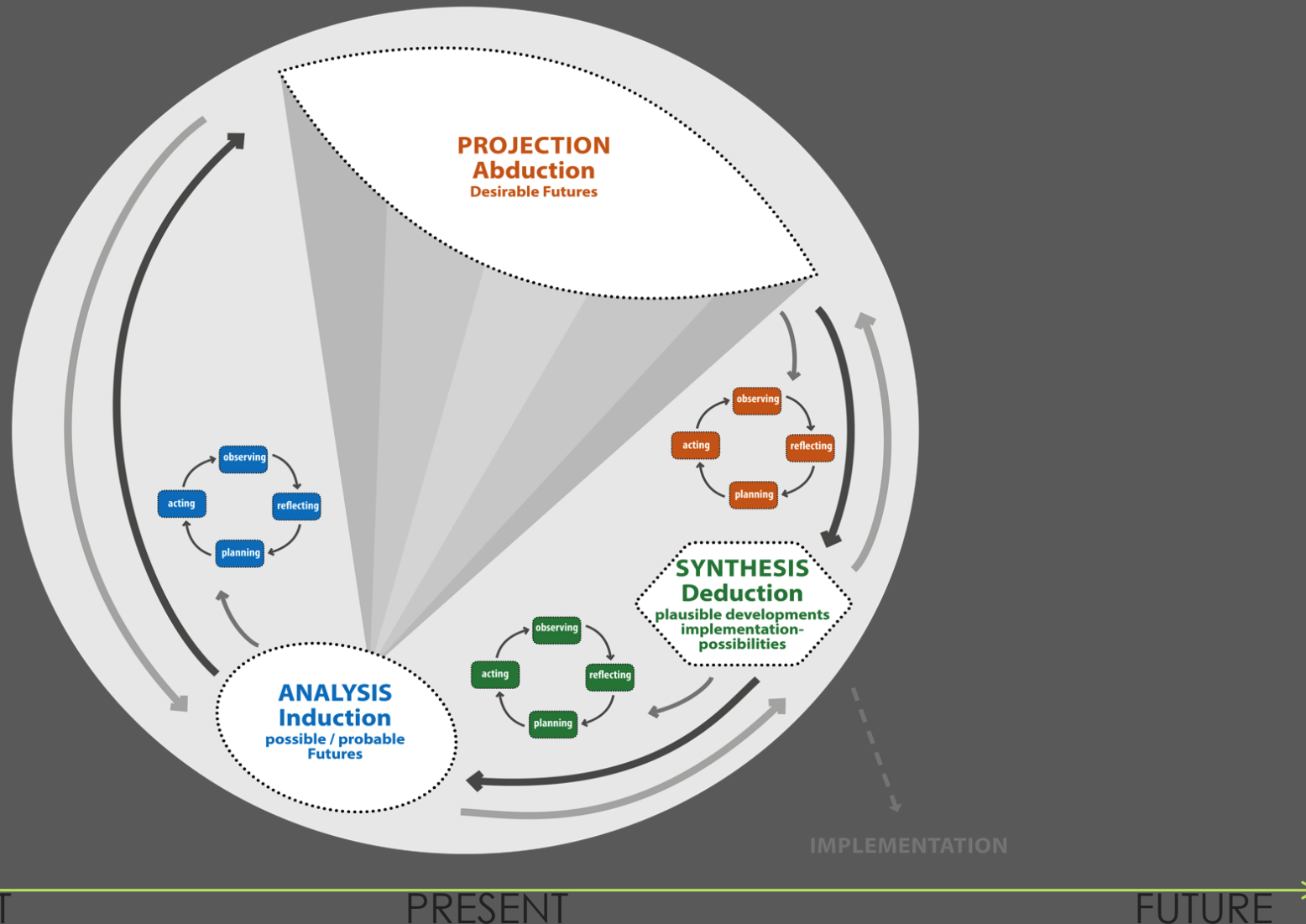
Future (user) Research

...

An alternative approach?



# APS–SYNERGY – MODEL as a FUTURES-DESIGN-PROCESS



## Research Through Design w/ the concept of futures

The Generic Design Process APS uses design methods for knowledge generation and has the mindset of human-centered design with communication

Adding methods and defined perceptions of futures the research process is comprehensible. It is also useful for mid-/long-term future problems.

## Research Through Design:

Narratives and visualizations are not only used to communicate and present scenarios / future, but also to gain new knowledge and discuss goals.

## 3D modeling - virtual reality

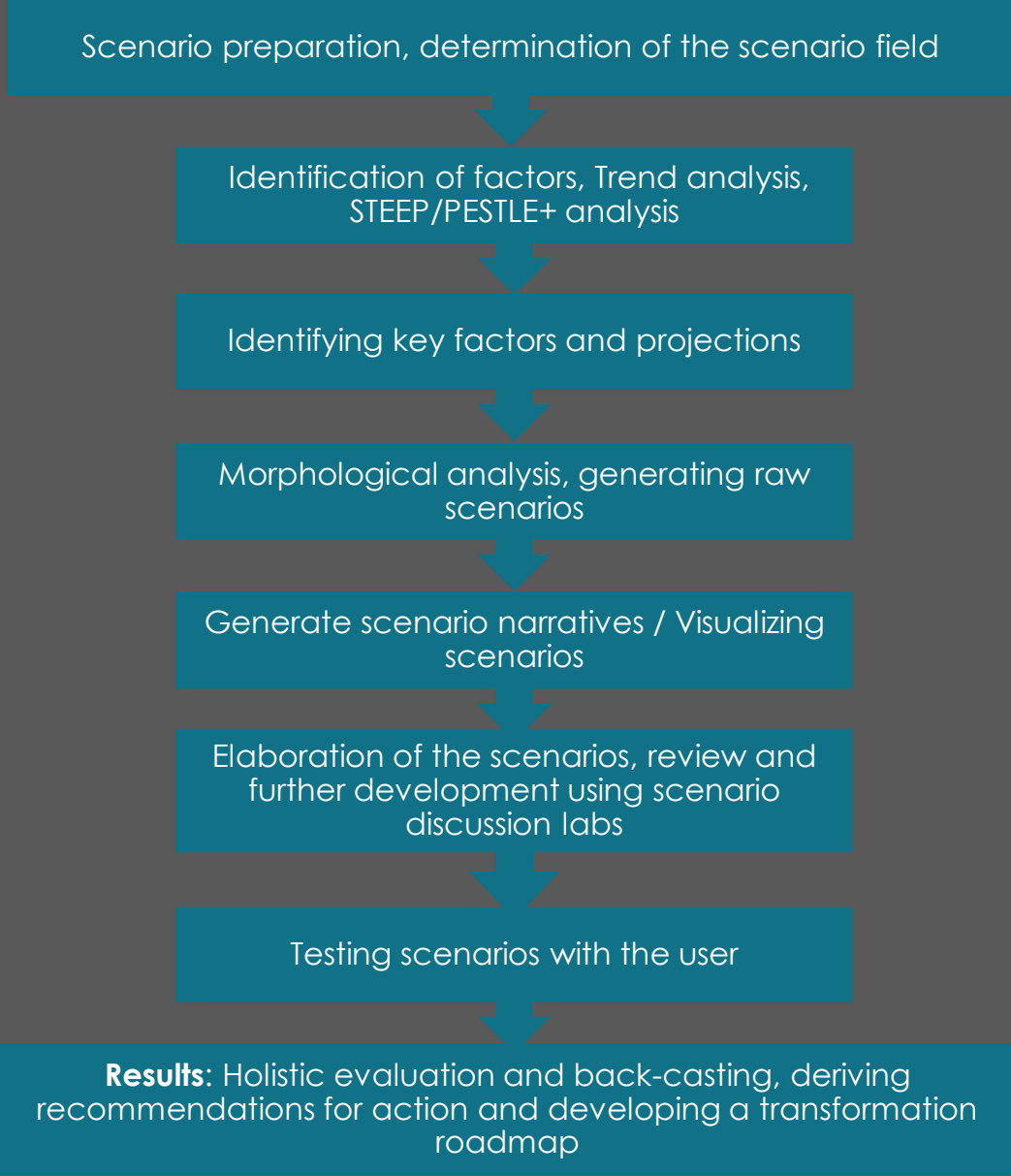
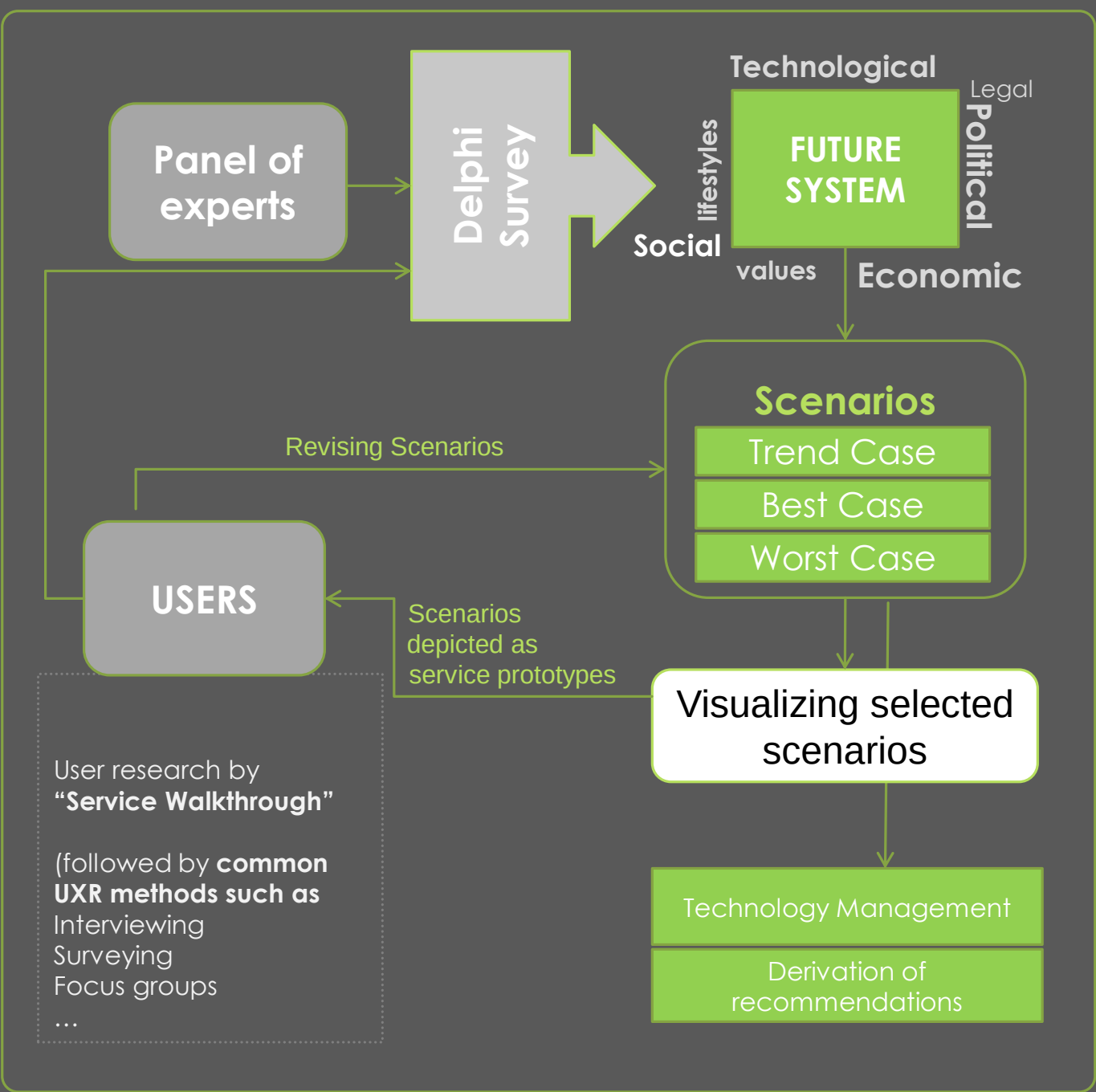
Basis: real operation



Biomassekarte von einem Acker. // © Renke Dählmann/MyDataPlant

## 2D sketches / animations

- Transformation paths
- Machine concepts and environment



Can we consider Scenario Design as the means of communication with the user on one side and with the technical decision makers on the other?



# QUESTIONS, COMMENTS?

# THANK YOU!

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