

Unveiling the Landscape of the Multi-Level Perspective through Text Mining: Examining the Transportation Transition

Daniel Weiss, Lara Damer, Stephan Müller

German Aerospace Center (DLR) - Institute for Transport Research

Research Group „Market analysis, -design and innovation strategies“ (MGI)



Wissen für Morgen



Content

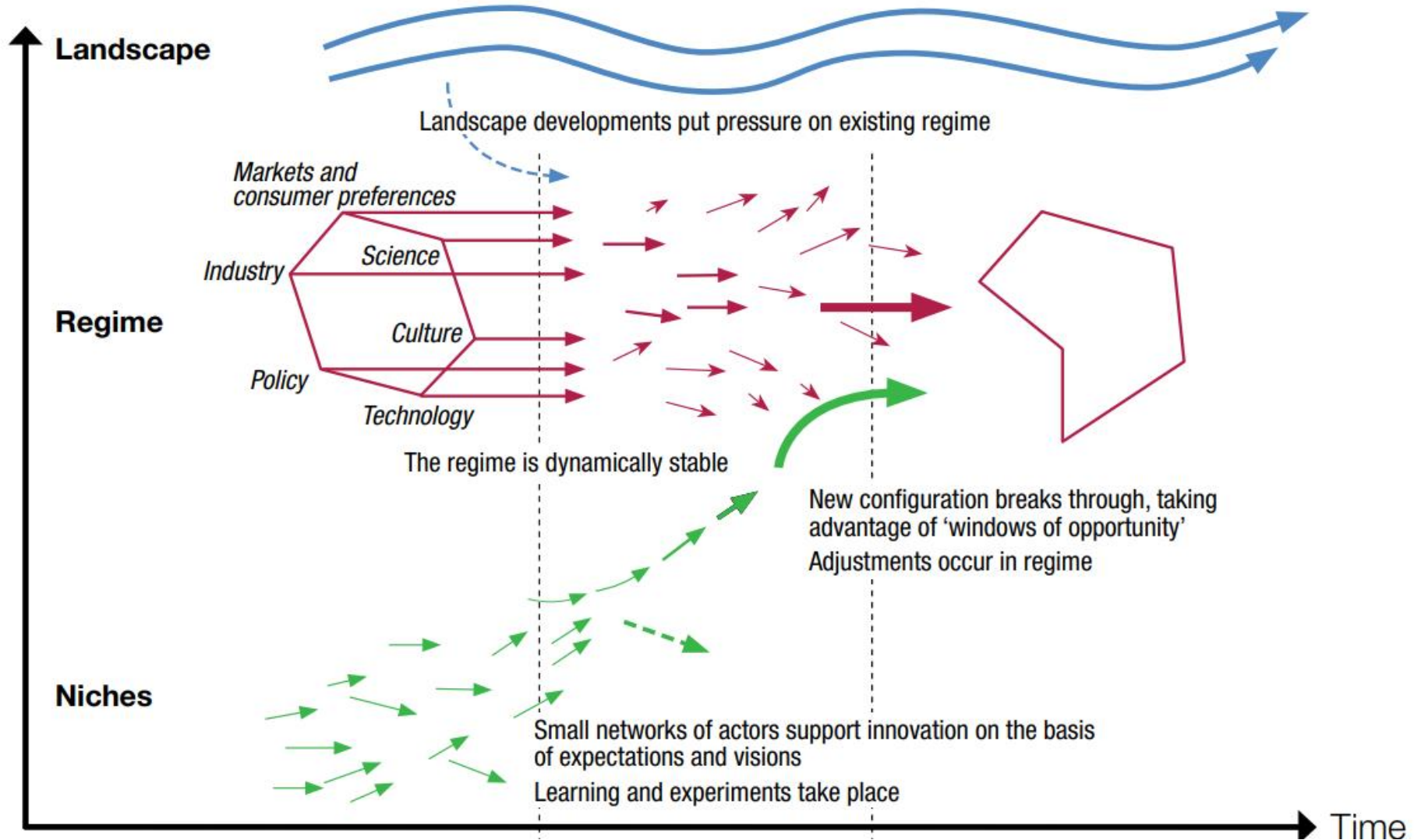
- Motivation
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Motivation



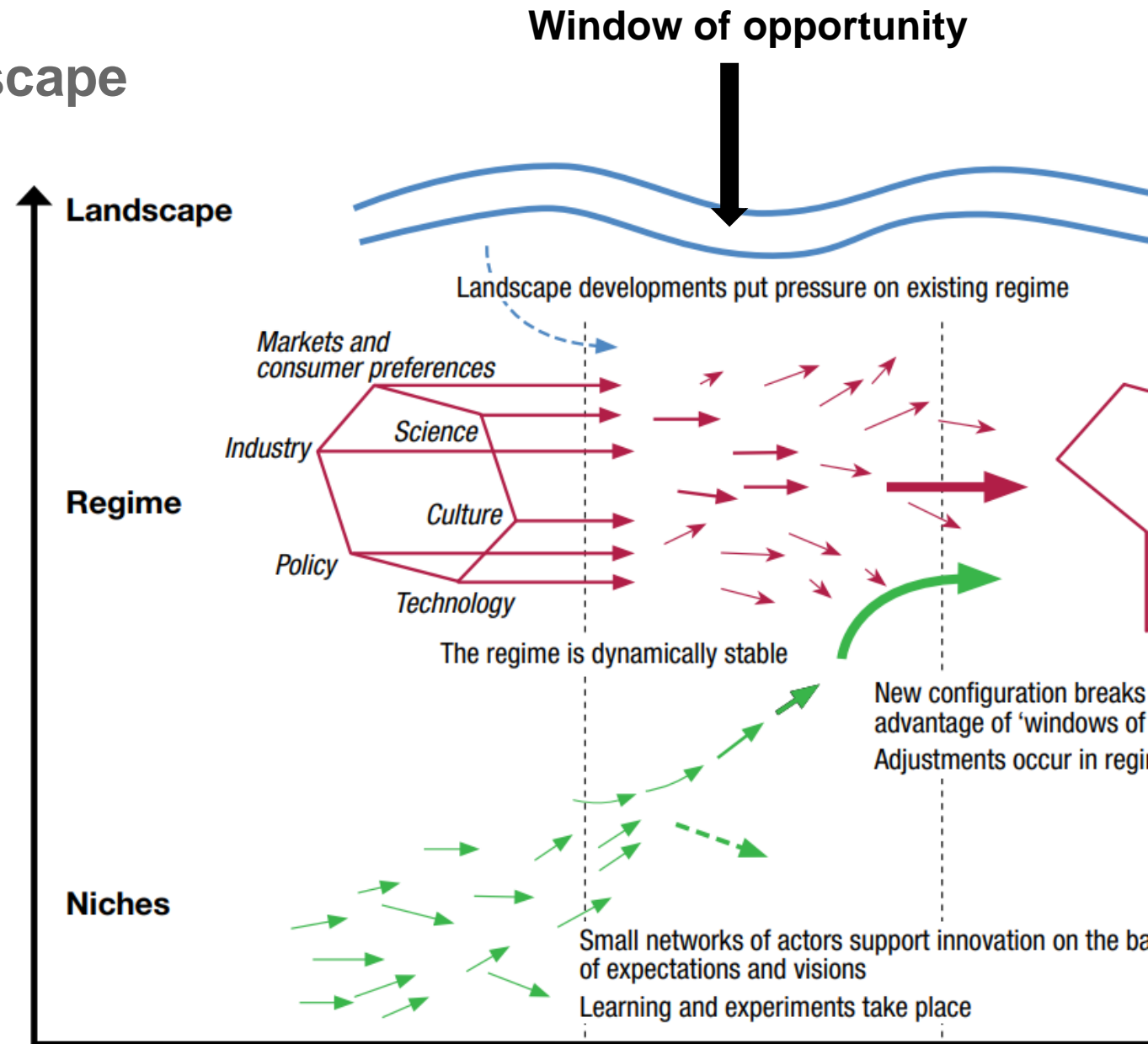
Multi-Level-Perspective (MLP) to understand transition processes



Adapted from Geels 2002, 2010

Underconceptualization of the landscape

- Landscape treated as “residual” but creating **windows of opportunity** (Geels 2011, Whitmarsh 2012)
 - Especially in the case of global values chains (Binz and Truffer 2017)
- *How can we monitor the landscape to identify windows of opportunity?*

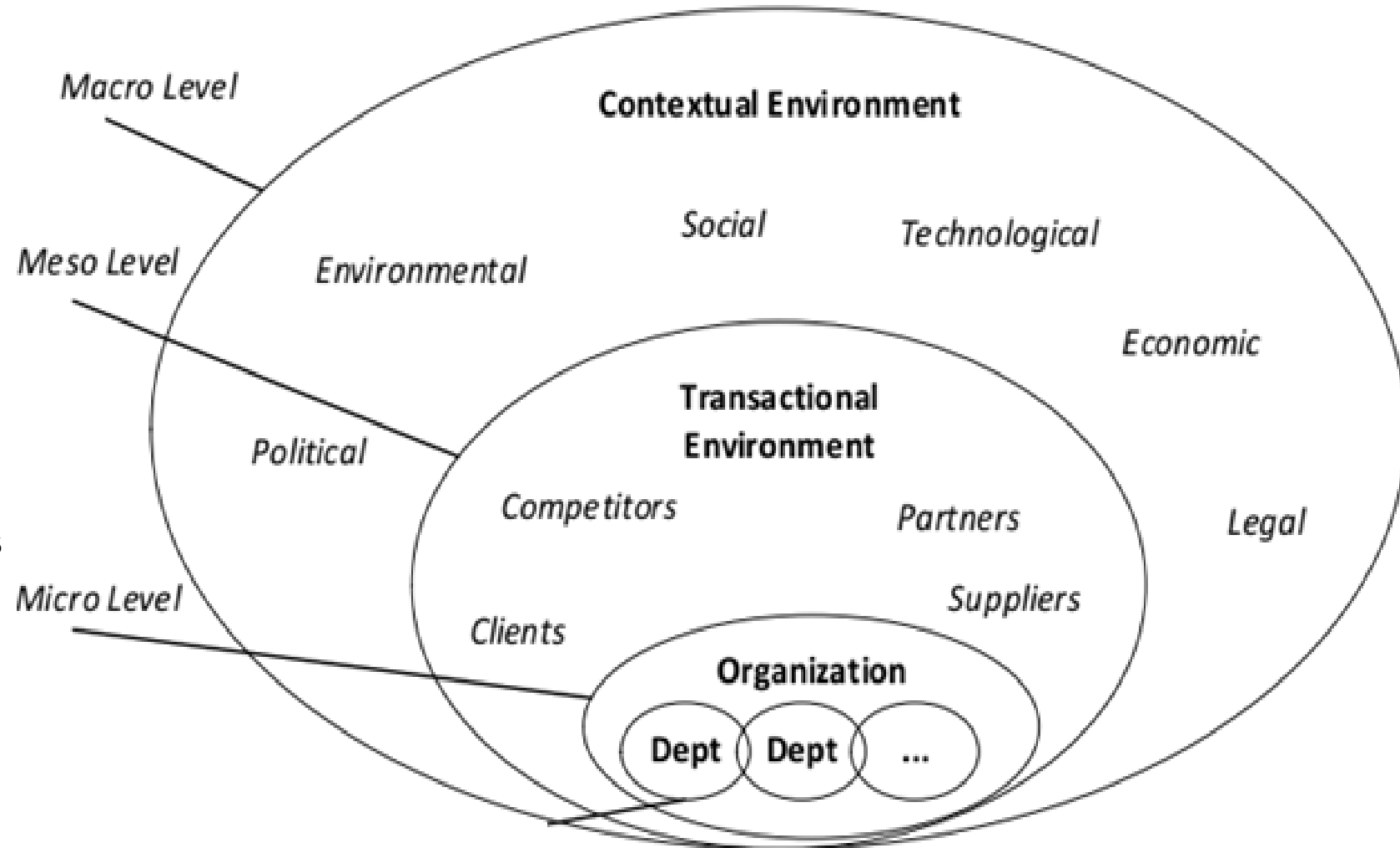


Method – Natural Language processing (NLP)

- Trending in transition studies (e.g., Weiss and Nemecek 2021, 2022, Dehler-Holland et al. 2021)

- Advantages:

- Process large body of data
- Reduce complexity and accelerate qualitative analysis
- Integration with LLMs



Processing Pipeline

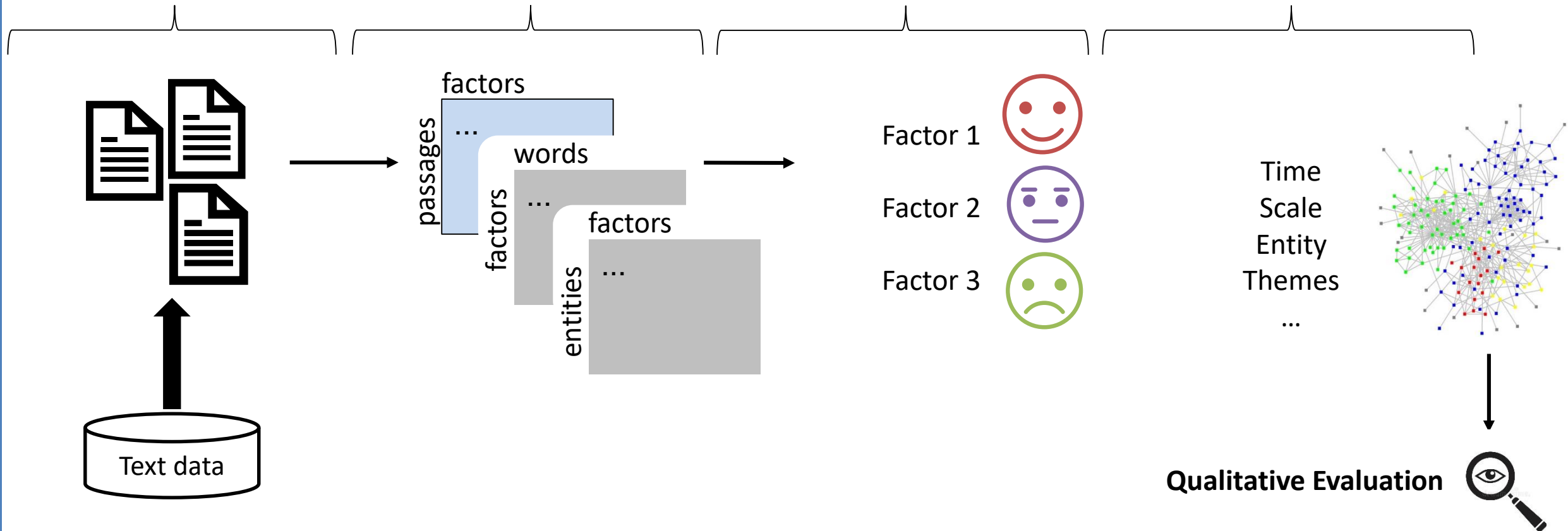


Pre-Processing

Factor mapping

Sentiment analysis

Clustering



Exemplary results from transportation studies



- **Environmental change:**
 - Emission reduction, climate change targets, energy transition, air pollution, sustainability, global warming, environmental pressure, climate policy, resource depletion , climate regulation
- **Demography:**
 - Social attitudes and values, increased demand for mobility, growing public awareness, globalization, de-globalization, awareness, ageing society
- **Digitalization**
 - ICT diffusion, information society, big data, AI, 5G



Discussion

- Facilitate subsequent qualitative analysis to derive recommendations, e.g., using:
 - Roadmapping
 - Scenario analysis

- Limitation:
 - Qualitative analysis bottleneck
 - Unclear definition of landscape factors

- Possible next steps:
 - Systematization of landscape factors along different dimensions
 - Train LLM models for qualitative evaluation



Contact

Dr. rer. pol. Daniel Weiss

Research group leader

„Market analysis, -design and innovation strategies“ (MGI)

Daniel.weiss@dlr.de

www.dlr.de/vf





THANK YOU!

Selected references

- Geels, F.W. (2002) 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study', *Research Policy*, 31(8), pp. 1257–1274. Available at: [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8).
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