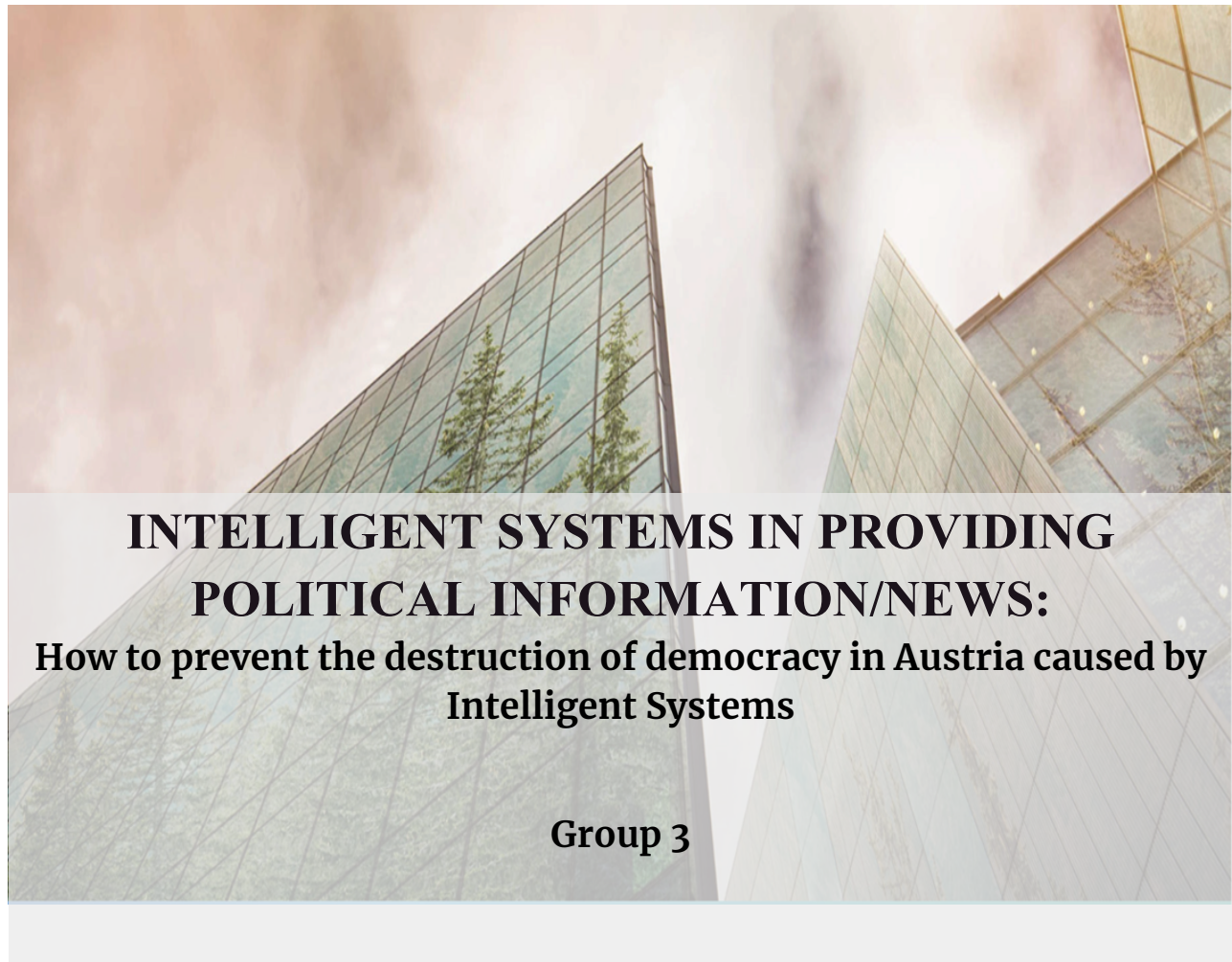




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1. Intro: What is the Td-Problem (derivation of the Guiding Question)

Austria, a nation with a rich democratic tradition and a strong commitment to democratic values, undoubtedly recognizes the importance of preserving the democratic process and ensuring its citizens have access to unbiased and accurate political news and information. However, as the integration of Intelligent Systems is becoming increasingly prevalent in the dissemination of political news and information to the public, concerns have arisen about the potential for these systems to undermine democratic capabilities, particularly in the context of electoral events.

Political systems are critical in shaping public opinion and individual decision-making processes. While these systems can provide valuable insights and analysis, misused or irresponsibly, they may lead to biased news, polarization and propaganda, which can manipulate public opinion and disrupt the democratic/elective process. It is, therefore, essential to ensure that using Intelligent Systems in providing political news and information does not harm democratic capabilities.

We aim to prevent the use of intelligent systems that have the intention or effect of disrupting the democratic capabilities of Austrian citizens before the 2029 elections. To address these concerns, we have assembled a Transdisciplinary Process that brings together experts from diverse fields to tackle the issue from multiple angles and arrive at a comprehensive solution. By leveraging the expertise of a range of stakeholders from different backgrounds, we will generate a more nuanced and holistic understanding of the issue and develop a robust set of recommendations that can be implemented to safeguard the integrity of the democratic process in Austria.

The purpose of this report is to present a comprehensive and concise summary of the results and conclusions of the Transdisciplinary Process that focuses on Intelligent Systems Providing Political News and Information. The report serves as a basis for ongoing discussions and future action, and it can also serve as a documentation of the collaboration between different stakeholders, participants, facilitators and supervisors. This report aims to communicate the

insights, generated ideas, recommendations, and solutions proposed during the process to disseminate the findings to relevant stakeholders such as researchers, practitioners, and the public. Moreover, this report will be used to assess the effectiveness of the transdisciplinary process and identify areas for improvement for future endeavors.

The report is structured to provide a comprehensive understanding of the issue of Intelligent Systems providing political news and information in Austria. This will explore the ethical and legal implications of Intelligent Systems and their potential impact on the democratic process. To begin, we will provide an overview of the current state of Intelligent Systems in this context, including a review of the existing literature and scientific research on the topic.

Next, we will outline the methods used to approach this issue in a transdisciplinary manner, including selecting participants from different backgrounds and fields of expertise. This will provide insight into the collaborative process of generating recommendations and solutions.

Finally, we will present our findings and recommendations based on the insights and interpretations gained throughout the Transdisciplinary Process. This will include a set of actionable recommendations for preventing the use of Intelligent Systems that have the intention or effect of disrupting the democratic capabilities of Austrian citizens before the 2029 elections.

2. System analysis:

Defining the scope and limits of a system is crucial in identifying critical interrelated components and processes that serve as the core of our framework. Therefore, By defining these system boundaries, stakeholders involved in using intelligent systems for political news and information in Austria can more effectively collaborate and communicate with each other and ensure that all relevant factors are considered when designing and implementing their strategies. After our final

conference that took part in Krems on the 31st of March, we agreed on five system boundaries that align with our desired framework :

1. **Austria:** The country of Austria represents a system boundary, as it is the geographic and political context in which the electoral campaign.
2. **Austrian voters:** The target audience for political news and information represents individuals with unique perspectives, needs, and preferences. Understanding the motivations and concerns of Austrian voters is essential for creating effective political messaging and engagement strategies.
3. **Legal framework:** The legal and regulatory environment surrounding political campaigning, advertising, targeting and generally, media content in Austria is worth mentioning as it establishes the rules and norms that govern how information can be disseminated and used during the electoral campaign period. This includes regulations around data privacy, transparency, traceability and accountability.
4. **Political-micro-targeting:** The use of intelligent systems for political news and information represents a system boundary. It introduces new technological capabilities and ethical considerations that must be considered. Political micro-targeting involves algorithms and machine learning to tailor messages and content to specific groups of voters based on their characteristics and behaviors. The latter is vital in our framework as these intelligent systems risk disrupting democratic principles and processes.
5. **2029 electoral campaign period:** The specific timeframe of the electoral campaign period also represents a system boundary, as it creates a distinct temporal context for political messaging and engagement. This includes considerations around campaign duration, the timing of key events and milestones, and the overall public mood and sentiment.

One of the main concerns with using intelligent systems in providing political news and information is the potential for bias and inaccuracy (Peters, 2022). This issue is fundamental in elections, where unbiased and accurate information is critical for citizens to make informed decisions. (de Fine Licht, 2020) And since there is a growing trend in using intelligent systems for providing political parties, news organizations and social media platforms to analyze data and generate personified/tailored content to user's preferences, it could be misused, for example, for political gain (Ünver, 2018).

Research has shown that these systems may favor mainstream news sources over alternative or independent sources, limiting the diversity of views available to users (Lazer et al., 2018). Users are only exposed to information that reinforces their beliefs and perspectives, potentially leading to a lack of exposure to diverse viewpoints (Pariser, 2011). Additionally, intelligent systems may contribute to forming echo chambers and filter bubbles.

Another concern is the potential for intelligent systems to spread false or misleading information through deliberate manipulation or unintentional dissemination of inaccurate information. This can profoundly affect democratic processes, such as elections (Woolley & Howard, 2016). Additionally, the use of intelligent systems in providing political news and information raises concerns about privacy and surveillance, as users' data and online activities may be tracked and analyzed, potentially having a chilling effect on free speech and political expression (Tene & Polonetsky, 2013).

Furthermore, political microtargeting has been a controversial issue in the EU in recent years, with some arguing that it can be used to manipulate public opinion and undermine democratic processes (Dobber et al., 2019). This creates a polarized pattern for online news consumption, where users visit and are exposed to news sources aligned with their political views (Garimella et

al., 2021). Although micro-targeting has been seen as a threat, the practice is not illegal. The EU protects a politician's expression, and political parties mirror society, presenting various opinions in different countries and populations. Therefore, political parties contribute to political debate and are protected by Article 11 of the Charter of Fundamental Rights ("Guide on Article 11 of the European Convention on Human Rights," 2022). This enables loopholes that could disrupt the democratic principles within the EU and, specifically, Austria.

The European Union openly acknowledges that online political marketing interferes with true democracy. Using intelligent systems to provide political news and information can disrupt democratic capabilities, particularly in elections. Therefore creating rules and regulations on political advertisements is "key to guaranteeing citizens fundamental rights and the integrity of democratic processes" ("European Parliament," 2022). As new techniques are continuously rolling out in an ever-changing online environment, political messages can potentially tailor messages through personal data collected. With citizens' data privacy at risk, the EU must protect people's rights and encourage transparency. The goal is to create equal opportunities to receive information and make decisions freely and fairly, not about which politician has better marketing AI capabilities. In November 2021, a new legislative package was developed to reinforce democracy, including two proposals for regulations on funding and transparency ("European Parliament," 2022). As all EU member states have regulations, only 17 are directed around the online environment, making this a space with many loopholes.

In 2021 the definition of political advertisement was reassessed in the EU. An impact assessment uncovered three main problems the proposal should address; cross border provision in online political advertising services, transparency, and challenges to citizen integrity ("European Parliament," 2022). The proposal has four main elements, which include (i) establishment of standard rules for online and offline advertising, (ii) application of sponsored political

advertising, (iii) extension of the electoral period, and (iv) imposition of transparency requirements and prohibition of invasive techniques ("European Parliament," 2022). In its totality, these new regulations set out by the European Union are to encompass a much broader sense of what qualifies as political advertising, which now would include any form of "advertising linked to elections, referenda, and regulatory or legislative process, regardless of who sponsors it" ("ECNL," 2022).

These regulations are intended to be implemented for the upcoming 2024 elections in Europe. However, many people, such as Google and journalists, are weary of this proposal, raising concerns about its validity ("ECNL," 2022). Previously, the EU determined that regulations were not all-encompassing, leaving too many gray areas for campaigns and misinformation to slip through the crack, possibly disrupting the democratic process.

The use of advertising, especially on social media platforms such as Facebook, is an effective technique to influence voters' decisions. In the European Union, political microtargeting and online advertising are on the rise (IDEA, 2020). In 2018, the number of political ads displayed on digital platforms increased by 61% compared to the previous year. Additionally, most political spending on digital platforms was used for microtargeting and ad personalization, with 76% of political ads utilizing this technique to target individuals in 2018. This figure is expected to continue to increase as digital platforms become more popular. Without countermeasures, electoral and political processes in the European Union (EU) will be affected by an expansion of these microtargeting strategies. ("Internet and Electoral Campaigns - Study on the Use of Internet in Electoral Campaigns," 2017).

3. Method

a. Description and design

Transdisciplinarity is an approach to knowledge creation that seeks to integrate multiple disciplines and perspectives to address complex real-world problems. It can also be defined as a necessity for effective decision-making on environmental issues. In fact, transdisciplinary teams should include not only experts from different scientific fields, but also representatives from affected communities, industry, and government (R. Scholz, 2011).

Additionally, R. W. Scholz & Steiner (2015) note that transdisciplinary teams must engage in continuous communication and reflection to ensure that all voices are heard and that the project is moving in the right direction. Therefore, they suggest that this process should involve not only sharing of knowledge, but also negotiation of values and interests.

R. W. Scholz (2017) offers a framework for understanding transdisciplinary research. He identifies three main components: knowledge integration, mutual learning, and real-world relevance. Knowledge integration involves combining different types of knowledge, including scientific, experiential, and practical knowledge. Mutual learning refers to the process of learning from each other's perspectives and experiences. Real-world relevance emphasizes the importance of addressing real-world problems and producing actionable outcomes.

R. Scholz et al., (2019) provides a practical guide for conducting transdisciplinary research. He suggests that transdisciplinary teams should start by identifying a specific problem or challenge and engaging stakeholders from the outset. They should then work to create a shared understanding of the problem and develop a research plan that incorporates diverse perspectives and knowledge types. Throughout the research process, the team should engage in reflexive dialogue and work towards actionable outcomes that can inform policy and practice.

The main ideas from R. Scholz et al., (2019) can be summarized as followed:

1. Starting with a specific problem or challenge that is relevant to society.
2. Engaging stakeholders from the outset to ensure that the project is driven by real-world needs.
3. Developing a shared understanding of the problem and the research questions.
4. Incorporating diverse perspectives and knowledge types, including scientific, practical, and experiential knowledge.
5. Engaging in reflexive dialogue to ensure that all voices are heard and that the project is moving in the right direction.
6. Co-creating knowledge and solutions with stakeholders, rather than simply imposing solutions.
7. Fostering a culture of collaboration and mutual learning.
8. Working towards actionable outcomes that can inform policy and practice.
9. Monitoring and evaluating the outcomes of the research to ensure that they are achieving the desired impact.
10. Communicating the research findings to a broad audience, including policymakers, practitioners, and the general public.

Taking into consideration the Method described by Roland Scholz and keeping three main points in line (knowledge integration, mutual learning, and real-world relevance), the group VS03 was assigned to work on the problem “Intelligent systems in providing political information/news”. As shown in section 1 of this report, after much discussion, the final Guiding Question was: How to Prevent the Use of Intelligent Systems that Intends or Has Effects on Disrupting the Democratic Capabilities of Austrian Citizens before the 2029 Elections?

To get in this Guiding Question and to be in a Transdisciplinarity process, this project has had different participants from science, practice and research.

The participants will be described in the next session.

b. Participants

Being Transdisciplinarity a TISE Master Course the initial participants were the students assigned to this project. After hours of reading, tests, research and workshops with Professor Roland Scholz, students became facilitators.

Coordinators / Researchers / Facilitators:

- **Mag. Günther Schreder**

Academic staff research - Department for Knowledge and Communication Management
University for Continuing Education Krems

- **Dr. Cornelia Sindermann**

Independent research group leader
University of Stuttgart

Students/Facilitators:

All students are part of the TISE Master Program.

- Master Candidate **Allena Arnold**

Allena Arnold (from Canada) has a Bachelor's Degree in Business, Marketing & Management.

- Master Candidate **Larissa Gehlen Pedro**

Larissa Gehlen Pedro (from Brazil) is a Civil Engineer.

- Master Candidate **Yasmine Jhabli**

Yasmine Jhabli (from Morocco) has a bachelor's degree in English Literature.

- Master Candidate **Ilya Lavrov**

Ilya Lavrov (from Russia) has a Bachelor's Degree in Political Science.

- Master Candidate **Nowai Linn**

Nowai Linn is a communications professional from Myanmar.

Apart from facilitators, other participants were invited to contribute to this project. Figure 1 shows the Brunswikian double lens applied to the societal relevant topic that has been discussed in this transdisciplinarity project.

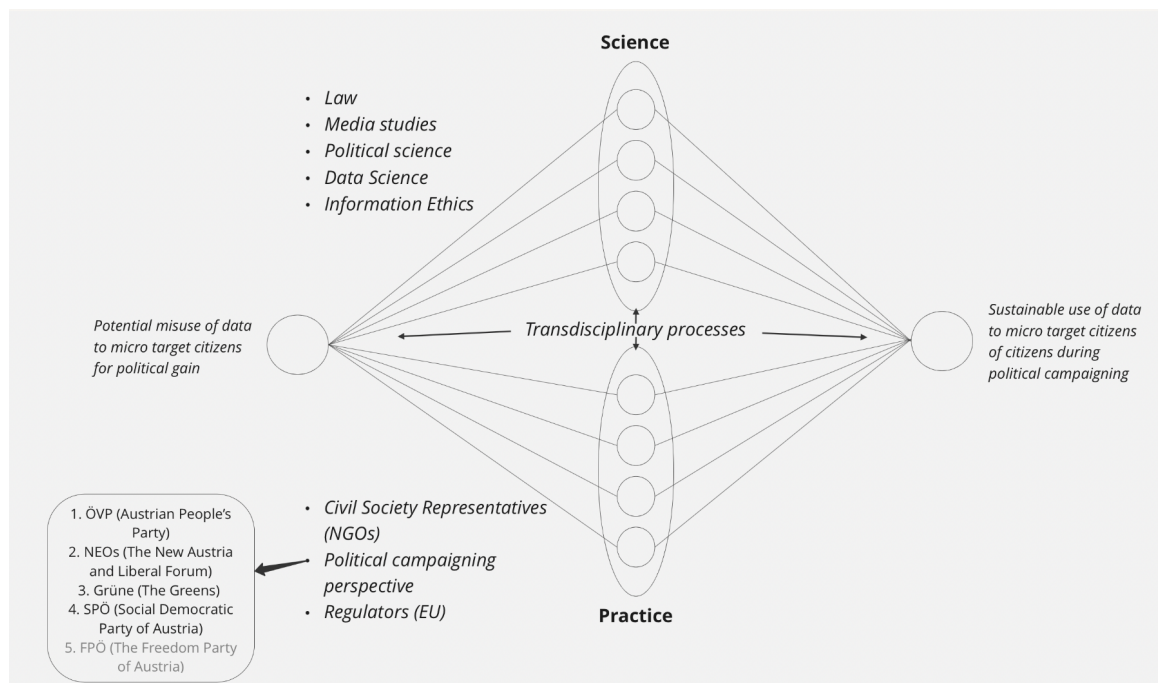


Figure 1: Brunswikian double lens adapted for this study

According to R. W. Scholz & Steiner (2015), the Brunswikian double lens involves viewing a problem or issue through two lenses: an internal lens and an external lens. The internal lens focuses on the individual components of the problem, such as the technical or scientific aspects. The external lens, on the other hand, focuses on the broader context in which the problem exists, such as social or environmental factors. By combining these two lenses, the Brunswikian double lens allows researchers to consider both the micro and macro aspects of a problem, and to

develop solutions that are grounded in both technical knowledge and social context. This approach emphasizes the importance of transdisciplinary collaboration and the integration of diverse perspectives and knowledge types.

From practice, this project has the following participants:

Yussi Pick is an Austrian national and internationally renowned campaign and communication consultant. He has worked in campaigns in the USA. He has won an Award in Germany called German Politics Award and an award in North America called the Rising Star Award.

Darius Djawadi works for the NEOS (The New Austria and Liberal Forum), a political party in Austria. He is currently Head of Social Media at NEOS and is responsible for leading the team that designs marketing strategies using social media.

Dr. Maria Diaz Crego works for the European Parliamentary Research Service as a Policy Analyst.

From science, this project has the following participants:

Marguerite Barry is a research and assistant professor at UCD (University College Dublin). Her research is focussed on ethical design for human-computer interaction (HCI) and communication through digital media.

Daniela Ingruber serves as a war and democracy researcher at the University for Continuing Education Krems (Austrian Democracy Lab), where she focuses on research areas such as the future of democracy, political education, and new media.

Dr. Phil. Heidrun Maurer is a researcher and Professor. She works at the Center for e-governance at University for Continuing Education Krems.

Univ.-Prof. Ing. Dr. Clemens Appl, LL.M. is a full Professor from the Center for Intellectual Property, Media and Innovation Law University for Continuing Education Krems.. His research and publication activities focus on intellectual property law, competition law, trade secrets, software law, protection of personal data and data ownership

Dr. Gabriel M. Lentner is an assistant professor at the Department for Legal Studies and International Relations at University for Continuing Education Krems.

c. Variables

i. Impact variable of status quo (and status quo)

Impact variables are defined as the variables that are used to measure the impact of a research program on the environment, society, and economy. These variables can be used to assess the effectiveness of a program in achieving its sustainability goals and to identify areas for improvement. impact variables should be selected based on the specific goals and objectives of the research program. They should be relevant, measurable, and responsive to changes in the program. In addition, impact variables should be based on a comprehensive understanding of the system being studied, including its social, economic, and environmental dimensions (R. W. Scholz & Steiner, 2015).

This project has 8 impact factors defined as the following:

Enforcement/Standards: Laws, regulations, standards, and more, that effect/guide the environment of data use for microtargeting in Austria, like GDPR for example.

Digital and Media Literacy: People capacity of dealing consciously and responsibly with data and critically evaluating sources of information is one of today's cultural requirement such as reading and writing

Polarization: The strong contrast of political opinions and political biases that are present in offline and online environments.

Ease of data collection: The level of data that is easily collected when browsing, shopping, working in an online environment; collected via tracking, cookies etc.

Innovation: The amount of innovation taking place within intelligent systems will alter the landscape and acquire solutions to be adjusted regularly. The rate that innovation takes place determines that solution that is needed to keep up with it.

Offline Research: Offline consumption of news refers to the process of accessing news through traditional media sources such as print newspapers, television, or radio, rather than online sources. This variable also includes offline discussions with people.

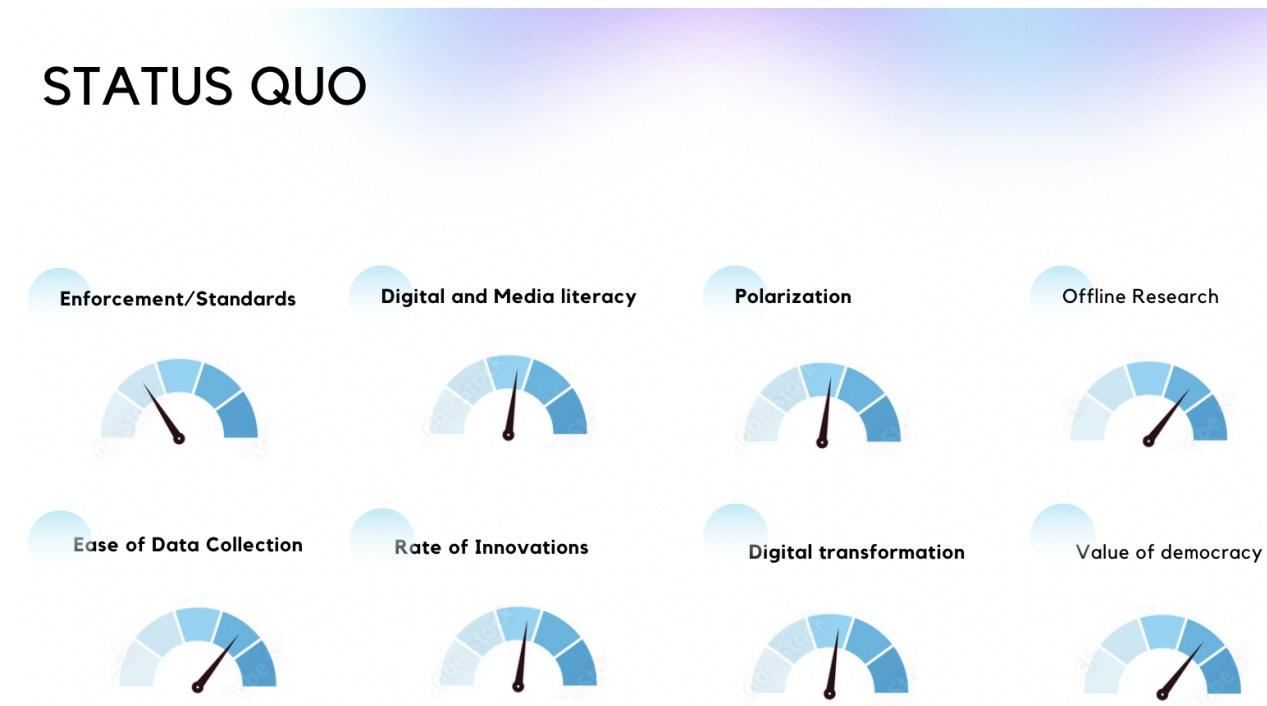
Value of democracy in society: The value of democracy in society refers to the belief that every individual has the right to participate in decision-making processes through free and fair elections. Democracy promotes and protects individual rights, fosters stability, allows diverse voices to be heard, and promotes transparency, accountability, and participation.

Digital transformation: involves the use of digital technologies to change how a business operates and delivers value to its customers. It can involve various technologies and aims to improve efficiency, increase agility, enhance customer experience, and create new business models. It requires significant investment in technology infrastructure, as well as a commitment to change management and training. Digital transformation is a strategic initiative that helps organizations remain competitive in a digital and fast-paced world. Can be seen through the lenses of World Digital Competitiveness (Measuring the capacity and readiness of economies to adopt and explore digital technologies for economic and social transformation).

Every impact factor was defined and based on research low and high values were signed to each and every one of them. It is possible to see these values in Appendix 1.

Based on the high, low and current values it was possible to draw the status quo using the impact variables, as the Figure 2 shows:

Figure 2



ii. Evaluation criteria

Evaluation criteria refer to the factors used to assess an organization's vulnerability to digital threats. Being transdisciplinarity, a method that emphasizes the integration of different types of knowledge and perspectives, evaluation criteria is developed through a participatory process that involves experts from different fields, including political science research, political advertisement, law, political parties, campaigners and more. Evaluation criteria are not meant to be prescriptive, but rather to provide a starting point for assessing an organization's vulnerability to digital threats. The criteria can be adapted to different contexts and can be used as a basis for developing customized assessment methods. At the end, evaluation criteria must offer a promising approach for assessing organizational vulnerability to digital threats and can help

organizations to identify areas for improvement and prioritize their security efforts. (R. Scholz et al., 2019)

To answer the Guiding Question “How to Prevent the Use of Intelligent Systems that Intends or Has Effects on Disrupting the Democratic Capabilities of Austrian Citizens before the 2029 Elections?” the transdisciplinarity process generated 6 Evaluation Criteria followed by their definition:

- Transparency & Traceability: Transparency in the context of intelligent systems can be defined as the ability to understand how the system makes decisions and operates. It refers to the extent to which the system's internal processes, algorithms, and data are open and accessible to users and stakeholders. Traceability in the context of intelligent systems refers to the ability to track and document the system's inputs, processes, and outputs over time. It involves recording and storing information about the data used, the algorithms applied, and the decisions made by the system, in order to facilitate accountability, transparency, and reproducibility.
- Equal Access to Information: In the context of intelligent systems, equal access to information is measured in order to ensure that the information presented to users through intelligent systems is accurate, impartial, and not influenced by any particular agenda or interest group. It also means being transparent about the sources of information used in microtargeting and ensuring that the information presented to users is not designed to manipulate their beliefs or behavior for political or commercial gain.
- Aware and informed citizens (digital/Media Literacy): Digital literacy refers to the ability to effectively and critically use digital technologies and information to achieve one's goals. It encompasses a range of skills, including the ability to access, evaluate, analyze, and communicate information using digital technologies.
- Accountability: Accountability refers to the responsibility of those involved in the design, development, and use of these systems to ensure that they are transparent, ethical, and aligned with democratic values. requires that those involved in the use of these systems take responsibility for the outcomes and impacts of their actions. This means being

willing to acknowledge and address any negative effects of microtargeting on democracy, and taking steps to mitigate these effects.

- Societal acceptance (of stakeholders): Level of support and trust that the public and other stakeholders have for these practices. This can involve assessing whether these practices are perceived as fair, transparent, and accountable, and whether they are aligned with democratic values and principles. This can involve assessing whether these regulations are perceived as necessary, effective, and aligned with democratic values and principles. Social acceptance can be influenced by a range of factors, including the level of public awareness and understanding of the potential risks and benefits of microtargeting and the use of intelligent systems in political campaigns, the degree of involvement and participation of stakeholders in the development and implementation of these regulations, and the effectiveness of regulatory mechanisms in ensuring that these practices are aligned with democratic values and principles.
- Clarity of solution/standard/regulations/etc (comprehensible/usability): The use of microtargeting and intelligent systems in political campaigns are clear and easily understandable to stakeholders, including policymakers, industry professionals, and the public.

iii. Threat variables

When engaging in a transdisciplinary process, it's important to take into account any potential threats that may affect the outcome of the process or the solutions that are developed. By identifying and addressing these threats, stakeholders can reduce risks and increase the chances of success. Moreover, considering threat variables can help anticipate and mitigate any obstacles that may arise during the process. We came up with two threat variables that could realistically and potentially disrupt our system:

- Intervention of Foreign Agencies: When these agencies target vulnerable groups who have low digital literacy and distrust in the political system, it might involve the spread of

propaganda in support of a political party or agenda that is favorable to the intervening organization.

Such a scenario is a realistic possibility, particularly in the context of societies that are highly polarized and have citizens with low digital literacy. In such situations, the threat of foreign intervention may be particularly problematic, as vulnerable groups are more susceptible to misinformation and propaganda.

- Algorithmically Curated Outlets: When there is a decrease in the number of journalists and news outlets, it could result in a reliance on algorithmically curated news outlets, which are often more affordable and accessible.

Potentially, this could lead to issues such as biases, vulnerability to hackers, and a lack of transparency, all of which could affect the accuracy and quality of the news as well as the user's data privacy.

iv. Bundles of intervention analysis:

When considering intervention scenarios for intelligent systems providing political news and information in Austria, there are three potential interventions that include prevention, emergency and aftercare measures which could be implemented to mitigate the potential negative impact of intelligent systems providing political news and information and maintain the viability of the broader news ecosystem:

I. Prevention interventions:

- Promoting Digital Literacy: This could involve developing educational resources to help users better understand how to evaluate the credibility of news sources, identify misleading or biased information, and protect their personal data and privacy online.
- Transparency regulations: Governments could enact regulations requiring news outlets to disclose their algorithmic curation processes and funding sources. This could help to

increase the transparency and accountability of news outlets, and reduce the likelihood of hidden biases or agendas.

- Collaboration between news outlets and technology companies: News outlets and technology companies could collaborate to develop more accurate and reliable news algorithms, using a combination of machine learning and human oversight. This could help to reduce the impact of false or misleading news, and ensure that users are exposed to a diverse range of perspectives.

II. Emergency Interventions:

- Fact-checking services: Organizations could develop fact-checking services that are able to quickly identify false or misleading news stories and provide accurate information to users. This could help to counteract the impact of false or misleading news stories, and reduce the spread of misinformation
- Social media platform interventions: Social media companies could develop tools and algorithms to identify and flag false or misleading content, and reduce its spread on their platforms. This could help to reduce the impact of false or misleading news stories, and ensure that users are exposed to a diverse range of perspectives.
- Emergency Response Team: This could involve a collaboration between government agencies, law enforcement, and technology companies to identify and respond to emerging threats related to foreign intervention in political news and information. The Emergency Response Team could work to identify and remove false or misleading content, track the spread of propaganda or disinformation campaigns, and identify and prosecute those responsible for the intervention.

III. Aftercare Interventions:

- Rebuilding Trust: In the aftermath of a significant event resulting in widespread misinformation or false news, it may be crucial to rebuild trust. This can be achieved by implementing transparency measures, which disclose sources of funding and algorithms used by news outlets. Additionally, educating users on how to identify credible sources of information and how to fact-check news stories can also be an effective approach.

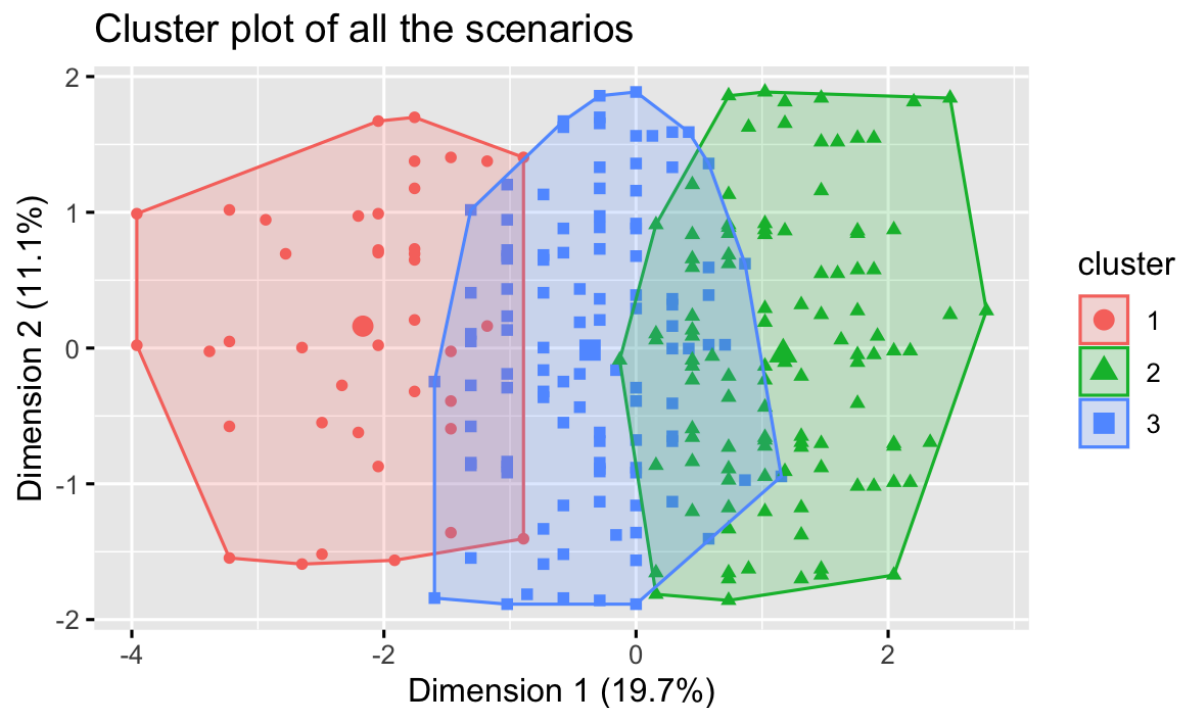
- Developing Support Groupes: Following a crisis, individuals may require emotional and psychological support due to the impact of false news and misinformation. To address this, support networks and resources, such as mental health services, crisis hotlines, and peer support groups, could be developed to help individuals cope with the aftermath.
- Restoring Public Confidence: After a crisis , it is crucial to regain public confidence in both the media and the political system. This may entail implementing measures such as public debates, town halls, and community engagement activities to help restore trust and rebuild connections between citizens and the political system.

All in all, these measures could promote digital literacy and critical thinking skills among users, as well as regulations to ensure that news outlets are transparent about their algorithmic curation processes and sources of funding as well as help the users identify and correct misinformation.

4. Results

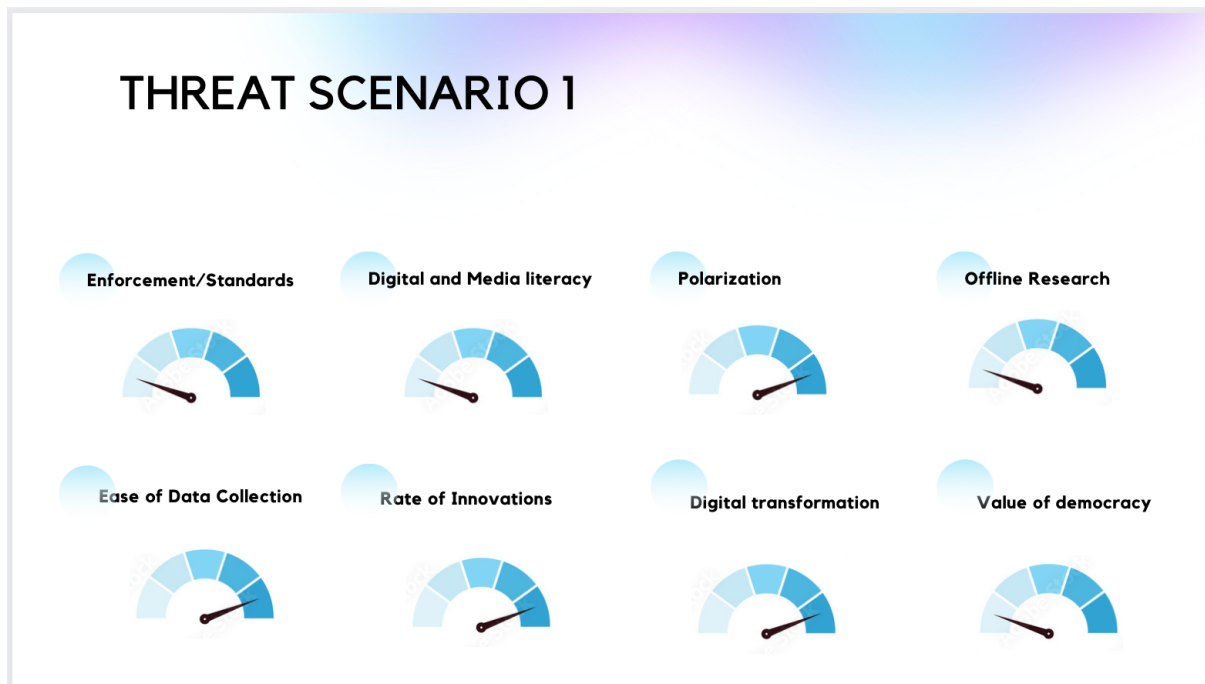
Our research group compiled a scenario matrix of 256 scenarios with varying impact factors. Based on that, the consistency scores of each scenario were calculated. Using the clustering algorithm k-means, all scenarios were merged into three large groups, which were named: 1) dystopian scenario, 2) realistic threat scenario and 3) utopian scenario. The clustering results are presented in Figure 3.

Figure 3



Threat Scenario 1 “Dystopian”

Figure 4.



This hypothetical scenario envisions a dystopian future in Austria, Austria where the unregulated use of citizens' private data for political purposes is combined with a low level of digital and media literacy, high polarization, accessible data collection, rapid technology and AI development, and a low value for democracy. Several factors converge to create a situation where manipulating citizens through the unregulated use of private data for political purposes becomes a reality.

In this scenario, political parties and candidates could potentially use citizens' private data for political purposes without any regulation, which could lead to an increase in targeted political advertising, personalized messages, and micro-targeting. This could create a situation where political campaigns could manipulate voters by showing them tailored information based on their data, interests, and behaviors.

The population's low digital and media literacy levels could exacerbate this situation. Many citizens may not realize that their data is being used for political purposes or may not understand how it is used. This lack of awareness could lead to citizens not making informed decisions and being easily influenced by targeted political messaging.

Furthermore, the high level of societal polarization could deepen existing divisions and create echo chambers where people only receive information confirming their beliefs and biases. This could lead to citizens becoming increasingly isolated and less able to engage in productive discussions and debates.

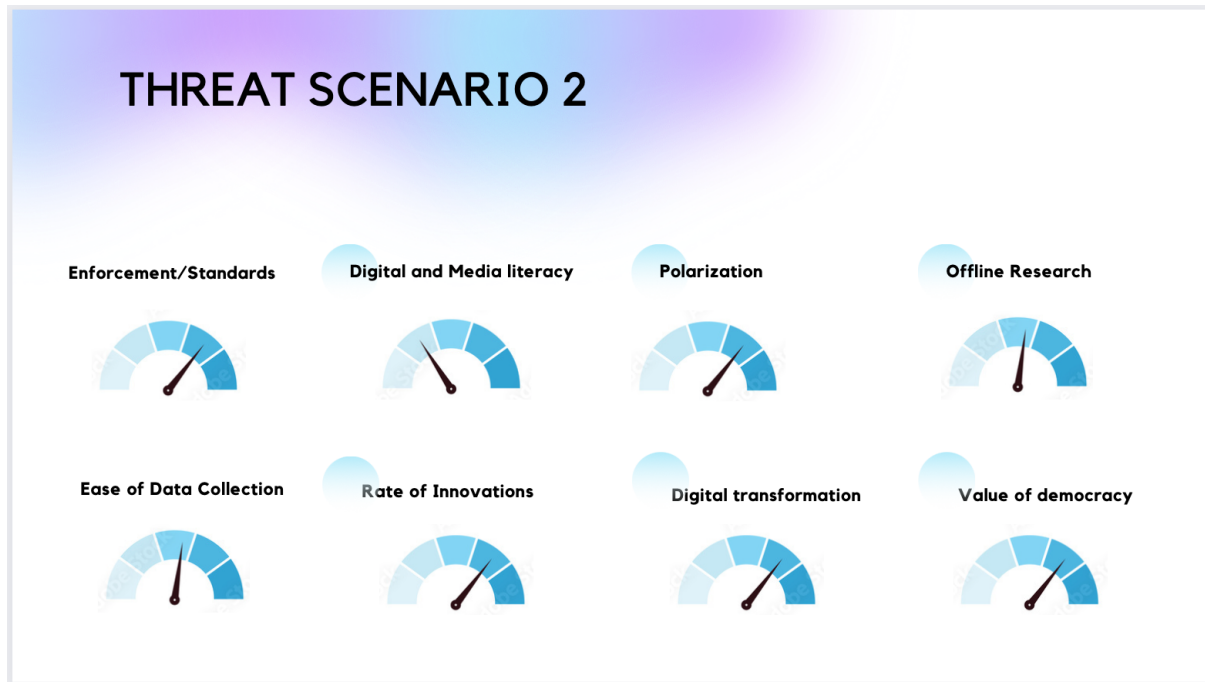
The ease of data collection and the rapid development of technologies and AI could exacerbate the situation by enabling political campaigns to create sophisticated algorithms to predict citizens' political preferences, behaviors, and voting patterns. This could allow political campaigns to target vulnerable citizens with misleading information or messages designed to sway their opinions.

Finally, in a highly digitalized society where people do not discuss issues offline and do not value democracy, the consequences of such a scenario could be severe. The democratic process could be undermined, and citizens' trust in the political system could erode. This could lead to increased cynicism, apathy, and disengagement among the population, which could have long-term implications for the stability and resilience of democratic institutions.

Overall, this scenario highlights the need for policies and regulations that protect citizens' privacy and democratic processes while promoting digital and media literacy and offline discussions. Failure to address these issues could result in a dystopian future in which citizens' fundamental rights are compromised and the democratic process is undermined.

Threat Scenario 2

Figure 5



This realistic scenario describes the situation in Austria, where there is relatively high regulation of citizens' private data for political purposes. Technologies and AI are developing rapidly, the level of digital transformation is very high, people discuss online and offline issues, and people value democracy. Still, the population's digital and media literacy level is insufficient. Additionally, society is highly polarized, and it is easy to collect data from citizens.

In this scenario, while there are regulations to protect citizens' privacy, the lack of digital and media literacy could still make citizens vulnerable to targeted political advertising and messaging. The high level of societal polarization could further exacerbate this issue, with political campaigns using targeted messaging to appeal to specific groups based on their values, beliefs, and interests.

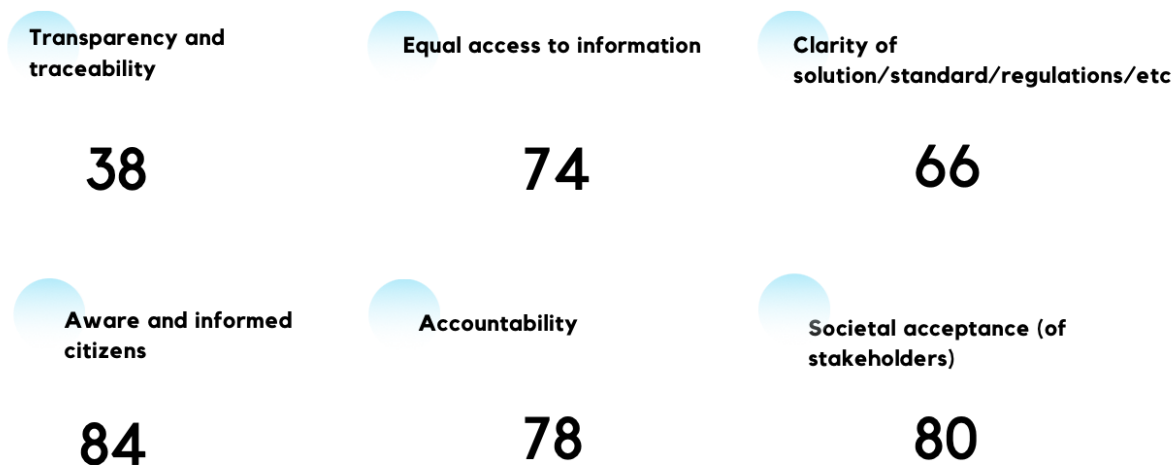
The ease of data collection and the rapid development of technologies and AI could enable political campaigns to create sophisticated algorithms that predict citizens' political preferences, behaviors, and voting patterns. This could lead to the creation of more effective targeted messaging and micro-targeting.

In a highly digitalized society where people discuss issues online and offline, the consequences of this scenario could be complex. On the one hand, online discussions could enable citizens to engage in more diverse and robust discussions and debates, potentially leading to more informed decisions. On the other hand, online discussions could exacerbate polarization by enabling people to self-select into echo chambers and only engage with information that confirms their beliefs and biases.

Despite the potential risks, the fact that people value democracy could help mitigate some of these issues. A strong commitment to democratic principles could lead to greater transparency in the political process and more effective measures to protect citizens' privacy.

Our calculations of evaluation criteria show that in this scenario, the most significant system losses occur from unaware and uninformed citizens and the lack of societal acceptance of stakeholders. This can be seen in Figure 6, where the risks of this scenario are depicted.

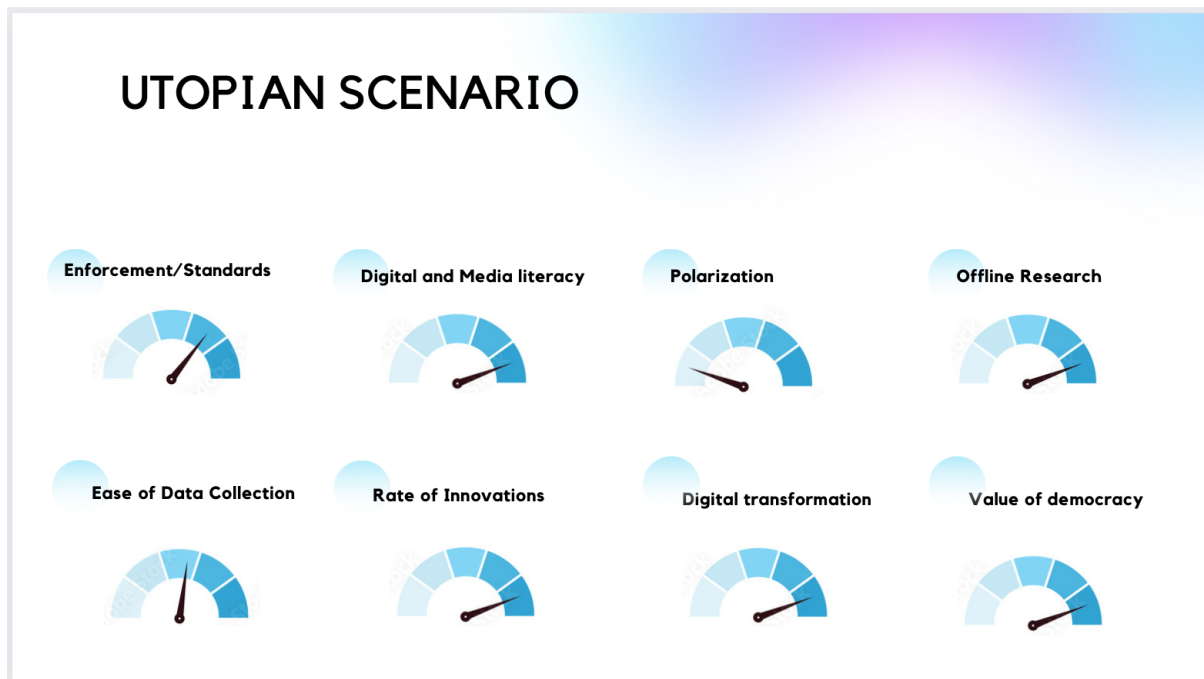
Figure 6



Overall, this scenario highlights the need for continued investment in digital and media literacy and the developing of policies and regulations that promote transparency and accountability in the political process. Failure to address these issues could result in a future in which citizens are easily manipulated by targeted political messaging, leading to a decline in trust in democratic institutions and potentially undermining the stability and resilience of the political system.

Utopian Scenario

Figure 7



This 'utopian' but realistic scenario shows how the situation can look like in Austria, where there is relatively high regulation of the use of citizens' private data for political purposes, the level of digital and media literacy among the population is very high, society is not polarized, and it is not that easy to collect data from citizens. Additionally, technologies and AI are developing rapidly, the level of digital transformation is very high, people discuss online and offline issues, and people value democracy.

In this scenario, the high level of regulation around using citizens' private data for political purposes would protect citizens' privacy. In contrast, the high level of digital and media literacy among the population would help citizens identify and resist any attempts at manipulation through targeted political advertising and messaging.

Furthermore, in a not polarized society, people could engage in constructive debates and discussions with a shared commitment to democracy, leading to more informed decision-making. The relatively difficult access to data collection would also make it harder for political campaigns to manipulate or micro-target voters, ensuring a more democratic and fair electoral process.

As technologies and AI continue to develop rapidly, they could be harnessed to promote democracy and transparency, for instance, by facilitating more informed citizen participation, better communication between citizens and their representatives, and improved monitoring of political processes.

In a highly digitalized society where people discuss issues online and offline, the consequences of this scenario could be overwhelmingly positive. Online discussions could enable citizens to engage in diverse, informative, and respectful conversations, facilitating the sharing of ideas and promoting a greater sense of community. Offline meetings could provide opportunities for individuals to connect and engage with each other, leading to greater understanding and social cohesion.

The high value placed on democracy in this scenario would help ensure that democratic principles and values are upheld and promoted, leading to more excellent political stability and a more robust, resilient political system.

Overall, this scenario presents an optimistic vision for the future, demonstrating that it is possible to harness technology and digital transformation for the greater good while ensuring that democracy, privacy, and human rights are protected. However, achieving such a future requires continued investment in digital and media literacy, a strong commitment to democratic principles, and the development of policies and regulations that promote transparency, accountability, and fairness in the political process.

Adaptive capacity rating

Regarding adaptive capacity, the three scenarios outlined have different levels of preparedness to deal with negative consequences resulting from extreme events.

Starting with the dystopian scenario where there is no regulation of citizens' private data for political purposes, low digital and media literacy, a highly polarized society, and a lack of value for democracy, the adaptive capacity is low. In such a scenario, the functioning of the political system would be severely compromised if an extreme event were to occur. With no regulations in place to protect citizens' privacy and prevent the manipulation of public opinion, the impact of any extreme event could be amplified, leading to further societal division and potential loss of trust in the political system.

In the second scenario, where there is high regulation of citizens' private data use for political purposes, digital and media literacy levels are insufficient. While the regulation of data use provides some protection for citizens, the lack of digital and media literacy could limit the ability of the population to recognize and respond to attempts at manipulation or misinformation. At the same time, society remains highly polarized; the adaptive capacity is moderate. The highly polarized nature of humanity could also make it difficult to achieve consensus and cooperation in the face of an extreme event, potentially undermining the functioning of the political system.

In the utopian scenario where there is high regulation of citizens' private data use for political purposes, high levels of digital and media literacy, a non-polarized society, and a high value for democracy, the adaptive capacity is increased. With solid regulations to protect citizens' privacy, high digital and media literacy levels and a shared commitment to democracy and the common good, the population would be well-equipped to respond to extreme events. The society's non-polarized nature would also facilitate cooperation and consensus, leading to a more coordinated response to the challenges.

Overall, adaptive capacity is strongly influenced by the level of protection and preparedness provided by regulations, digital and media literacy, and the societal values underpinning political

systems. While the utopian scenario presents the highest level of adaptive capacity, it requires continued investment in digital and media literacy and a solid commitment to democratic principles. The dystopian scenario offers the lowest level of adaptive capacity. It underlines the need for regulations and democratic values that protect citizens' privacy and promote transparency, accountability, and fairness in the political process.

Vulnerability scores

The level of vulnerability of the three scenarios mentioned varies significantly based on their preparedness to handle adverse events and their ability to maintain essential functions of the system. It was calculated according to the following formula:

$$\text{Vulnerability} = \text{Risk} * (1 - \text{Adaptive Capacity}) * 100$$

Starting with the dystopian scenario, where there is no regulation of citizens' private data for political purposes, low digital and media literacy, a highly polarized society, and a lack of value for democracy, the vulnerability is high. The lack of regulation and low digital and media literacy would make protecting citizens from adverse events challenging, and the polarized society would limit cooperation and consensus in handling such affairs. This would make essential functions of the system, such as the functioning of the political system, highly vulnerable to collapse in the face of adverse events.

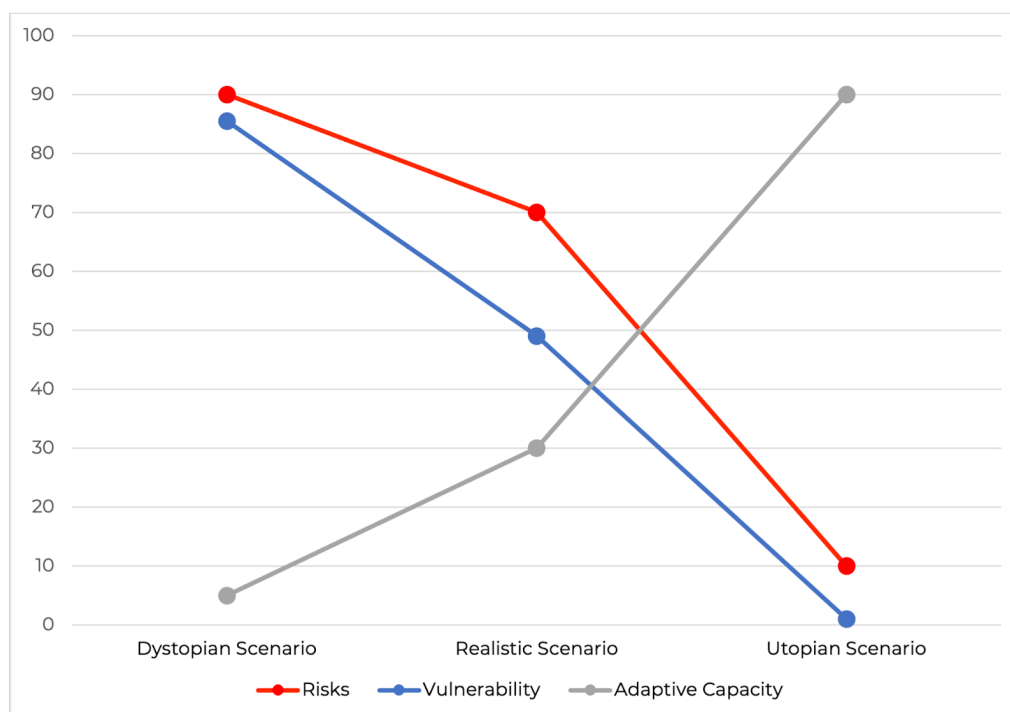
In the second scenario, where there is high regulation of citizens' private data use for political purposes, digital and media literacy levels are insufficient. While regulation of data use provides some protection, the lack of digital and media literacy could still make it challenging to handle adverse events effectively. At the same time, society remains highly polarized, and the vulnerability is moderate. The highly polarized society could also limit cooperation and consensus, leading to a more complex handling of negative events.

In the utopian scenario, where there is high regulation of citizens' private data use for political purposes, high levels of digital and media literacy, a non-polarized society, and a high value for democracy, the vulnerability is low. With strong regulation and high digital and media literacy levels, adverse events would be handled more effectively, and the non-polarized society would

facilitate greater cooperation and consensus. This would make essential functions of the system, such as the functioning of the political system, less vulnerable to collapse in the face of adverse events.

Overall, the level of vulnerability of the three scenarios is strongly influenced by the level of protection and preparedness provided by regulations, digital and media literacy, and societal values. The utopian scenario presents the lowest level of vulnerability, given the combination of solid regulations, high levels of digital and media literacy, a non-polarized society, and a high value for democracy. The dystopian scenario presents the highest level of vulnerability, underlining the need for strong regulations, digital and media literacy, and societal values that protect citizens and promote transparency, accountability, and fairness in the political process.

Figure 8. Adaptive Capacity and Vulnerability Graph



The research team conducted an analysis of three potential future scenarios in Austria, considering the level of regulation of citizens' private data use for political purposes, digital and

media literacy, societal polarization, the ease of data collection, the development of technologies and AI, the level of digital transformation, offline and online discussion, and the value for democracy.

The team evaluated the adaptive capacity and vulnerability of each scenario, considering their ability to maintain essential functions of the system after negative events and their impact on handling uncertain events, respectively. The findings of the analysis were visualized in Figure 1, which provides a graphical representation of the results.

The figure presents the three scenarios, with their respective levels of adaptive capacity and vulnerability indicated by color-coded bars. The dystopian scenario is shown to have the lowest adaptive capacity and the highest vulnerability, with the utopian scenario presenting the highest adaptive capacity and the lowest vulnerability. The second scenario is placed in the middle, indicating a moderate level of adaptive capacity and vulnerability.

The research team used this visual representation of the results to facilitate a clear understanding of the strengths and weaknesses of each scenario and their potential impact on the viability and essential functions of the system in the face of negative events. By providing a graphical representation of the results, the team was able to present their findings in an accessible and easily digestible format, allowing stakeholders to make informed decisions based on the research.

5. Discussion and interpretation

The transdisciplinary approach carried out in this report sheds invaluable light on the potential future scenarios in Austria for this situation. It has taken into account the level of regulation of citizens' private data use for political purposes, digital and media literacy, societal polarization, the ease of data collection, the development of technologies and AI, the level of digital transformation, offline and online discussion and last but not least the value for democracy. In this chapter, the finding paved important implications for regulators, policymakers and citizens alike, as well as spotlighted the need for continued investment in digital and media literacy, the development of policies and regulations which promote transparency and accountability in the political process and a solid commitment to democratic principles per se.

The team utilized the transdisciplinary approach, breaking down the complex system into its essential components and analyzing their interactions and interdependencies. The finding demonstrated that the level of vulnerability of the three scenarios varied predominantly based on their preparedness to handle negative events and maintain essential functions of the system.

The three scenarios outlined in the approach present distinct possibilities for the future of Austria's political news and information landscape shaped by the above factors, such as regulation, digital and media literacy, societal polarization, data collection and technological advancements. Each scenario demonstrates, as described below, the potential consequences of different combinations of these factors on the Austrian political ecosystem.

In principle, the dystopian scenario portrays the dangers of a society lacking regulation, low digital and media literacy, high polarization and little regard for democracy. On the contrary, the utopian scenario paints a picture of a well-regulated society with high digital and media literacy,

non-polarized, and valuing democracy; meanwhile, the threat scenario 2 illustrates a mixed situation where high regulation exists. Nevertheless, digital and media literacy is insufficient, and society remains polarized.

Delving deeper into these three scenarios – a dystopian scenario has no regulation of the use of citizens' private data for political purposes, low digital and media literacy, a highly polarized society and a lack of value for democracy, underscoring the more significant risks concerning the use of technology and the digital transformation without appropriate safeguards and protections. The findings further indicated the adaptive capacity and vulnerability of the political system in such scenarios are substantially compromised. There is also a high risk of societal division and potential erosion of trust in the political system.

The second scenario – there is high regulation of the use of citizens' private data for political purposes. Still, digital and media literacy levels remain inadequate, and society continues to be highly polarized, presenting a more moderate outcome. The regulation of data use protects citizens, but a lack of digital and media literacy may restrict their capacity to notice and respond to manipulation and misinformation. In a problematic situation, society's polarization might make consensus and collaboration more difficult, compromising the functioning of the political system.

The utopian scenario is high regulation of citizens' private data use for political purposes, high levels of digital and media literacy, a non-polarized society and a high value for democracy, giving out the most optimistic future. These conditions empower the population to effectively respond to extreme events due to robust regulations, high digital and media literacy and a shared commitment to democratic principles and the common good. The non-polarized nature of society facilitates cooperation and consensus, leading to a more coordinated response to the challenges faced.

By all means, it connotes a well-regulated and well-prepared society is less vulnerable to negative events that could disrupt essential functions of the system. This implies that Austria's policymakers and stakeholders should prioritize measures that promote transparency, accountability and fairness in the political process while also investing in raising people's digital and media literacy.

The three scenarios mainly highlight the following:

1. The level of regulation and digital and media literacy markedly impact the adaptive capacity and vulnerability of the political news ecosystem in Austria
2. The degree of societal polarization, data collection ease, technological advancements and the value placed on democracy also play vital roles in shaping the political landscape
3. The utopian scenario exposes a balanced combination of these factors that could accelerate a more resilient and sustainable political news ecosystem.
4. The dystopian scenario depicts the risks and potential negative consequences concerning the absence of regulation and democratic values.
5. Threat scenario 2 involves investing in digital and media literacy and addressing societal polarization.

This discussion unearths the lack of regulations, digital and media literacy, and a highly polarized society that can threaten the adaptive capacity of the political ecosystem. Conversely, strong regulations, high levels of digital and media literacy, a non-polarized society and a high value for democracy can promote adaptive capacity and decrease vulnerability. It also brings to attention that the ease of data collection and the constant development of technologies can create new opportunities for political campaigns to manipulate citizens via targeted political advertising. It must be noted that online discussions can cause increased polarization and the formation of echo chambers, limiting the diversity of information and opinions available to the voters of Austria.

Hence, setting side by side the three scenarios weigh on the importance of striking a balance between regulation, digital and media literacy and fostering a sense of shared responsibility for democracy in the country. The realistic scenario that reflects the current situation in Austria

proves the potential threats that could arise from inadequate digital and media literacy even when regulations are in place.

Findings:

1. Regulatory frameworks governing the use of citizens' private data for political purposes heavily impacts the political landscape's adaptive capacity and vulnerability
2. Digital and media literacy plays an essential role in Austrian citizens making informed decisions and resisting manipulation
3. Societal polarization and the ease of data collection can exacerbate the risks, such as targeted political messaging
4. Commitment to democratic principles can help mitigate negative consequences promoting greater transparency and accountability in the political process
5. Balancing regulation, digital and media literacy and fostering a shared commitment to democracy is critical for building a resilient and transparent political system
6. Technologies and AI can empower Austrian citizens but also can pose risks to privacy and democratic principles, depending on how they are harnessed and regulated
7. Online and offline discussions can contribute to a vibrant democratic process. They also have the potential to exacerbate polarization if not moderated adequately
8. The ease of data collection and rapid development of AI can highly impact the effectiveness of targeted messaging and micro-targeting in the political process, meaning it emphasizes the need for strong regulations and oversight
9. High polarization can hinder constructive debates and consensus-building in a democracy

Recommendations:

1. Strengthen regulations on using citizens' private data for political purposes to protect the privacy and prevent manipulation
2. Invest in digital and media literacy programs to help citizens identify and resist manipulation, misinformation and targeted political advertising. This includes fostering collaboration between governments, media organizations and educational institutions to develop extensive digital and media literacy initiatives that reach citizens of all ages and

backgrounds, ensuring a well-rounded understanding of the digital landscape and its potential risks

3. Cultivate a non-polarized society by encouraging constructive debates, discussions and cooperation among citizens and political stakeholders
4. Develop regulations and policies that promote transparency, accountability and fairness in the political process in Austria
5. Establish strict guidelines for political advertising on social media platforms guaranteeing transparency about the advertisement's source and data used to target specific audiences
6. Promote unbiased and independent media outlets that provide high-quality, balanced reporting and analysis of political news that enables citizens to access diverse perspectives and make informed decisions
7. Encourage public participation in the political process through offline spaces for discussion, as such town hall meetings and online forums, plus other channels that facilitate dialogue between citizens and their representatives
8. Implement robust oversight mechanisms to monitor and regulate the use of AI and technologies in the political process to ensure they support rather than undermine democratic principles.
9. Foster multi-stakeholder collaboration among governments, technology companies, civil society organizations and citizens to co-create solutions and strategies that balance privacy, technological innovation and democratic principles
10. Encourage public-private partnerships to develop innovative technological solutions that improve transparency and accountability in the political process, as such real-time monitoring of campaign financing, AI-driven fact-checking tools, public reporting mechanisms, and the list goes on
11. Develop a comprehensive national strategy outlining the country's vision for digital transformation with a focus on preserving democratic values ensuring data privacy as well as promoting digital and media literacy

Austria must remain vigilant in addressing the challenges posed by the digital age. Implementing the above recommendations and continuously evaluating their effectiveness will enable Austria to better prepare for and adapt to the evolving digital landscape, ensuring a transparent, accountable and inclusive political process. Therefore, the future of Austria's political news and information landscape hinges on carefully managing and balancing these factors. By considering the potential impacts, threats and opportunities that intelligent systems present in this discussion, Austria can work toward a more resilient and sustainable political news ecosystem that upholds democratic principles, protects privacy and fosters an informed and engaged citizenry. To achieve the utopian scenario's vision, the efforts require ongoing commitment and collaboration from all stakeholders, from government, the private sector, and civil society to citizens. Together they can create a political landscape that harnesses the benefits of digital transformation while upholding democratic principles, privacy, and human rights.

Our report provides insights into the complex interplay between regulation, digital literacy, polarization, and democracy in the context of technology use for political purposes. Our constructivist grounded theory approach to developing a system model is still relatively new and untested in this phenomenon which calls for future research to explore the identified topics in greater detail. While our report used a transdisciplinary approach and analyzed expert discussions extensively, it is essential to acknowledge the limitations of our findings. The stakeholders, scientists and experts that our team had conversations with had many years of experience in their respective fields, and it is unclear to what extent their expertise can be applied to non-experts. Yet, further research can investigate this aspect to enhance the generalizability of the findings.

6. Main conclusions. SoRO

In conclusion, deriving socially robust orientations (SoROs) for preventing the use of intelligent systems that intend or have effects on disrupting the democratic capabilities of Austrian citizens before the 2029 elections requires the ability to structure the complex Td-problem and organize a method-based process. Through a transdisciplinary collaboration between practitioners and scientists, we constructed and evaluated scenarios on the vulnerabilities of the Austrian election system, identifying significant impact factors and proposing orientations for mitigating undesired effects.

The VS03 study identified eight impact factors and six evaluation criteria for addressing the guiding question of avoiding the use of intelligent systems that disrupt the democratic capabilities of Austrian citizens. As discussed in the beginning, transdisciplinarity is necessary to address complex real-world problems with teams involving experts from different scientific fields, industries, affected communities and government. Through the Transdisciplinary Process, we established five system boundaries for designing and implementing effective strategies that prevent the use of intelligent systems from undermining democracy.

The evaluation of impacts on different scenarios and estimation of the effects of countermeasures allowed us to describe the feared undesirable effects that may appear and offer orientations for mitigating them. Our method of developing orientations based on scenarios jointly constructed and evaluated by diverse high-level experts provides an advanced and efficient way to address challenging but societally relevant topics.

The process of transdisciplinary collaboration also provided a protected space for open discussion of differing viewpoints and joint development of orientations, following specific codes of conduct of cooperation to ensure its success. Our findings highlight the importance of proactive

and collaborative efforts to address the potential negative impacts of intelligent systems on democratic processes.

The report explores measures to mitigate the negative impacts of intelligent systems providing political news and information. These measures include promoting digital literacy, transparency regulations, collaboration, fact-checking, and social media interventions. A scenario matrix of 256 potential scenarios with varying impact factors is presented, clustered into a dystopian, realistic threat, and utopian scenarios.

Furthermore, it discusses three potential scenarios for Austria's political news and information landscape, including a need for policies and regulations that protect citizens' privacy and democratic processes. Investing in digital and media literacy while promoting transparency and accountability in the political process is emphasized to maintain societal acceptance of intelligent systems in political campaigns. Society's polarization and data collection ease also pose risks and exacerbate political news ecosystem challenges. Achieving balance requires a commitment to democratic principles supported by solid regulations concerning data privacy, transparency, and accountability in the political process.

The report provides a comprehensive analysis of the use of intelligent systems in delivering political news and its potential impacts on democratic processes in Austria. It deepens the importance of a transdisciplinary approach in addressing complex societal issues, promoting collaboration and mutual learning among experts from different fields, industries, affected communities, and government. Ultimately, the report offers socially robust orientations for mitigating negative impacts and enhancing democratic processes in Austria, contributing to developing effective policies and regulations that protect citizens' fundamental rights and democratic processes.

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