

DESIGNING TO DEBIAS

designing an intervention to stimulate
multiple perspective thinking
during supervisory meetings.

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DESIGNING TO DEBIAS

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Disclaimer

The findings and conclusions presented in this report are based on personal observations and analyses of a selective part of the company. Furthermore, the research was conducted within a limited timeframe. They do not necessarily represent or reflect the operations of ACM as a whole.

ENERGIE MARKT

Hoe zou dit signaal effect kunnen hebben op andere spelers binnen de markt?

WAS DEZE VRAAG RELEVANT?
Kleur dan een ster in:



CONSUMENTEN

Watvoor emotionele schade zou dit probleem kunnen veroorzaken bij consumenten?

WAS DEZE VRAAG RELEVANT?
Kleur dan een ster in:



DUURZAAMHEID

Hoe heeft dit probleem mogelijk effect op de energie transitie?

WAS DEZE VRAAG RELEVANT?
Kleur dan een ster in:



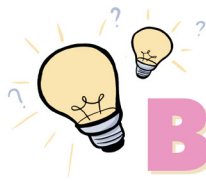
MISSIE ACM

Hoe past dit besluit wel/niet bij de ACM missie?

WAS DEZE VRAAG RELEVANT?
Kleur dan een ster in:



"De ACM laat markten goed werken voor mensen en bedrijven. Nu en in de toekomst."



BIAS SHEET

Gebruik de vragen op deze kaart als geheugensteun tijdens overleggen of bij het nemen van beslissingen. De vragen zijn bedoeld om je te helpen aannames te herkennen en kritisch te bevragen.

- Is dit probleem al onderzocht?
- Welke aannames worden er gedaan?
- Welke informatie is er nog nodig voor een betere beslissing?

- Wat zegt het onderbuik gevoel hierover?
- Zijn alternatieven overwogen?
- Zijn er verschillende opvattingen binnen het team?

- Spelen eerdere ervaringen met dit bedrijf een rol in het besluit?
- Worden beslissingen gemaakt op basis van beslissingen in het verleden?
- Is er al contact geweest met het bedrijf?

CONSUMENTEN



DUURZAAMHEID



ENERGIE MARKT



MISSIE ACM



"De ACM laat markten goed werken voor mensen en bedrijven. Nu en in de toekomst."

EXECUTIVE SUMMARY

Bias in decision-making is a well-documented phenomenon that may influence regulatory practices, including those of the Netherlands Authority for Consumers and Markets (ACM). In the energy sector, supervisors assess signals, potential indications of market violations, to determine whether further investigation is necessary. However, these assessments may be unconsciously influenced by cognitive biases, limiting the consideration of diverse perspectives. This thesis aims to understand how biases might influence ACM's supervisory practices within the energy department and explore possible interventions to mitigate these biases.

This project follows a design research methodology, combining literature review, observational studies, and expert interviews to understand the role of bias in ACM's supervisory processes. Biases can accumulate through the various stages of the supervision process, influencing how signals are received, interpreted, and acted upon. For instance, during the detection stage, biases related to expertise may limit the diversity of perspectives considered in the assessment. Supervisors with strong legal or economic expertise may inadvertently prioritize signals that align with their own knowledge, while overlooking signals requiring a broader or more specialized view, such as sustainability or market dynamics. Additionally, the ways in which signals are presented and categorized may influence how supervisors perceive their importance or relevance, further reinforcing existing biases.

Intervention Design

Observations revealed that discussions often prioritized legal perspectives, with limited consideration of broader economic, social, and consumer-related factors. To address this, a toolkit was developed to facilitate critical discussion during detection meetings. The intervention consists of two key components:

- [Bias Sheet](#) – A set of reflective questions designed to help supervisors identify and challenge their own assumptions.
- [Context Cards](#) – A card deck categorized into four themes: consumers, the energy market, sustainability, and ACM's mission. Each card provides a new perspective and a prompt question to encourage broader discussion.

During signal assessment, supervisors who lack legal expertise on a particular case are assigned the role of discussion challenger. These individuals use the Context Cards to introduce alternative viewpoints, ensuring a more balanced evaluation of signals. The detection coordinator concludes each discussion by inviting challengers to highlight any overlooked aspects. The toolkit is designed to be adaptable, so it could be altered to fit different meeting formats and can be further customized to fit ACM's evolving processes.

Conclusion and Future Research

This thesis demonstrates that design can play a role in improving regulatory decision-making by making biases more explicit and encouraging structured critical reflection. However, further research is needed to:

- Explore how the toolkit can be applied across other stages of ACM's supervision process.
- Investigate the long-term impact of the intervention on decision-making culture.
- Enhance engagement by incorporating interactive or gamified elements.
- By addressing these areas, the intervention can evolve into a broader strategy for fostering a culture of critical thinking and bias awareness within ACM and similar regulatory bodies.

TABLE OF CONTENTS

H1 INTRODUCTION

1.1 Project Brief | 2

- 1.1.1 Relevance to the Field of Design
- 1.1.2 Goal

1.2 Company Introduction | 3

- 1.1.1 The Netherlands Authority of Consumers and Markets
- 1.2.2 Energy Department

1.3 Project Approach | 5

- 1.3.1 Complementary Approaches

H2 LITERATURE EXPLORATION

2.1 Cognitive Biases | 10

- 2.1.1 Defining Biases
- 2.1.2 Bias Blind Spot
- 2.1.3 Belief-consistent Information Processing

2.2 Biases & supervision | 12

- 2.2.1 Defining Supervision
- 2.2.2 Biases in Supervision

2.3 Bias mitigation | 16

- 2.3.1 Debiasing vs. Choice Architecture Interventions

2.4 Key Takeaways | 19

- 2.4.1 Identifying Research Gap
- 2.4.2 Key Themes and Research Implications
- 2.4.3 Implications for Intervention Design

H3 CONTEXT EXPLORATION

3.1 Research approach | 24

- 3.1.1 Methods
- 3.1.2 Data Gathering

3.2 External Context | 27

- 3.2.1 Introducing the Energy Market
- 3.2.2 Balancing Interests: Consumer vs. Organisation
- 3.2.3 Market Complexities blurring scope ACM

3.3 Internal Context | 30

- 3.3.1 Problem-solving Supervision
- 3.3.2 Measuring Intervention Effectiveness
- 3.3.3 Problem Identification & Prioritization
- 3.3.4 Intervention Selection

3.4 Key Findings | 34

- 3.4.1 Identified Challenges & Risks for Biases

H4 SYNTHESIS

4.1 Design space | 36

- 4.1.1 Synthesis Approach
- 4.1.2 Identified Leverage Point: Detection Meeting

4.2 Design direction | 38

- 4.2.1 Co-Creation with Behavioural Experts
- 4.2.2 Design Goal

4.3 Design criteria | 41

H5 CREATE

5.1 Ideation | 46

5.1.1 Approach

5.1.2 Idea Selection

5.2 Test sessions | 49

5.2.1 Setup

5.2.2 Research Focus

5.2.3 Setups

5.2.4 Findings

5.3 Key Takeaways | 54

H6 FINAL INTERVENTION

6.1 UNFRAME | 56

6.1.1 Use Scenario

6.1.2 Envisioned Effect over Time

6.2 Design Rationale & Considerations | 63

6.2.2 Creating a Safe Space for Feedback

6.2.3 Participation & Engagement

6.3 Future Development | 65

6.3.1 Continuous Feedback and Card
Marking System

6.3.2 Roles for sustaining the Intervention

H7 CONCLUSION

7.1 Discussion | 70

7.1.1 Reflection on the Project Goal

7.1.2 Design Limitations

7.2 Recommendations | 73

7.2.1 Validation

7.2.2 Concept Development

7.2.3 Other Potentially Interesting Research Areas

7.3 Personal Reflection | 76

7.3.1 Project Management

7.3.2 Personal Ambitions

7.3.3 Project Context

01 PROJECT INTRODUCTION

This chapter introduces the project by explaining the motivation and its' relevance for the field of design. The project's initial goal and research questions are covered.

- 1.1 Project Brief**
- 1.2 Context Introduction**
- 1.3 Project Approach**
- 1.4 Report Structure**

start

1.1 PROJECT BRIEF

In recent years, there has been a growing critical eye on governmental institutions and the functioning of political systems (Holierhoek & Price, 2019). The Netherlands is grappling with a decline in public trust, affecting supervisory bodies in particular (Inspectieraad, 2024a). This societal development was accelerated by a series of political scandals, most notably the Dutch childcare benefit system scandal. Between 2013 and 2019, the Dutch tax authority wrongful labelled thousands of citizens as fraudsters, leading to devastating personal and financial repercussions. This scandal highlighted the possible impact of systemic biases and brought attention to their potential to cause significant injustices. Addressing bias within supervisory practices has become a focal point of recent discussions.

The general loss of societal trust underscores the urgent need for systemic reforms to address these biases within public institutions (Inspectieraad, 2024a). Their independence in relation to political, economic, and social interests is under scrutiny, demanding a higher level of vigilance and accountability. Moreover, the Dutch government has stressed the importance of examining regulatory decision-making as a crucial step towards enhancing the effectiveness of supervisory bodies (Coffeng, 2022).

The Netherlands Authority for Consumers and Markets (ACM) has also recognized its growing significance. Their behavioural insights team initiated a larger research project to better understand and mitigate biases among their supervisors. This graduation project is part of their preliminary research stage and serves as a starting point for future research. With this project, I aim to introduce a research-through-design approach to the existing bias research project carried out by the ACM's behavioural insights experts.

1.1.1 Relevance to the Field of Design

Public organizations are increasingly adopting design thinking as a tool for addressing complex, “wicked” problems (Brinkman et al., 2023). By focusing on user needs and fostering creative problem-solving, design thinking provides a structured approach to tackling challenges. While its application has primarily focused on external contexts, such as enhancing services to meet citizen needs, design also holds significant potential to transform internal operations. It can challenge traditional processes and introduce fresh perspectives within organizations. Over the years, the field of design has expanded its scope. It is moving beyond the traditional focus on creating products and services, to include more strategic, cultural, and organizational dimensions in design projects (Holierhoek & Price, 2019). This broader scope highlights its growing role in addressing complexity and driving transformation across sectors, including public institutions. Despite its potential, the integration of design thinking within the context of public institutions remains challenging. The traditional structures and cultures of public organisations can be resistant to adopting design-oriented approaches (Brinkman et al., 2023). Through this project, I aim to contribute to this evolving collaboration by exploring how design can identify opportunities for interventions within existing organizational processes, ultimately demonstrating its value in fostering improvement in the public sector.

1.1.2 Goal

The goal of this project is to understand how biases can influence ACM's supervisory practices in the energy department and explore the design space for developing suitable interventions.

1.2 COMPANY INTRODUCTION

1.2.1 The Netherlands Authority of Consumers and Markets

The Netherlands Authority of Consumers and Markets (ACM) is an independent regulatory body in the Netherlands dedicated to ensuring well-functioning markets for both consumers and businesses. One of its primary methods for achieving this goal is the enforcement of competition law to maintain fair market competition (Ministerie van Algemene Zaken, 2023). Beyond its enforcement role, ACM also sets rules for the telecommunications, transport, postal, and energy markets (Ministerie van Algemene Zaken, 2023). For instance, it ensures fair energy prices, reliability, and the promotion of sustainable energy practices. Additionally, ACM is responsible for informing consumers about their rights and obligations through its information desk, known as ConsuWijzer. It also acts as an advisor to the government, offering both solicited and unsolicited advice on proposed regulations affecting market functionality (Ministerie van Algemene Zaken, 2023).

In instances of non-compliance, the ACM imposes sanctions, such as warnings and fines. Given that these measures can impact the continuity of businesses and markets, it is crucial for the ACM to make informed decisions about which measures to impose (Coffeng, 2022).

Biases are particularly prevalent in judgment-based professions (Jansen & Aelen, 2015). Regulators often encounter negative situations, such as various violations by companies, which can distort their perception of reality. Strong biases in supervision increase the risk of decisions being based on intuition rather than sufficient information, potentially leading to unfair judgments and the emergence of blind spots, which might result in missed or unpenalized violations.

Such biased decisions can also harm ACM's reputation. For example, if a court finds a lack of objective justification in decision-making or insufficient consideration of alternatives, ACM's neutrality and independence may be questioned. An authoritative position is crucial for the effectiveness of ACM's actions and measures. An official warning from ACM can sometimes be enough prompt behaviour change, avoiding the need for more severe legal procedures, thus saving valuable time and resources for both ACM and the regulated entities. Additionally, the ACM warns consumers about law-violating companies through press releases. Ensuring these warnings are taken seriously by consumers is vital for maintaining trust and authority.

1.2.2 Energy Department

The Energy department focuses on regulating and supervising the Dutch energy market. Their main mission is to accelerate the energy transition for Dutch citizens and market parties (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2024). ACM regulates and supervises the entire energy chain, from energy producers to consumers. The main supervisory themes include critical issues such as grid congestion, the energy transition, the development of a future-proof energy system, and ensuring consumer protection. To foster a more outward-looking approach, ACM initiated a reorganization within the Energy department, effective May 1, 2024. The directorate will predominantly adopt a thematic and project-based working model to put more emphasis on prioritizing larger themes and individual projects.

The new department comprises 11 teams, each led by a manager. Three teams will have dedicated tasks and responsibilities, serving as cross-functional facilitators. Employees from these teams may also contribute to

thematic areas or projects part-time. The remaining eight teams will consist of flexible staff, deployable across various themes or projects, with specific assigned tasks based on their expertise.

To ensure supervisory agility, a mission-driven thematic working model was adopted. By decoupling themes from fixed teams and staffing levels, the department gains flexibility in resource allocation over time. Each theme will have a designated theme coordinator, operating under a manager's direction. This manager, responsible within the Management Team (MT), acts as the primary point of contact and decision-maker for the theme. Additionally, each manager has a designated "buddy" manager, streamlining decision-making processes.

The department is currently transitioning to this new approach, with ongoing recruitment of new managers and adjustment to the revised operational model.

Introduction of the Strategy and Planning Team

In addition to structural changes, a new team, Strategy and Planning (S&P), has been introduced. S&P is established to support the department across various domains. Its responsibilities include developing and executing strategic visions for the energy transition and the energy sector.

1.3 PROJECT APPROACH

This project can be separated into two distinct parts. The first part focuses on finding out the nature of the problem. The second part focusses on exploring the solution space and designing the proposed intervention. The project approach was mainly inspired by the Systemic design framework (Design Council, 2021). Due to the broad nature of the project scope, inspiration was taken from other design approaches to determine suitable methods. The table below provides a schematic overview of the four key phases followed in this project.

	Explore	Reframe
Goal	Getting to know the design context and topic	Reframing the system by opening up a new space for design.
Description	Identifying the key risk areas in the current supervision process where biases can interfere. Explore widely and deeply the subject-specific, theoretical and locational context of the project. Look at what is already happening and identify where there is potential for change.	Reframe the current situation by opening up a new space for design. Bring stakeholders and project partners together to first identify opportunities and challenges and then formulate a direction to move in.
Systemic Approach	- Gathering knowledge from different perspectives - Explore the connection between key themes - Start making & identifying opportunities	- Bring people together and synthesise insight - Look at and reframe through different lenses - Remap the system with a new goal or purpose - Highlight opportunities, challenges, questions
Methods & Practices	- Literature research - Interviews - Observation - Immersion	- Clustering - Causal Loop Diagram - Visualising Interactions

Create

Defining the desired interaction

Create big and small ideas for interventions. Think about the bigger goal and how to move towards it.

- Generate ideas
- Prioritise which actions are most important for moving towards the goal
- Create (small) interventions with potential for big impact

- Fragmented idea generation through brainstorming

Catalyse

Designing Final Concept

Show people related to the project what the new situation looks like in a tangible way. Prototype and 'mock-up' the ideas to communicate it to others, test and explore what else it connects to.

- Prototype, test and iterate upon the ideas
- Be open to change and developments
- Validate and evaluate the idea(s) with stakeholders and potential users of the system

- Prototyping
- Testing mechanisms with supervisors
- Validation through conversations with project client

1.3.1 Complementary Approaches

Agile Design & Development

The Energy Department is continuously evolving to adapt to the demands of its external environment, including undergoing a reorganization during this project. This shifting context calls for a flexible mindset, often described as an agile approach. While originally rooted in software development, agile values and principles are increasingly applied to design (Van Boeijen et al., 2020). Consequently, although relevant design methods and plans were established at the outset, they were adjusted throughout the project to align with the organization's dynamics. For instance, the reorganization altered some of the needs and requirements identified during the initial research phase, ultimately influencing the direction of the final design.

Designing for Behavioural Change

Designers are increasingly asked to create interventions, whether through products, services, or their combinations, that facilitate behavioural change (Van Boeijen et al., 2020). Psychological and social science models are often utilized to understand and influence the processes driving behaviour. Moreover, observations are a large part of design process for behavioural change (Van Boeijen et al., 2020). In this project, scientific literature covering the phenomenon of bias is used as a theoretical lens during research activities. Throughout the project, the expertise from the behavioural experts was consulted frequently to validate insights gained from observation and developed ideas created during the design phase.

Co-Design

In this project, co-design was incorporated during the second phase of the design process. This is a collaborative approach where designers, users, and experts actively participate in design activities, ensuring that the solutions developed are well-aligned with organizational needs.

Engaging supervisory officers in brainstorming sessions allowed their expertise to guide the alignment of intervention ideas with the work processes. Additionally, a central objective of the project was to introduce ACM to a new design approach, encouraging them to view challenges from a fresh perspective. For example, this was achieved by actively involving the behavioural experts during the 'Reframe' phase. Direct involvement allows ACM to own the resulting insights, empowering them to continue building upon these ideas in the future (Van Boeijen et al., 2020). This participatory method enhances the relevance of the outcomes and fosters a sense of ownership and commitment among the participants.

Visualising Interactions

In order to design an interactive intervention, the relationship between people, products, and their environment need to be comprehended. To uncover supervisors' needs regarding their work processes, their experience with current systems was examined during the research phase. These needs help defining the requirements of an intervention to suit the existing work processes. Data is gathered through interviews with supervisors and observations during meetings. Visualising observed interactions help to express how activities take place over time and between people, how cause and effect transpire, and what the people involved do and feel (Van Boeijen et al., 2020).



A pink abstract graphic consisting of two overlapping loops, resembling a stylized 'O' or a calligraphic flourish, positioned behind the title.

LITERATURE REVIEW

This chapter discusses what the existing research tells about the project's two main themes: Biases and supervision. Existing research is explored to gain a deeper theoretical understanding of these concepts. The chapter defines "cognitive biases" and "supervision", and explores how biases affect supervisors' judgments. Common biases identified in supervisory contexts are highlighted based on prior studies. The third section covers common strategies for mitigating biases. The chapter concludes by summarizing the key findings and identifying the key themes to guide the context exploration discussed in chapter 3.

- 2.1 Cognitive Bias**
- 2.2 Bias & Supervision**
- 2.3 Bias Mitigation**
- 2.4 Key Takeaways**

explore

2.1 COGNITIVE BIASES

2.1.1 Defining Biases

Cognitive biases refer to the systematic errors in our judgements and decision-making, which tend to reoccur in particular circumstances (Kahneman, 2011). Biases stem from the brain's inherent limitations regarding information processing (Jansen & Aelen, 2015). The human brain is faced with a constant stream of information and stimuli, yet it has a limited capacity to process all of it simultaneously. To manage this overload, it prioritizes information selectively and relies on cognitive shortcuts, referred to as heuristics, to streamline decision-making (Robertson, 2016; Kahneman, 2011). For example, the familiarity heuristic reflects people's tendency to favour familiar options over the unknown, which can be helpful in everyday situations like choosing where to eat dinner. While heuristics enable quick and efficient judgments, they can also lay the groundwork for biases to emerge. Biases develop when pre-existing knowledge and assumptions are influencing the processing and understanding of new information, often taking precedence over new factual evidence (Coffeng et al., 2021; Jansen & Aelen, 2015). For instance, individuals may unconsciously apply different standards to evaluate behaviours, depending on whether they involve members of their own group or another (Oeberst & Imhoff, 2023). Due to their intrinsic connection to human cognition, biases are deeply embedded and highly persistent (Jansen & Aelen, 2015). They influence how individuals interpret and process information, particularly when the information is counter-intuitive, conflicting, or uncertain (Jansen & Aelen, 2015). While biases simplify decision-making and reduce cognitive load, allowing for faster processing, they also increase the risk of false interpretations (Azzopardi, 2021). Thus, while biases can be useful in everyday decision-making, it can lead to significant inaccuracies when navigating more complex or uncertain situations.

2.1.2 Bias Blind Spot

The bias blind spot refers to the tendency of individuals to believe that others are more susceptible to cognitive biases than they are themselves. While most people acknowledge the existence of biases and may even admit to being somewhat influenced by them, they generally perceive themselves as more rational and objective than others (Kahneman, 2011; Coffeng, 2022). This phenomenon highlights a critical flaw in debiasing interventions solely focusing on self-reflection, as biases are often resistant to personal scrutiny and remain unnoticed during decision-making processes (Kahneman, 2011). Even experienced professionals, including supervisors tasked with high-stakes decisions, are not immune to the bias blind spot. Contrary to the common assumption that experience improves decision-making quality, research indicates that experienced individuals may be particularly vulnerable to this bias (Jansen & Aelen, 2015; Coffeng, 2022). Their confidence in their expertise can create a false sense of immunity to biases, thereby increasing the risk of flawed judgments (Kahneman, 2011). This overconfidence, combined with the inherent challenge of detecting biases in real-time, makes it particularly difficult for individuals to identify and address their own biases, even when they are influencing important decisions (Kahneman, 2011). Additionally, this false sense of objectivity can extend to group dynamics. There is often a tendency to assume that opposing groups hold their views due to bias or dishonesty (Hallsworth et al., 2018).

2.1.3 Belief-consistent Information Processing

While over 180 individual biases have been identified, much of the research has centred on categorization rather than mitigation (Lilienfeld et al., 2009; Sibony, 2020). This segmented approach often overlooks the shared principles driving these biases. Oeberst and Imhoff (2023) suggest that many biases stem from common beliefs, such as “My experience is a reasonable reference” and “My assessment is correct.” These beliefs lead individuals to favour information that aligns with their preconceptions, regardless of the context.

The initial step in the information processing process is the perception of an event, followed by the use of memory to recognize and interpret that perception (Maqsood et al., 2004). Human cognition naturally seeks a coherent understanding of its’ context and the events occurring in it (Kahneman, 2011). This drive for “cognitive closure” compels individuals to develop beliefs, which act as hypotheses guiding individuals to make sense of one’s environment (Oeberst and Imhoff, 2023; Hallsworth et al., 2018). In an ideal world, new information would refine or correct prior beliefs depending on its consistency. However, strongly held beliefs are rarely swayed by weak or isolated contradictory evidence (Oeberst & Imhoff, 2023). It takes substantial disconfirming evidence to meaningfully alter views. Moreover, beliefs shape how people interpret and process new information. The human brain’s associative mechanisms tend to search for conforming evidence when testing a hypothesis (Kahneman, 2011). In other words, people seek out information that aligns with their already existing beliefs while ignoring or discounting contradictory evidence, influencing their future perceptions and decisions (Hallsworth et al., 2018). This biased sampling of information can create the false illusion of certainty, reinforcing strong but flawed beliefs. Additionally, beliefs that are emotionally comforting or deeply ingrained are particularly resistant to change (Oeberst & Imhoff, 2023). Even when individuals

are motivated to be objective, belief-consistent information processing persists. Paradoxically, their efforts can actually reinforce this, especially if their focus is mainly on justifying their current perspectives instead of countering it (Oeberst & Imhoff, 2023).

People often use their own experiences as a basis for understanding others, overlooking important differences (Oeberst & Imhoff, 2023). For instance, they tend to assume that others interpret situations the same way they do. When making judgments, individuals project their own perspectives, favouring information that confirms their assumptions while ignoring contradictory evidence (Oeberst & Imhoff, 2023). This bias is evident when people overestimate what others know, such as assuming uninformed individuals are aware of outcomes they themselves have learned. By relying on their personal viewpoints, people create a feedback loop where their beliefs reinforce their interpretations of others. Stereotypes are a clear example of this process, as they are beliefs about others that promote consistent patterns of biased thinking and behaviour. One reason for this persistent loop is that people rarely attempt to falsify their beliefs (Oeberst & Imhoff, 2023). Often, they lack the means to recognize their errors, either because they don’t have access to alternative perspectives or because their biased processing prevents them from seeing inconsistencies.

2.2 BIASES & SUPERVISION

2.2.1 Defining Supervision

In the Netherlands, various regulatory bodies and inspectorates monitor compliance with specific regulations. Their goal is to detect illegal and unethical practices and identify risks that may harm consumers or society as a whole (Coffeng, 2022). Supervisors assess situations using the available information and their expertise, which includes their prior experiences and knowledge. During this process, supervisors make numerous decisions based on their judgements, for example when determining if there is a legal basis and societal need for intervention.

Redefining Supervision in a Dynamic Society

The environment in which supervisory bodies operate today is marked by increasing complexity, uncertainty, and rapid change (Van Erp, 2019). Traditionally, supervision has been viewed as a distinct phase within the broader policy cycle—a structured process that includes policy formulation, implementation, and oversight (Stahlie, 2022). However, the classical cycle assumes a degree of stability that is increasingly difficult to reconcile with the fluid conditions of modern society (Ministry of Infrastructure and Water Management, 2022). As a result, the traditional boundaries between policy, implementation, and supervision are increasingly blurred (Ministry of Infrastructure and Water Management, 2022). Supervisors are often required to engage with overlapping roles and responsibilities, heightening the challenges they face in maintaining objectivity and ensuring accountability in a complex and dynamic landscape.

This growing complexity challenges supervisors to adapt to the shifting dynamics, though many struggle to determine the best course of action (Inspectieraad, 2017). Oversight issues have become more intricate, requiring supervisors to navigate competing interests and exercise greater strategic

The main goal of supervision is to determine whether an action or situation meets the established requirements

(Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (BZK), 2001).

insight (Inspectieraad, 2024). Additionally, the uncertainty inherent in this environment complicates decision-making, making it harder to identify clear actions or assign responsibilities within a system (Ministry of Economic Affairs, 2017).

Public Demands vs. Careful Deliberation

Supervisors are expected to make objective and well-reasoned judgments, particularly because their interventions can significantly impact the reputation and future performance of the organizations they oversee. However, this responsibility is complicated by the need to balance competing societal expectations and priorities (Coffeng, 2022). Public and political dynamics play a significant role in shaping the focus and decision-making processes of supervisory institutions (Braun, 2012). For example, shifts in public opinion on specific issues can amplify societal pressure, urging supervisors to act swiftly in response to emerging concerns. Yet, public and media attention often diverge from areas where interventions could yield the most significant benefits. This misalignment may itself be influenced by cognitive biases, such as the availability bias, where prominence is given to readily available or emotionally charged information rather than objective priorities (Hallsworth et al., 2018).

Supervisors face a dual challenge: on one hand, there is public demand for rapid intervention to address pressing issues, often accompanied by blame if problems are not resolved promptly. On the other hand, the legal scrutiny their decisions face necessitates a cautious and thorough evaluation of evidence to ensure legal defensibility (Coffeng et al., 2023). This legal focus, while essential, can inadvertently overshadow broader considerations, such as the potential economic repercussions of certain interventions (Coffeng et al., 2023). Balancing these pressures requires supervisors to navigate a complex landscape where timing, societal expectations, and legal considerations must be weighed carefully. Striking this balance is critical to maintaining public trust and ensuring that interventions are both effective and equitable (Coffeng, 2022).

2.2.2 Biases in Supervision

As discussed in chapter 2.1, biases impact the brain's information processing and judgements formation. As judgements are the core of supervision, biases can profoundly impact supervisors' decision-making, thereby directly affecting the effectiveness of supervision (De Nederlandse Bank, 2015). Biases can play a significant role in shaping how problems are assessed and intervention plans are developed. For instance, there is always a risk that bias limits the consideration of alternative scenarios when selecting suitable interventions or that significant problems are being ignored or underestimated (De Nederlandse Bank, 2015).

Blind Spots & Tunnelvision

Supervisory bodies are tasked with identifying significant problems and assessing risks associated with future issues (Coffeng, 2022). Detecting problems and discerning meaningful patterns among them requires careful analysis, but it is a process fraught with uncertainty. A shared frame of reference within supervisory teams may aid in the initial selection and interpretation of signals, providing a cohesive foundation for decision-making (Autoriteit

Financiële Markten, 2017). This can manifest through organizational culture, strategic objectives, and shared values. However, such collective perspective also increases the risks for developing tunnel vision, potentially limiting the inclusion of diverse perspectives (Autoriteit Financiële Markten, 2017). This may result in selective perception, where signals that fall outside the prevailing viewpoint are dismissed or deemed irrelevant (Autoriteit Financiële Markten, 2017). Moreover, past experiences with overseen parties or sectors can cloud future judgments, as supervisors may unconsciously allow these experiences to influence how they interpret and respond to new developments (De Nederlandse Bank, 2015). This dynamic underscores the importance of balancing a unified approach with openness to alternative perspectives to minimize biases in decision-making and problem detection. To effectively address these challenges, supervisory bodies must remain vigilant against the risks of shared perspectives by fostering diversity of thought and actively seeking out alternative viewpoints to ensure comprehensive and unbiased decision-making.

Group Reinforcement

Within supervisory practices, many decisions are made collectively in groups, often perceived as fostering objectivity (Coffeng, 2022). However, group decision-making introduces its own set of biases. For example, group reinforcement can lead individuals to conform to the majority view, even if they privately disagree, which stifles dissent and critical evaluation (Hallsworth et al., 2018). There are two main factors driving group reinforcement: 1. People may hear many others expressing an opposing view and think their personal opinion may be wrong. 2. People do not feel free to give their opinion because of social pressure (Hallsworth et al., 2018). Moreover, groups usually focus on what most people already know. As a result, crucial insights that only a few people or organisations have may not be shared (Hallsworth et al., 2018). While groups have the potential to mitigate individual biases, group processes

must be carefully managed to prevent these collective biases from taking hold (Coffeng, 2022).

Information Asymmetry

Information is a crucial element of effective supervision. Supervisors need to decide what information they require to make an informed judgment (De Nederlandse Bank, 2015). However, they usually depend on data provided by the entities they oversee, possibly resulting in selective or inaccurate information (Jansen & Aelen, 2015). This reliance can result in information asymmetry, complicating efforts to form a clear and objective understanding of the supervised environment (Jansen & Aelen, 2015; De Nederlandse Bank, 2015). Such asymmetry is further compounded by the close interactions between supervisors and entities, which can foster social identification—a phenomenon where supervisors develop an undue sense of affinity or alignment with those they regulate (De Nederlandse Bank, 2015). This alignment may lead to biases such as the ostrich effect, where supervisors ignore negative signals or shy away from making difficult decisions to intervene (De Nederlandse Bank, 2015).

Moreover, even when ample information is available, supervisors face the risk of information overload. The vast volume of data can overwhelm their capacity to identify and focus on the most critical insights, potentially causing decision paralysis and delays in judgment (Citroen, 2011). Effective decision-making requires more than just access to data; it demands the ability to sift through information, prioritize relevance, and translate it into actionable knowledge (Maqsood et al., 2004). Thus, having access to abundant information does not guarantee that supervisory bodies will make accurate or timely decisions (Coffeng, 2022).

To mitigate these challenges, supervisory bodies must not only ensure optimal information exchange but also engage in reflective practices. This includes critically examining

their own assumptions, seeking alternative perspectives, and fostering a culture of accountability and transparency (Coffeng et al., 2023). Such practices help counteract the biases introduced by information asymmetry and past experiences, reducing uncertainty and improve decision-making outcomes (Citroen, 2011).

Examples of common Biases

Framing

The presentation of information has a profound effect on the way this information is processed and judged. Framing effects can result into an imbalance in supervisory focus. For example, high-profile issues are usually prioritized over persistent, less visible problems (Hallsworth et al., 2018). For example, the way governments allocate attention means that certain issues and solutions are more likely to be salient. This can mean that government 'overreacts' as attention on issues cascades rapidly, perhaps reaching for whatever solutions come to mind easily, even as slow-developing problems go unnoticed (Hallsworth et al., 2018).

Confirmation bias

The brain wants to make sense of everything it observes. It prefers to make a logical story and constantly searches for evidence supporting that story (Kahenman, 2011). Confirmation bias can skew the understanding of an issue by leading supervisors to focus on information that supports their existing views while ignoring conflicting data (De Nederlandse Bank, 2015).

Information bias

The tendency to seek additional information even if it does not influence the decision or action (De Nederlandse Bank, 2015). This can lead to inefficiencies and delays in the decision-making process.

Illusion of similarity

Assumption that others share our views, leading to overestimations of how much supervised parties will understand or accept the proposed measures (Hallsworth et al., 2018). This can result in interventions being less effective or resisted by the regulated party.

Inter-group opposition

Resistance and communication issues between supervisory bodies and supervised parties can stimulate inter-group opposition. Fostering distrust and hinders acceptance of external insights (Hallsworth et al., 2018).

Group reinforcement

Group reinforcement can lead individuals to conform to the majority view, even if they privately disagree, which stifles dissent and critical evaluation (Hallsworth et al., 2018).

Overconfidence

People tend to overestimate the accuracy of their judgements and the effectiveness of their plans (Hallsworth et al., 2018). This may lead to supervisors overlooking potential pitfalls or unintended consequences.

Illusion of control

The exaggerated belief in one's ability to influence outcomes, particularly in complex systems where casualty is not straightforward (Hallsworth et al., 2018). This bias may lead supervisors to overlook the interconnectedness of various factors and underestimate the complexity of the systems they are attempting to regulate.

Anchoring

Individuals rely too heavily on initial information or values when making decisions, potentially leading to a narrow consideration of alternative and outcomes (De Nederlandse Bank, 2015).

2.3 BIAS MITIGATION

Mitigating biases in decision-making requires a deliberate and systematic approach that targets biases throughout every phase of the process (De Nederlandse Bank, 2015). Kahneman (2011) emphasizes the importance of enhancing decision-making stages, from the initial framing of problems to gathering relevant information and reflecting on outcomes. Central to this effort is the active questioning of underlying beliefs and the pursuit of diverse perspectives (Oeberst & Imhoff, 2023). Organizations can foster a culture where biases are openly acknowledged and addressed by encouraging individuals to recognize and challenge each other's assumptions. Developing a shared language for discussing biases creates a supportive environment for critical reflection and the re-examination of assumptions (Kahneman, 2011).

To promote unbiased decision-making, interventions should encourage examining facts from multiple angles. Strategies such as formulating alternative hypotheses, reframing information, and employing role-reversal techniques help decision-makers consider diverse viewpoints (Jansen & Aelen, 2015). Competitive elements and role-playing exercises can further activate individuals to explore a broader range of insights, fostering more balanced evaluations (Jansen & Aelen, 2015). Explicitly acknowledging uncertainty also plays a vital role, enabling supervisors to assess potential outcomes more thoroughly and avoid premature conclusions (De Nederlandse Bank, 2015).

Practical techniques, including presenting counterarguments, using analogies to uncover parallels, and requesting alternative explanations, support more reflective and objective decision-making (De Nederlandse Bank, 2015; Coffeng, 2022). For instance, requiring supervisors to draft "proposals for decision" forces a conscious, step-by-

step evaluation of their reasoning, reducing the likelihood of impulsive or biased judgments (Coffeng, 2022). By embedding these mechanisms into organizational practices, decision-making processes can become more rigorous, transparent, and equitable.

Addressing Group Thinking

Combating groupthink requires strategies that encourage individual contributions and promote open dialogue. One effective approach is to have team members share their perspectives independently, rather than conforming to a single agenda or dominant viewpoint (Hallsworth et al., 2018). This minimizes the reinforcing effects of group consensus and allows for a broader range of ideas to surface. Transitioning from traditional meeting structures to more interactive and collaborative workshop formats can further disrupt automatic, biased decision-making processes by fostering an environment that invites critical thinking and debate (Hallsworth et al., 2018). Additionally, reflecting on group dynamics and actively encouraging diverse viewpoints throughout discussions can help neutralize biases. Simple practices, such as incorporating a check-out moment at the end of each meeting, allow participants to reassess the decision-making process and ensure that no critical perspectives were overlooked (Autoriteit Financiële Markten, 2017). These techniques collectively create a more balanced and inclusive decision-making environment, reducing the likelihood of groupthink.

2.3.1 Debiasing vs. Choice Architecture Interventions

In the literature, various types of interventions and mechanisms are mentioned that could help reduce biases. Fasolo et al. (2024) reviewed 36 bias mitigation strategies and categorized them into two types. Debiasing interventions aim to raise awareness of biases and equip individuals with cognitive tools to improve judgment, critical thinking, and decision-making quality. These type of interventions are most effective in the early stages of decision-making when desired outcomes are unclear, focusing on improving the reliability of reasoning and information (Fasolo et al., 2024). Choice architecture interventions, on the other hand, reshape the decision environment to steer choices toward the most objective outcomes. This is particularly useful in later stages, once the most unbiased option is defined (Fasolo et al., 2024). The previous chapter elaborated on the dynamic and complex nature of the supervisory context, raising the questions whether it is possible- or even desirable- to determine the optimal decision beforehand. Therefore, it is expected that the debiasing interventions category is most suitable for the ACM. Below, the three main common strategies used in this category are explained.

Training Interventions

Bias training programs usually aim to increase people's understanding of cognitive biases and their potential influence on judgments and decisions (Fasolo et al., 2024). While these trainings have gained popularity, mere awareness is insufficient to enable individuals to effectively counter biases. Coffeng (2022) highlights that while recognizing biases is an essential first step, it does not necessarily equip decision-makers with the skills to address them. To be effective, training must go beyond awareness by providing practical tools for identifying and mitigating biases, both individually and collectively. Vinkenburg (2017) emphasizes that successful training interventions must provide actionable strategies that empower participants to

actively address biases rather than passively acknowledge them. One approach is teaching thinking strategies, which equip decision-makers adaptable methods for reducing cognitive errors and biases in various decision-making contexts (Fasolo et al., 2024).

Warning Interventions

Warning strategies are designed to alert decision-makers to potential cognitive errors and biases during judgment and decision-making processes. While training interventions mainly focus on teaching new decision-making techniques, warnings serve as immediate reminders to reassess their decisions with heightened caution (Fasolo et al., 2024). A practical example of this strategy is the use of safety symbols in hazardous workplaces. These visual reminders are designed to counter employees' optimism bias — the tendency to underestimate risks (Brady, n.d.). By providing a visible reminder of potential hazards, safety symbols encourage employees to adopt safer practices and be more cautious in high-risk environments. While warning interventions are simple and easy to implement, their effectiveness is often limited by their context-specific nature (Fasolo et al., 2024). Warnings must be tailored to particular contexts and decision scenarios in order to be effective. Organizations wanting to implement these strategies should thoughtfully identify specific situations where biases are likely to occur and design targeted alerts to mitigate their influence.

Feedback Interventions

Feedback interventions focus on providing decision-makers with information about the accuracy of previous judgments or the quality of decisions to enhance future decision-making (Fasolo et al., 2024). By reflecting on past choices, decision-makers can identify cognitive biases and adjust their approaches to avoid repeating errors. A commonly used tool in this category is the "Decision Quality Control" checklist developed by Kahneman et al. (2011). This

checklist consists of 12 questions across three categories, which are designed to help executives evaluate the quality of decisions. Despite its widespread use, this type of tools have faced criticism. Coffeng (2022) argues that while such tools may increase satisfaction with the decision-making process, they do not always guarantee better decision outcomes. A significant limitation of feedback interventions is that individuals often struggle to recognize their own cognitive errors. Consequently, effective reflection tools often require the involvement of an independent third-party moderator. Kahneman et al. (2011) emphasize that these moderators should be completely independent of the decision's outcome to ensure objectivity. Cristofaro (2017) further argues that these decision moderators should possess expertise in cognitive psychology to conduct effective assessments.

2.4 KEY TAKEAWAYS

2.4.1 Identifying Research Gap

*Translating Theory into intentionally
Debiasing Interventions*

The literature exploration reveals a significant interest in bias mitigation strategies, particularly in judgment-based professions and strategic decision-making roles. While psychological research predominantly focuses on understanding cognitive biases and their underlying causes, studies in management often propose theoretical guidelines for improving decision-making processes. Despite valuable suggestions for bias mitigation, only a few direct examples of effective interventions were identified in the literature. There is a lack of practical, intentionally designed interventions that translate the theoretical guidelines into actionable solutions within organizational settings.

2.4.2 Key Themes and Research Implications

The literature offered valuable insights into cognitive biases and the supervisory landscape, shaping the approach for identifying bias-prone areas within ACM's supervision process. Moreover, it provided useful understanding on how debiasing interventions can be effectively designed. Three key research groups were identified from the literature review – Groups dynamics, beliefs, and external influences on supervision. Below, the key takeaways are organized into these groups and discussed in relation to their implications for the research methodology discussed in the next chapter.

Beliefs

The literature underscores that underlying beliefs are a fundamental mechanism driving cognitive biases (Oeberst & Imhoff, 2023). Beliefs influence how supervisors interpret information, assess risks, and make decisions. Understanding these mental models can provide valuable insights into how biases manifest.

Research Implication: Observational research will focus on uncovering underlying beliefs that influence supervisory processes at ACM. Special attention will be given to how beliefs surface during meetings and whether they affect the framing of discussions and decision-making.

External Influences on Supervision

Supervisory processes operate within dynamic and rapidly evolving contexts. Supervisors are tasked with detecting and addressing issues within a system shaped by external developments, including regulatory changes, political priorities, and societal expectations. These influences complicate decision-making by creating a complex environment where multiple considerations must be weighed. One key challenge supervisors face is balancing the public's demand for swift intervention with the legal scrutiny that requires thorough and cautious decision-making (Coffeng et al., 2023). Public pressure often emphasizes high-visibility issues, while legal requirements necessitate careful evaluation to ensure defensible outcomes. This duality can sometimes overshadow broader considerations, such as the long-term economic impact of interventions.

A shared frame of reference, such as a clear organizational vision or mission, can be a valuable guiding tool to foster alignment within supervisory teams. As highlighted by the Dutch financial authority, Autoriteit Financiële Markten (2017), a collective framing approach can also influence the decision-making process, potentially reinforcing biases, blind spots and tunnel vision.

Research Implication: ACM's supervisory processes will be examined to understand how external factors influence decision-making. Special attention will be given to the organization's framing criteria and shared reference points. Understanding its impact will help to design interventions that foster more balanced and reflective decision-making practices.

Group Dynamics

Biases often become more pronounced in group settings (Coffeng, 2022). Group interactions can both reveal and reinforce cognitive biases during the decision-making process. Examples from the literature include:

- Dominant voices can disproportionately influence decisions, overshadowing diverse perspectives.
- Certain viewpoints may be dismissed due to favouritism or reliance on easily recalled (availability) information.
- Group discussions often reveal biases in language, framing, and collective reasoning.

Research Implication: Observing group meetings will be essential to detect subtle cues about how information is shared, which perspectives are emphasized or dismissed, and how pre-existing assumptions are reinforced. These observations will help uncover patterns where biases emerge and persist.

2.4.3 Implications for Intervention Design

In the previous chapters, the distinction between debiasing interventions and choice architecture interventions was explored. Given the dynamic and case-specific nature of the supervisory process at ACM, debiasing interventions emerged as the most suitable approach. Unlike choice architecture, which modifies decision environments, debiasing interventions focus on enhancing decision-makers' awareness, reasoning, and judgment processes to mitigate cognitive biases.

The table on the right summarizes the key limitations and opportunities for debiasing interventions identified through the literature review. These insights will inform the design of a new intervention tailored to ACM's supervisory context.

RECOMMENDED PRACTICES

Reflection

Encouraging structured reflection on group dynamics and decision-making patterns to identify and counteract biases (Autoriteit Financiële Markt, 2017). Develop shared language and supportive environments for discussing biases (Kahneman, 2011).

Structured Feedback Tools

Checklists and guided reflections can help enhancing decision processes (Fasolo et al., 2024).

Training & Awareness

Equip individuals with practical tools and cognitive skills for bias identification and mitigation. Awareness-based training should focus on actionable strategies rather than passive acknowledgment (Fasolo et al., 2024).

Tailored Warnings

Design targeted alerts for specific decision-making scenarios (Fasolo et al., 2024).

Diverse Perspectives

Designing interventions that foster exposure to varied viewpoints to challenge pre-existing assumptions (Oeberst & Imhoff, 2023; Jansen & Aelen, 2015).

Acknowledging Uncertainty

Encourage decision-makers to openly acknowledge their assumptions (De Nederlandse Bank, 2015).

PRACTICES TO AVOID

Bias Blind Spot

People often struggle to recognize their own biases, and usually perceive themselves as less biased than others (Kahneman, 2011; Coffeng, 2022).

False Confidence

Decision-makers may overestimate their objectivity and decision quality. Over-reliance on structured decision tools may result in false assurance (Coffeng, 2022).

Limited Effect Awareness

Just awareness on bias does not necessarily change behaviour (Coffeng, 2022).

Context-Specific Warnings

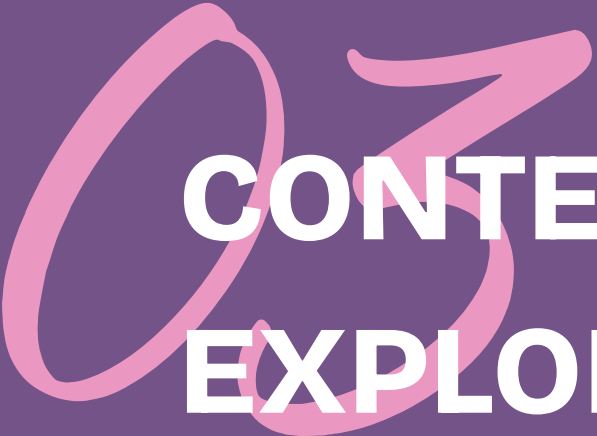
Generic warnings are often ineffective (Fasolo et al., 2024).

Assumption of Information Sufficiency

Accurate information alone does not eliminate biases (Coffeng, 2022).

Premature Conclusions

Failing to acknowledge uncertainty can lead to hasty decisions (De Nederlandse Bank, 2015).



CONTEXT EXPLORATION

This chapter describes the activities carried out as part of the 'Explore' phase of the project. The chapter ends with a summary of key findings and the emergent key themes.

The aim of this exploration phase is to understand the role of supervisors and the factors influencing their decision-making. This involved examining the supervision process to identify key decision points and exploring how contextual factors shape these decisions. The findings were used to define the problem-solution frame, setting the stage for the subsequent chapters.

- 3.1 Research Approach**
- 3.2 External Context**
- 3.3 Internal Context**
- 3.4 Key Findings**

explore

3.1 RESEARCH APPROACH

The research primarily involved an ethnographic approach, with most fieldwork taking place within ACM. Efforts were made to immerse in the role of supervisors, adopting a participant-observer perspective to gain a holistic understanding of the organisation. This included working at the ACM office, attending meetings, presentations and social activities. The table on the right provides a summarized overview of the research activities. A detailed overview can be found in appendix B.

Explorations were conducted across two main research areas: ACM’s external context and internal context. The depth of exploration varies across these areas, aligning with the project’s scope and focus. For example, significant attention was given to understanding ACM’s supervisory practices (internal context group). Gaining insight into the specific objectives and challenges faced by supervisors is essential for identifying decision points where biases are likely to arise and where debiasing strategies could be most effective. These insights are particularly valuable, as they help define the design space and establish criteria for the proposed intervention.

The two research areas address the following questions, which served as a framework for guiding analysis and aligning findings throughout and after the research process.

Research Activity	Amount
Meetings Behavioural Expert Team	12-15
Meetings Behavioural Expert Team	15-20
Internal Presentations	10-15
External Presentations	3
Interviews	5
Conversations	13-16
Miscellaneous (immersion) activities	3

Research Questions

EXTERNAL CONTEXT

- What is learned about the energy market?
- What external context factors influence judgement and decision-making?

INTERNAL CONTEXT

- How does ACM approach supervision?
- What is learned about the energy department?
- What internal context factors influence judgement and decision-making?

3.1.1 Methods

Observation was a key method used to study supervisors in a non-invasive manner. It enabled insights into an understanding of their rationale, influential variables, and interactions within context. The insights from observations were supplemented with semi-structured interviews. Combining the observations with interviews and informal interactions allowed for a comprehensive understanding of supervisors’ roles and the contextual factors influencing their decision-making processes. To gather additional information about ACM and supervision, additional presentations focused on the energy department were attended. Furthermore, meetings relevant to the entire ACM organization were attended, including the periodic “Cappuccino Meeting,” during which key current developments within ACM are presented to employees. A fly-on-the-wall observation technique was used to minimize researcher influence on participants. This method involved collecting data through passive observation, where the role of a participant observer was assumed during meetings (Skylab - Technical University of Denmark, n.d.). This allowed me to attend real-time discussions. A drawback of this approach was the inability to directly question supervisors during observations to validate insights (Skylab - Technical University of Denmark, n.d.). To address this, unstructured interviews and informal interactions were utilized to clarify and confirm observations. Meeting frequency and accessibility also influenced the choice to attend weekly team meetings in addition to larger detection meetings held every six weeks.

Recognizing that participants might alter their behaviour when observed or interviewed (Van Boeijen et al., 2020), various informal activities—such as internal presentations, the energy department day, and a sports day—were attended to facilitate unfiltered conversations. These

informal interactions allowed for a deeper understanding of supervisors’ experiences while simultaneously validating insights gathered through the other methods. Due to the informal nature of these conversations, only brief notes were taken during or immediately after the encounter.



Figure 3.1.1 Annotated Ex

3.1.2 Data Gathering

Given the sensitivity and confidentiality of data at ACM, the scope of data collection for this project was inherently limited. Observations were conducted in a strictly secured environment, and no audio or video recordings of meetings and the ACM environment were permitted.

During meetings and presentations, I documented notable quotes, paying special attention to statements that reflected assumptions or beliefs. Relevant information regarding the four research areas was also noted. In cases where longer interviews were conducted, these sessions were recorded with verbal consent and later transcribed for analysis. All interview recordings and transcripts were securely deleted following the completion of the analysis to maintain confidentiality.

The notes and transcripts were analysed, and relevant data snippets were highlighted. A data snippet was considered relevant if it provided information about the internal or external context, indicated underlying collective beliefs, or referenced an interaction with a company. The selected data was paraphrased and interpreted using digital “statement cards” (see Figure 3.1.1). Statement cards, developed by Stappers et al. (2023), serve as a structured tool to make the interpretation and pattern recognition of qualitative data more explicit. Each statement card consists of three fields: a quote, a paraphrase/interpretation, and a researcher ID. Since this project was conducted individually and the data was gathered from multiple research activities, the researcher ID was replaced with a research activity ID (see Figure 3.1.1). The literature emphasizes that underlying beliefs are a key mechanism driving cognitive biases (Oeberst & Imhoff, 2023). To better understand the collective beliefs among supervisors, quotes reflecting assumptions or opinionated beliefs were assigned an additional label. The statement cards were first categorized by the two research areas, external and internal context (appendix C). Through a spontaneous clustering approach, the cards sharing the same subject or theme were grouped together to reveal patterns. These patterns formed the foundation for the information covered in the following sections of this chapter.



Example of Statement Card

3.2 EXTERNAL CONTEXT

Complexity in the Supervision Landscape

Chapter 2.2 explained that Supervisors must make difficult decisions in a changing environment, while balancing the interests of various stakeholders. This chapter examines how this applies to ACM, and the Energy Department in particular. This helps to understand the complexity supervisors face when making decisions.

3.2.1 Introducing the Energy Market

The Dutch energy market is undergoing significant transformations driven by two major and conflicting challenges: the energy transition and grid congestion. On the one hand, organisations and consumers are stimulated to adopting green energy solutions, such as solar power. On the other hand, the electricity grid is severely overburdened, limiting the capacity to accommodate new renewable energy sources. These opposing dynamics have led to complex changes, including policy adjustments such as the net metering scheme and compensation for surplus solar energy. Moreover, the evolving energy landscape creates opportunities for new organisations to enter the market. These developments result in a very complex system in which ACM has to execute its' regulation and supervision tasks.

Market Monopolies

A distinctive aspect of the Dutch energy market is the presence of legal monopolies. Consumers do not always have the freedom to choose their energy providers. For instance, certain neighbourhoods are limited to a specific heat supplier. This limited choice lead to repeated interactions between supervisors and the same market party, increasing the risk of forming biased perceptions and reinforcing negative associations with particular companies. This can lead to supervisors (unconsciously) focusing on the negative aspects of familiar parties, potentially overlooking their compliance efforts or improvements.

Media Narrative: Watchdog vs. Cowboys

The media frequently portrays market parties as “cowboys”. Several conversations with supervisors indicated that this label is occasionally used by supervisors as well. While this label highlights concerns about unregulated or risky business practices, it carries the risk of fostering an “us versus them” mentality among supervisors. This negative framing may unintentionally reinforce negative beliefs and hinder impartial judgements. In addition, historical challenges with established market players can create a bias where supervisors focus primarily on these large incumbents while overlooking potential issues with newcomers.

Interdisciplinary Complexity

The energy market is characterized by its inherent complexity, requiring legal, economic, technical, and behavioural science expertise. However, ACM's current workforce is predominantly composed of individuals with legal or economic backgrounds, while consisting less of technical specialists and behavioural experts. The multifaceted nature of the sector's developments suggests that integrating technical and behavioural insights alongside legal and economic considerations will become more crucial for complete problem assessments.



Figure 3.2.1 Dutch News Headlines using the term 'Cowboy' to refer to market parties

3.2.2 Balancing Interests: Consumer vs. Organisation

One of the main priorities the Energy department is to accelerate the energy transition. This transition emphasizes the need for public engagement, innovative ideas, and social innovations, making it a deeply political process filled with normative choices and uncertain outcomes (Ministry of Economic Affairs, 2017). However, governments are often bureaucratic, excelling in creating stability and predictability—traits that do not align well with the creativity and change required for innovation (Meijer et al., 2016). Moreover, legal systems tend to be based on outdated societal frameworks and often lag behind technological advancements (Ministry of Infrastructure and Water Management, 2022). For instance, a novel approach to constructing microgrids might not yet be permitted by law, despite its potential to greatly enhance sustainability.

Accelerating the energy transition also brings another challenge. To achieve and speed up this transition, companies must develop innovative solutions. This requires time, money, and the freedom to invest in new technologies. Additionally, they need to run pilot projects to test these new solutions. As a result, ACM may decide to refrain from or reduce penalties for certain companies within the energy sector, as fines could hamper their ability to invest. At the same time, ACM has a responsibility to protect consumers and intervene when necessary. The interests of companies and consumers do not always align, and regulators must balance these interests on a case-by-case basis. This creates a continuous tension within which ACM must navigate.

3.2.3 Market Complexities blurring scope ACM

In Chapter 2.2, it was noted that the boundaries between policy and supervision are increasingly blurring. This development is evident in the recent amendment to the Electricity Grid Code on April 18, 2024, in which ACM introduce societal prioritization. Due to increased grid congestion in the Netherlands, ACM believes grid operators should prioritize parties serving public interests to enter the grid (ACM, 2024). Hearing similar concerns from politics, society, and market participants, and seeing little political action, ACM decided to enforce this. A prioritization framework has been set up consultation with the different stakeholders, such as the Ministry of Economic Affairs and Climate. Starting October 1, 2024, grid operators must prioritize parties serving significant public interests according to this new framework.

Despite the legal basis grounded in European and national law, uncertainty remains about ACM's authority to enforce this decision. Proponents argue that European Court rulings uphold the role of national regulators in such matters, while critics assert that this is inherently a political issue requiring parliamentary approval.

This ambiguity creates uncertainty among supervisors regarding ACM's scope and their legal powers. Additionally, ACM is increasingly involved in policymaking, such as advising on the net metering arrangement. In these instances, ACM is often expected to adopt a position by the national government, which conflicts with its role as an impartial supervisor. This tension can complicate supervisory activities, for instance when determining appropriate interventions.

3.3 INTERNAL CONTEXT

Supervision Process and its Challenges

This chapter focusses on how ACM executes its' supervision tasks. First, the overall supervision process is broadly described. Followingly, the chapter examines how problems are prioritized and interventions are selected.

3.3.1 Problem-solving Supervision

The supervision process can be separated into three different stages: Detection, investigation, and intervention. It is an iterative process in which the different stages often seamlessly transition into one another in practice (figure 3.3.1). For example, supervisors may detect new signals during the intervention stage, indicating another significant problem.

ACM puts a heavy emphasis on their primary objective to resolve consumer and market problem. They describe their supervision approach as “problem solving supervision”, where punitive measures are described as the “last resort” and should only be used when absolutely necessary. Rather than a one-size-fits-all approach, supervisors are stimulated to tailor interventions to benefit the overall market health.

Stage 1: Detection

The detection stage focuses on identifying potential problems or violations. It describes the process of going from raw information in the early stage to individual signals, eventually leading to prioritized supervisory investigations. Detection requires both a deep understanding of the market and an open mind to objectively evaluate information. These two requirements can sometimes be at odds: extensive knowledge may unconsciously lead to a less exploratory attitude.

“On day one, the question is: ‘Do we have a problem here? How significant is that problem? Is it even a problem we should have an opinion on?’”

Quotes from interview with manager

“Detection & Supervision”

Stage 2: Investigation

Once a potential issue is identified during detection, the nature, severity, causes, and possible solutions to the problem are examined. Supervisors enrich signals with additional information, often drawing on sector-specific expertise to analyse data. This stage often overlaps with the detection and intervention stages, as insights gained may require revisiting earlier analyses or considering preliminary intervention strategies.

Stage 3: Intervention

The final stage involves implementing interventions to address identified issues. ACM has a range of intervention options, from issuing binding directives to imposing fines.

3.3.2 Measuring Intervention Effectiveness

After an intervention has been implemented, ACM occasionally conducts an evaluation to assess whether the intervention achieved its intended outcomes. The findings are framed around key outcomes and successes to convey the value of the regulatory action.

ACM typically carries out these evaluations internally, which raises a critical question: How reliable are the findings when the organization evaluates its own actions? To ensure

objectivity and enhance credibility, it may be beneficial to involve external, independent parties in the evaluation process. This approach could strengthen external trust in the results and provide a more impartial assessment, which could help enhancing the overall effectiveness of ACM’s supervisory practices.

Additionally, it remains unclear whether all projects are evaluated evaluation or whether a standardized procedure exists. Establishing a formal evaluation framework would not support organizational learning, but also foster greater transparency and accountability.

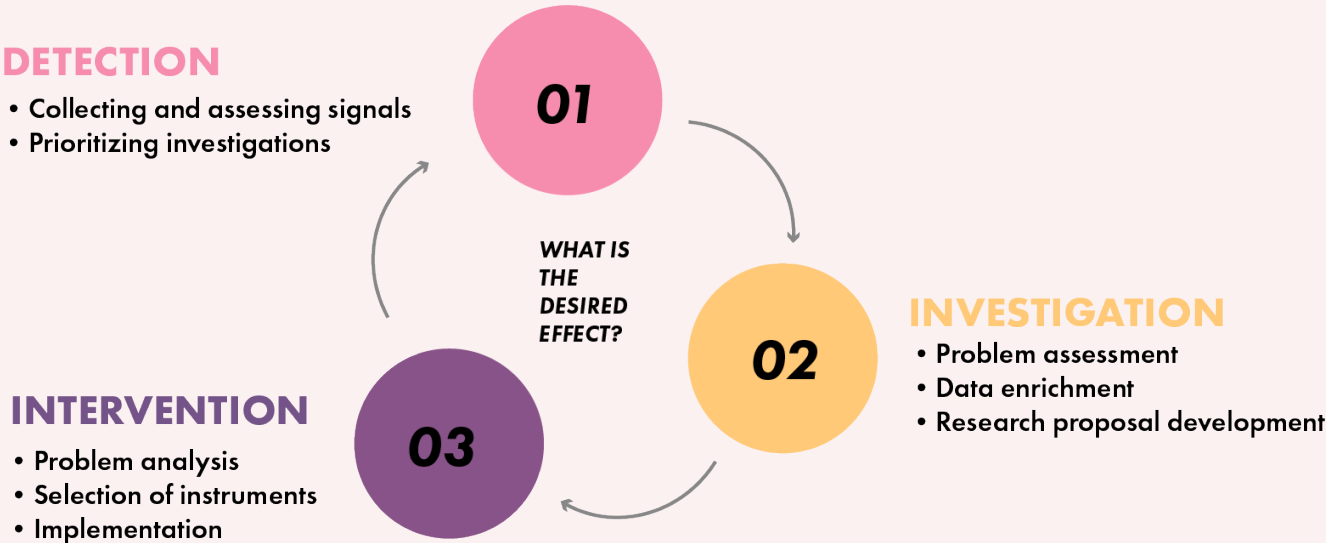


Figure 3.3.1 – Three phases of the supervision process

3.3.3 Problem Identification & Prioritization

Supervisors are tasked to assess incoming signals for relevance, and collectively select which ones need further investigation. Signals are snippets of information that suggest something might be wrong. ACM receives signals from various sources, such as:

- Consumer Signals: These often originate from ACM's ConsuWijzer, a public service where consumers can file complaints or submit questions. The majority of consumer signals come through general complaints. Despite their value, consumer signals represent only a limited segment of reality, as not all consumers are aware of or engaging with ACM.
- Signals from Market Parties: Companies, sector associations, and other stakeholders sometimes approach ACM to address issues. These signals often provide important insight information about market developments or possible violations.
- Media Reports: Media coverage can reveal patterns of misconduct or market trends that warrant regulatory attention. Supervisors are kept informed daily, for example through the two daily summaries of relevant news articles.
- Internal Observations: ACM supervisors themselves may identify irregularities during their daily work. When employees notice something noteworthy, they report it to the signal coordinators via email or a web form. These signals often contain valuable context and are highly regarded by the detection team.
- Social Media: ACM previously experimented with social media monitoring as a potential signal source but faced limitations due to legal restrictions.

Detection Meeting

New or potentially relevant signals are discussed during the detection meetings. The primary goal is to collectively determine whether a signal warrants further investigation or action. If a signal is deemed significant, it is escalated to the intervention team for follow-up.

One notable observation during the observed meetings was that signals were primarily presented rather than openly discussed. During the attended meetings, signals were discussed on a company-by-company basis, often leading to personal associations with specific firms. For instance, supervisors shared anecdotes and prior experiences, which can shape the overall perception of a company. Some companies appeared more frequently in discussions than others, which may create the impression that there are systemic issues within those organizations. This, in turn, could negatively impact their perceived reputation, even if the volume of signals is simply a reflection of their larger market presence rather than an indication of widespread misconduct.

Prioritization

ACM cannot address all issues faced by consumers or businesses due to limited capacity. Therefore, it must carefully select which market and consumer problems to address. Key criteria for setting these priorities include the extent of harm caused by organizations and the impact on consumers, society, and the broader energy market. Another critical consideration is whether the issue carries societal or strategic significance. "Will this issue be in the headlines tomorrow?" Signals that are likely to generate media attention commonly receive higher priority—either due to their societal impact or because they reflect persistent, systemic problems.

ACM recognizes that harm can be both direct and indirect, making it difficult to assess definitively. A factual report may

“With larger projects, we want to assess the impact & effect. What has this project actually accomplished on a broader scale?”

*Quotes from interview with manager
“Detection & Supervision”*

not initially seem severe enough to warrant action but may become relevant when viewed in context. For example, a report of residents without heating for several weeks may already seem urgent. However, the situation becomes even more critical when vulnerable consumers are involved. Vulnerable consumers are defined as individuals who are particularly susceptible to certain commercial practices or products, and require additional legal protection (Autoriteit Consument & Markt, 2021). Examples of vulnerable consumer may include, but are not limited to: children, elderly and consumers with mental or physical disabilities.

Supervisors must assess the severity of a problem for the affected consumer, society, and the market. This includes evaluating the economic impact, such as financial losses, as well as potential emotional harm. A key challenge is that during the initial signal selection stage, there is no capacity for thorough investigation for each individual signal. As a result, prioritization often relies on the supervisors' perception and judgment, which inherently increases the risk of subjective biases influencing decision-making.

3.3.4 Intervention Selection

After a problem has been detected and thoroughly investigated, the intervention team focuses on selecting appropriate measures to resolve the issue. Several factors influence this decision-making process, depending on the nature of the violation.

First, the organization's profile is carefully considered. Have there been previous interactions with this party? Has ACM imposed sanctions for similar issues with this organization before? The organization's behaviour significantly impacts ACM's approach. Generally, cooperative parties are treated more leniently compared to those who are intentionally uncooperative. For instance, ACM may adopt a mediating role in disputes between market players rather than opting for immediate punitive measures.

Market dynamics are also a crucial consideration. While imposing a fine might legally seem the most effective solution, it could lead to unintended consequences, such as a company's bankruptcy, which might create a larger problem for consumers. In such cases, alternative interventions may be preferred to maintain market stability.

Furthermore, ACM's desired public image sometimes influences the choice of instruments. Certain measures are selected to send a broader warning to the market. A notable example occurred in the spring of 2024 when ACM fined Epic Games International for unfair commercial practices targeting children in the game Fortnite (Autoriteit Consument en Markt, 2024). In addition to penalizing the misconduct, the fine served as a cautionary signal to other companies employing similar dark patterns. This was explicitly emphasized by former board member Cateautje Hijmans van den Bergh, who stated, “...With this decision, we are sending a strong message: children should be able to play an online game without being improperly pressured.” (Autoriteit Consument en Markt, 2024).

3.4 KEY FINDINGS

This final chapter of the 'Explore' phase provides a summary of the key findings from the research activities. These insights serve as the foundation for defining the design space and shaping the design direction in the following chapter.

3.4.1 Identified Challenges & Risks for Biases

The detection process relies to some extent on forming initial hypothesis. In some cases, supervisors must make early judgements about possible issues while only limited information is available. These early assessments significantly influence the direction and focus of subsequent supervisory activities.

Supervisors assess signals based on ACM's legal responsibilities, sector-specific knowledge, and societal needs. While such expertise is essential, it can also introduce the risk of cognitive biases, as extensive experience may unconsciously diminish openness to new or exploratory insights.

Diverse Nature of Signals: The types and volume of signals vary significantly across different market domains. Some sectors generate numerous signals, while others remain relatively silent. This variation poses challenges in prioritizing and evaluating signals effectively.

Limited Information and Time Pressure: In some cases, supervisors must assess signals with incomplete information and under tight deadlines. This can lead to reliance on intuition rather than evidence-based assessments. While intuition-driven decisions are not inherently flawed, they complicate accountability and retrospective evaluations.

Contextual Gaps in Consumer Signals: Consumer signals may not always offer enough contextual background to support a well-founded evaluation. This lack of context makes it challenging for supervisors to judge how severe or representative a signal might be. Moreover, I observed a general tendency to label signals coming from supervisors as more relevant than consumer signals. This may result into consumer signals being less actionable than those from internal sources, which tend to be accompanied by richer background knowledge. Although supervisors are likely to have a better understanding of ACM's scope and legal possibilities, this belief can reinforce a narrow perspective on market conditions, increasing the risk of blind spots.

Risk of Confirmation Bias: There is a danger that supervisors' evaluations of data are influenced by pre-existing assumptions about certain companies, leading to a focus only on their negative aspects while overlooking positive or neutral developments.

Defining Relevant Signals: It is difficult to define what constitutes a "relevant" signal in advance. Information that initially appears irrelevant may later reveal important patterns. During several conversations, supervisors and managers indicated that it is difficult to assess how representative incoming signals are of the broader market landscape.

04 SYNTHESIS

This chapter outlines how the insights from the 'Exploring' phase are translated into a concrete assignment to guide the design stages of the project. It begins by defining the design space for an intervention, based on clustered findings from the exploration. These insights were synthesized to uncover potential leverage points for change within the supervision process. The chapter then articulates the intended goal of the intervention and sets out the design criteria.

- 4.1 Design Space**
- 4.2 Design Direction**
- 4.3 Design Criteria**

reframe

4.1 DESIGN SPACE

4.1.1 Synthesis Approach

During the ‘Exploring’ phase, insights were categorized under two primary research areas: external context, and internal context. While these categories supported the initial structuring of data, they resulted in fragmented findings that did not address systemic dynamics.

To capture the current situation more comprehensively, the “Vision in Product Design” (ViP) method (Hekkert & Van Dijk, 2011) was employed, particularly the step of generating and clustering context factors.

This structured process was complemented by inspiration from the causal loop diagram (CLD) template (Van Der Bijl-Brouwer, 2023). CLDs are instrumental in uncovering feedback mechanisms and systemic interactions. By mapping cause-and-effect relationships, they enable the identification of leverage points within a system, CLDs help to identify leverage points for strategic interventions within a system. This synthesis approach made the abstract complexity of biases more tangible and visually comprehensible. The resulting storylines highlighted intervention opportunities and served as a communication tool to share insights with supervisors and gather their perspectives.

4.1.2 Identified Leverage Point: Detection Meeting

The synthesis revealed a systemic risk of supervisors’ biases being reinforced throughout the supervision process. This reinforcement is primarily driven by the selection and prioritization outcomes within the detection stage,

influencing which stakeholders supervisors engage with during subsequent stages. Repeated interactions with the same market parties amplify the risk of cognitive biases, possibly affecting supervisors’ interpretation and response to new cases (De Nederlandse Bank, 2015). These biases can be reinforced by legal conflicts or negative experiences—possibly leading to reputational biases toward certain market participants. This effect is particularly evident in the energy sector as key stakeholders remain relatively stable.

In addition to consumer-submitted signals, supervisors also contribute signals based on their own observations or research. There is a risk that these internally generated signals reflect supervisors’ pre-existing assumptions, consequently influencing subsequent discussions. This may result in a feedback loop in which signals reinforcing prior beliefs are prioritized, intensifying tunnel vision over time (Oeberst & Imhoff, 2023). Research supports the finding that once biases are formed, individuals interpret new information through the lens of existing beliefs, especially when the information is ambiguous (Coffeng et al., 2021; Jansen & Aelen, 2015). Furthermore, if specific market parties generate a disproportionate number of signals, there is a risk that this imbalance may inadvertently strengthen supervisors’ existing assumptions. Over time, this may subtly shape how new signals are assessed and prioritised.

Furthermore, the nature of the signals selected during the detection stage can shape supervisors’ perspectives in the investigation and intervention stages. When certain types of signals are repeatedly prioritized, supervisors become more familiar with specific stakeholders. This could reinforce reputational assumptions. The character and perceived intent of a company influence how supervisors determine appropriate intervention strategies. For example, companies that frequently appear tend to be approached differently by

ACM. Thus, the early signal selection can shape the trajectory of case handling, risking perpetuating biased interpretations in decision-making during following stages.

To attempt to distort this reinforcing loop, the detection stage is chosen as leverage point to intervene. Within this stage, the detection meeting marks an early decision-making moment where bias can be either reinforced or challenged. Additionally, targeting this meeting aligns with ACM's strategic goal to strengthening the signal detection processes.

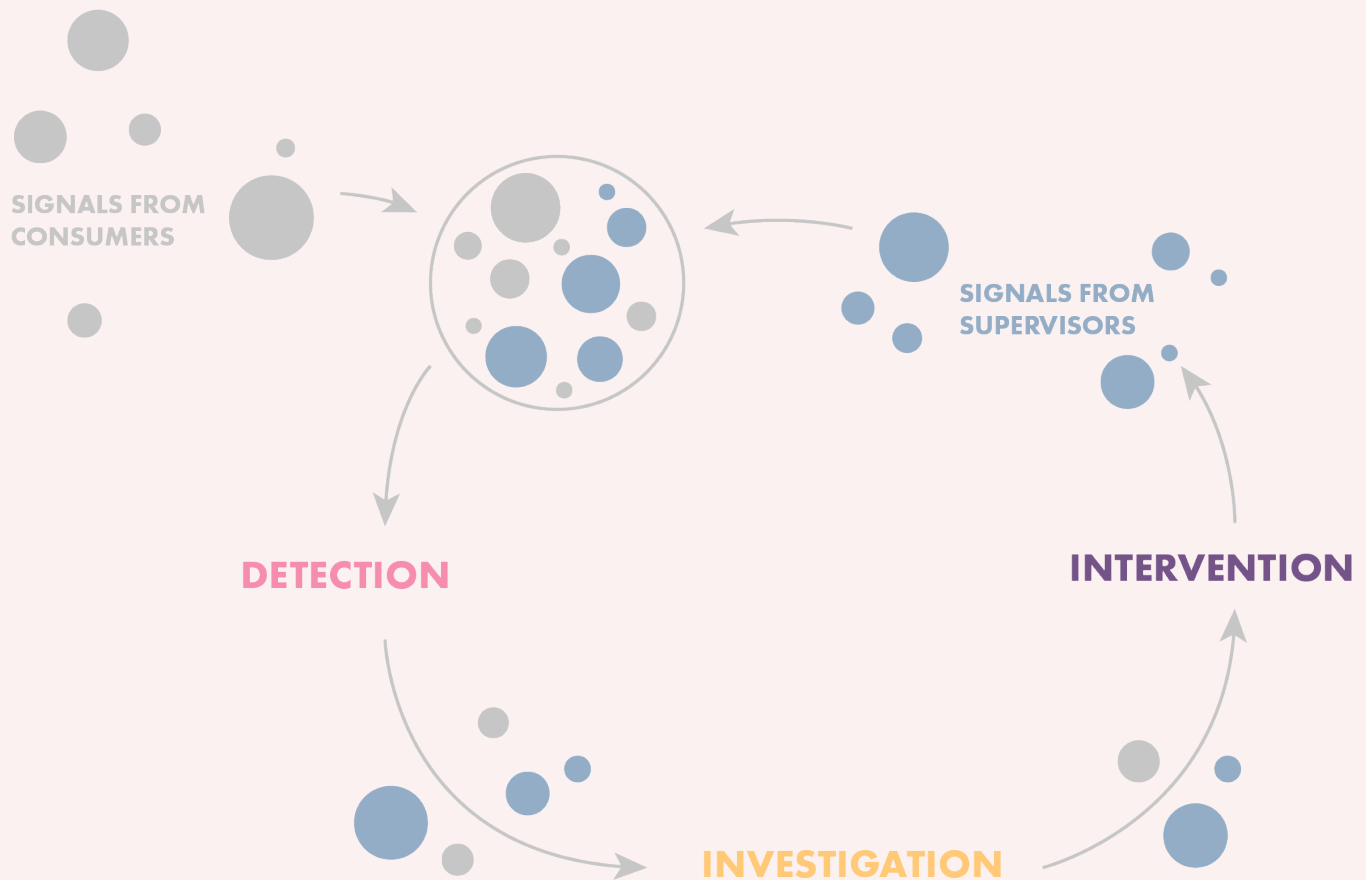


Figure 4.1.1 – Diagram portraying systemic risk of bias reinforcement

4.2 DESIGN DIRECTION

4.2.1 Co-Creation with Behavioural Experts

Before setting the design goal and interaction vision, a co-creation session was conducted with behavioural experts at ACM. The primary objective of this session was to leverage their organisational knowledge and behavioural science expertise to generate different intervention directions. Their understanding of the organization allows them to assess what is likely to succeed or face challenges given the profile of supervisors. Moreover, their expertise in behaviour change can contribute to formulate a suitable design direction. This involvement aimed to demonstrate how to approach solution development from a design perspective. The complete test guide can be found in Appendix E.

Session Description

The session began with a plenary icebreaker aimed at stimulating creative thinking before the brainstorming sprints. Participants were asked to brainstorm unconventional uses for a roll of toilet paper. Once ideas were flowing, the prompt was inverted to imagine how a roll of toilet paper could be misused in a criminal context. This icebreaker was setup as a playful yet effective way to challenge normative thinking, inspired by the inverse brainstorming technique (TU Delft, n.d.).

Following the warm-up, the group was introduced to the design dilemma through an observed interaction from the research phase. This scenario was chosen to reflect the leverage point identified in Chapter 4.1: the detection meeting. Presenting a familiar and relatable example helped to make the systemic impact of early-stage signal selection more understandable.

The session was divided into two main brainstorming sprints. In the first sprint, participants were encouraged to propose as many unconventional or imaginative interventions as possible, using provocative prompts as inspiration. After sharing the most eccentric ideas, the second sprint focused on refining those into more realistic concepts. The SCAMPER technique (Van Boeijen et al., 2020) was introduced to support this phase by guiding systematic adaptation of ideas. The session concluded with a reflective group discussion, where participants shared insights and aligned on the most promising directions



Figure 4.2.1 – Interaction used to explain design dilemma

Setup

Participants were divided into three groups. Each group got their own flip-over. Different pens, post-its, and coloured markers were provided to stimulate a creative atmosphere. Ideally, each group is positioned at their own table. However, this was not possible during this session due to the room’s setup

Results

The various ideas generated during the session were categorized to form distinct design directions. During the group discussion, participants reflected on each direction. The table below provides an overview of these directions and summarizes the main discussion points:

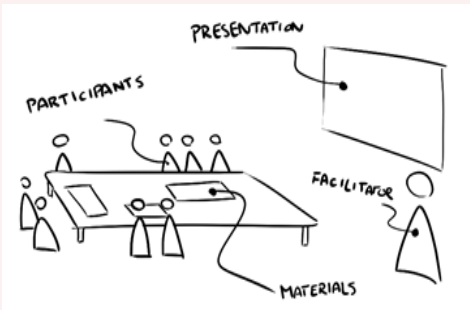


Figure 4.2.2 – Digital sketch of co-creation setting

Design Direction	Examples of generated Ideas	Concerns
Neutralizing Negative Associations with Positive Stories about Organizations	• “The Love Letter”: Periodically sending emails with positive news about organizations.	• Risk that supervisors may ignore or dismiss the information. • Limited impact due to belief-consistent processing.
Improving Relationships Between Supervisors and Organizations	• Setting up internship or shadowing programs for supervisors to gain insight in market operations. • Organizing informal gatherings with organization representatives.	• Risk of reinforcing bias by selecting specific companies. • Need for buy-in from both ACM management and organizations. • Feasibility concerns due to capacity constraints.
Discouraging Biased Remarks about Companies	• Assigning supervisors a month of “DOX duty” to punish biased expressions.	• Risk of introducing a punitive atmosphere within ACM. • Questions around enforcement and defining what constitutes “biased behaviour”.
Cross-Checking Signal Selection	• Rotating detection teams across ACM directorates. • Using AI to scan documents for assumptions.	• Detection requires specific market knowledge, making cross-department exchanges challenging. • ACM’s market-sensitive information cannot be publicly shared, prohibiting the use of AI scanning tools.

Key Takeaways

- The ideas generated during the session primarily focused on changing associations surrounding market parties. However, the effectiveness of this approach is debatable due to belief-consistent processing, as explained in Chapter 2.1. Additionally, collaborating directly with market parties to reshape these associations raises ethical and practical concerns, including the risk of unintentionally reinforcing positive biases (e.g., a halo effect). In extreme cases, this could even result in regulatory capture, where a regulatory body intended to protect public interest begins to align its decisions with the priorities of the industry it supervises (CFA Institute Research and Policy Center, 2019). Thus, the intervention should not rely solely on strategies that aim to reshape associations.

- The discussion also highlighted that for an intervention to be effective, it should be periodically integrated into the supervision process. Standalone interventions, such as workshops or informal gatherings, are unlikely to produce sustained change. These types of activities often fall outside supervisors' priorities and may be dismissed in favour of time-sensitive regulatory duties. Instead, the intervention should be embedded into existing routines and decision-making moments.

- It was also noted that most supervisors tend to focus on legal and economic aspects, paying less attention to psychological topics and behaviour change. The intervention should frame bias awareness in a way that resonates with supervisors' core responsibilities and values, highlighting how it benefits decision-making rather than presenting it as an abstract behavioural concern.

4.2.2 Design Goal

The insights derived from the co-creation session were used to come up with the final design goal: "Stimulating supervisors to actively consider diverse perspectives during signal assessment by fostering critical discussion during detection meetings."

The overarching vision of the intervention is that supervisors become more critical of how and when biases may influence their assessments. Research shows that exposing individuals to diverse viewpoints helps challenge pre-existing biases (Oeberst & Imhoff, Jansen & Aelen, 2015). By integrating diverse perspectives, the intervention aims to enrich the evaluation process and encourage supervisors to recognize potential blind spots.

4.3 DESIGN CRITERIA

To translate the design goal into design criteria, inspiration was taken from the Transtheoretical Model of Behaviour Change (TTM) (Prochaska & Velicer, 1997). TTM posits that behavioural change occurs in five distinct stages: Precontemplation, Contemplation, Preparation, Action, and Maintenance. Each stage reflects a different level of readiness to adopt a new behaviour, such as implementing regular exercise routines or, in this case, using a bias-awareness intervention during decision-making processes (O’Hea et al., 2004). An intervention’s success depends on its ability to meet users where they are and facilitate movement through these stages.

To identify design criteria grounded in behavioural dynamics, an individual brainstorming session was conducted using the TTM as a guiding framework. The process began by mapping potential barrier onto the TTM stages. For each stage, potential reasons for supervisors’ reluctance to progress to the next stage were written on post-its. The post-its were clustered into

broader themes, and translated into four design criteria.

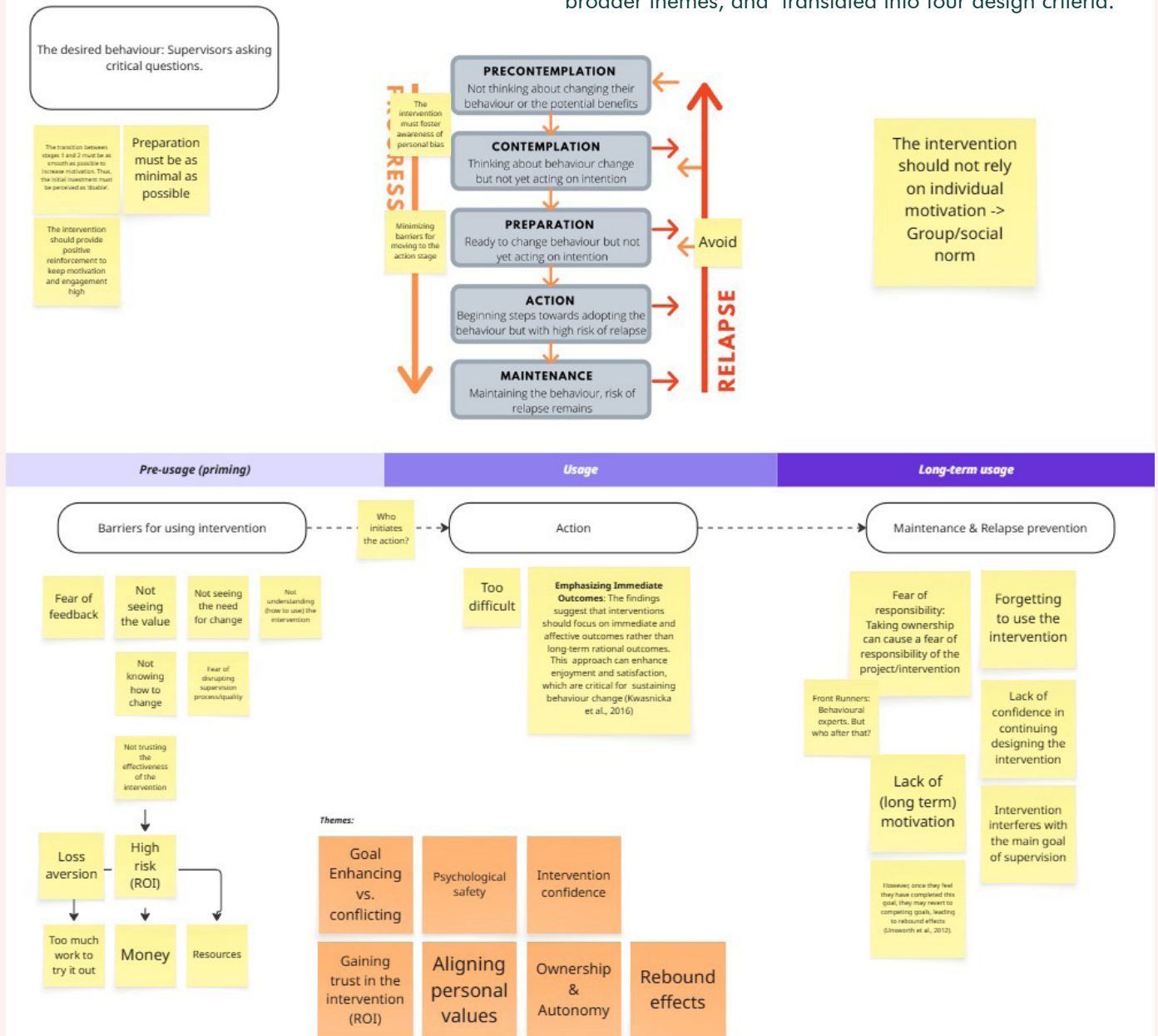


Figure 4.3.1 – Screenshot from the TTM brainstorm session

Criteria 1: Alignment

The intervention must support rather than compete with the detection meeting's primary goal: making efficient, evidence-based decisions. Research shows that behaviour is largely guided by goal pursuit (Unsworth et al., 2012). Thus, if the tool is perceived as extraneous or time-consuming, this can cause goal conflict and reduce engagement (Unsworth et al., 2012). Instead, interventions are more effective when integrating the new behaviour into existing goals (Unsworth et al., 2012). In this case, encouraging supervisors to consider multiple perspectives should be presented as an enhancement to their decision-making, not as an extra task.

> The intervention should be perceived as a meaningful addition to the existing goals of the detection meeting. It must strike a balance between supporting decision-making and introducing new reflective practices in a way that feels relevant and manageable.

Criteria 2: Low-barrier adoption

To encourage initial uptake, the intervention must be feasible using ACM's current resources. It must require minimal investment in time, resources, or organizational change. As behavioural design is relatively new at ACM, low-risk, low-effort tools are more likely to be approved and piloted. This approach leverages the "foot-in-the-door" technique, which emphasizes gradual engagement through small initial commitments (Guéguen et al., 2008). Thus, the intervention should avoid advanced technology, reliance on external expertise, or the need for structural changes—making it easy to test without disrupting regular workflows and laying the groundwork for the development of future interventions.

> The intervention must be easy to adopt with minimal resources or disruption to existing workflows to lower initial resistance and organizational openness.

Criteria 3: Safe Environment

Discussing bias can be sensitive, especially if framed as personal critique. To avoid defensiveness, the intervention must promote an environment where supervisors feel comfortable engaging in open and constructive discussions. Moreover, it should present biases as natural cognitive tendencies and position feedback as a tool for collective learning. A safe environment encourages openness and increases the effectiveness of reflection and peer feedback.

> The intervention must create an environment where feedback is framed as an opportunity for mutual growth rather than personal evaluation.

Criteria 4: Adaptability & Co-Ownership

Insights from the exploration phase revealed that the context within ACM's energy department is dynamic. To remain relevant, the intervention must be flexible and invite iterative development by its users. Empowering supervisors to adjust the tool encourages ownership and long-term engagement, which is crucial for sustaining motivation over time (Kwasnicka et al., 2016). Therefore, the intervention should be designed in a way that supervisors feel empowered to tailor its use and content—ensuring it continues to fit their practice and values as the organisation evolves.

> The intervention must be adaptable to evolving workflows and allow supervisors to co-develop its future iterations.

05 CREATE

In the previous chapter, the decision was made to continue with the detection process and focus on the detection meeting. A specific interaction was addressed that we wanted to address with an intervention. This chapter covers the design activities undertaken to find the final design direction, leading to the final design.

- 5.1 Ideation**
- 5.2 Test Sessions**
- 5.3 Key Takeaway**

create

5.1 IDEATION

5.1.1 Approach

A research-through-design approach was used to navigate the design opportunities for the final intervention. The theoretical framework discussed in chapter 2 offers various opportunities for bias interventions. These mechanisms were used as a starting point for brainstorming raw ideas. To guide the individual brainstorm sessions, the opportunities defined from the literature were used and rephrased into so-called “how-to” questions. These open brainstorm questions function as a starting point for creating a variety of ideas (Van Boeijen et al., 2020).

The main focus of the brainstorm was to get practical ideas on how these mechanisms could be implemented into the detection meeting. During the brainstorming sessions, different sub-ideas that could be implemented in the detection meeting were generated.

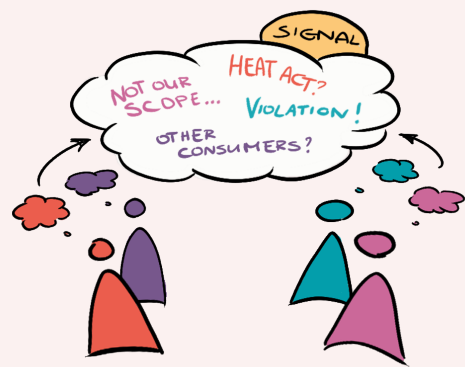
<i>Reflection</i> Encouraging structured reflection on group dynamics and decision-making patterns to identify and counteract biases (Autoriteit Financiële Markt, 2017). Develop shared language and supportive environments for discussing biases (Kahneman, 2011).	• How can we encourage reflection on the discussions held and the decisions made during the detection meeting? • What are different ways one can reflect on something?
<i>Structured Feedback Tools</i> Checklists and guided reflections can help enhancing decision processes (Fasolo et al., 2024).	• How can we give supervisors feedback on their decisions?
<i>Training & Awareness</i> Equip individuals with practical tools and cognitive skills for bias identification and mitigation. Awareness-based training should focus on actionable strategies rather than passive acknowledgment (Fasolo et al., 2024).	• How can we train supervisors to become more aware of their biases (about market parties)?
<i>Tailored Warnings</i> Design targeted alerts for specific decision-making scenarios (Fasolo et al., 2024).	• How can we alert supervisors during the detection meeting to make them more aware of their biases?
<i>Diverse Perspectives</i> Designing interventions that foster exposure to varied viewpoints to challenge pre-existing assumptions (Oeberst & Imhoff, 2023; Jansen & Aelen, 2015).	• How can we encourage supervisors to take into account different perspectives?
<i>Acknowledging Uncertainty</i> Encourage decision-makers to openly acknowledge their assumptions (De Nederlandse Bank, 2015).	• How can we encourage supervisors to acknowledge their assumptions?

5.1.2 Idea Selection

Four intervention ideas were selected from the brainstorm. The selection was mainly based on the criteria established in Chapter 4, with particular emphasis on feasibility and relevance to the design context.

The selected ideas can be grouped into two overarching debiasing strategies. The first group aims to enrich discussions by stimulating individual reflection before group discussions. The second group focuses on redesigning how information is presented to influence the framing of the discussion.

Each idea was briefly validated in conversations with behavioural experts, who confirmed their relevance and practical testability. The concepts were then iteratively refined to allow for rapid, low-resource prototyping and testing within simulated meeting setups.



World Cloud

Strategy: Stimulating reflection

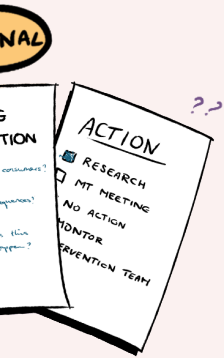
This intervention aims to stimulate critical and reflective discussions by making initial reactions to a signal explicit. It encourages diverse perspectives by visualizing individual interpretations before the discussion starts and group influence sets in. Before the group discussion begins, supervisors individually write down the first three things that come to mind upon reading the signal. These inputs are visualized in a digital word cloud and presented on the screen. By anchoring the discussion in this collective yet unfiltered pool of perspectives, the intervention seeks to reduce early convergence and tunnel vision.



Assumption Dump

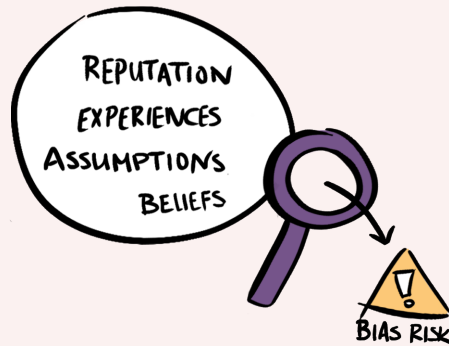
Strategy: Stimulating

This idea is designed to stimulate individual reflection to minimize groupthink. Before the group discussion starts, supervisors are given time to individually write down assumptions and analyse a signal. When the discussion starts, these assumptions are shared. By making unclear information explicit, the intervention encourages actions for the signal. Individual reflection helps supervisors to bring a variety of perspectives to the discussion, reducing early convergence and tunnel vision during discussions.



Reflection

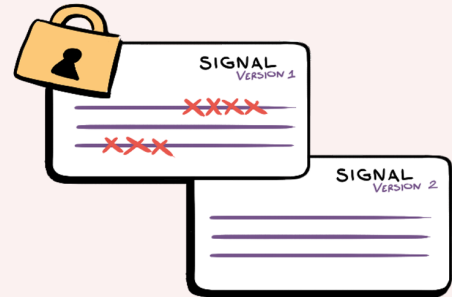
to promote individual
 e groupthink during
 his intervention gives
 independently process
 al before the group
 rough two prompts,
 to identify missing or
 and consider suitable
 nal. This structured
 supervisors recognize
 with the intention to
 perspectives to the table



Bias Monitor

Strategy: Redesigning information

This idea seeks to counteract shared biases that may limit perspective-taking. It tries to enhance awareness of existing group biases to foster more neutral conversations. Supervisors periodically fill out a questionnaire about their views on various market parties. When a party is broadly viewed negatively, any signals involving that party are marked as “high risk for bias.” This warning label intends to encourage supervisors to pause and reflect on how collective beliefs may shape their interpretation of the signal.



Signal Anonymization

Strategy: Redesigning information

This intervention limits the influence of prior knowledge and assumptions by presenting signals without identifying details, such as the company name. The intent is to focus attention on the facts of the signal itself, minimizing reputational bias that might narrow the range of perspectives considered. By withholding this information until after initial assessments, the intervention strives to foster a more objective and open interpretation of the signal content.

5.2 TEST SESSIONS

This section describes how the selected intervention ideas were tested to explore their potential to foster critical and reflective discussions during detection meetings. Two exploratory sessions were organized with supervisor and behavioural experts. These sessions aim to uncover how these interventions influenced discussions dynamics and bias awareness in a semi-realistic setting.

The complete test descriptions, including research questions, time tables, and conclusions, are provided in Appendix E.

5.2.1 Setup

Each test session was designed to evaluate different aspects of the intervention ideas, including usability, impact on group discussion, and potential barrier to implementation. The sessions were structured to simulate the detection meeting as closely as possible. Both sessions concluded with group reflections with participants and follow-up evaluation with behavioural experts.

5.2.2 Research Focus

The overarching aim of the sessions was to examine how each intervention supports the design goal. To navigate this, five questions guided the sessions:

1. Is it possible to handle anonymized signals in the same way as current signals?
2. How do the interventions influence signal discussions?
3. Do the interventions encourage a critical perspective regarding biases?

4. Do bias risk indicators affect the interpretation of the signal?

5. Are there any barriers for regulators to implement these ideas? If so, what are they and why?

5.2.3 Setups

Each session was structured into three distinct rounds, with each round focusing on analysing a specific signal and testing an idea.

Session 1

Participants: 3 supervisors and 1 behavioural expert

Tested ideas: Assumption Dump, Signal Anonymization

Format: Three rounds testing different formats per signal

- Round 1: Supervisors wrote down questions and missing information related to a signal.
- Round 2: Supervisors used coloured voting cards (red/orange/green) to indicate their judgement. The red card indicated no action should be taken, the orange card signified uncertainty, and the green card represented a call for action.
- Round 3: Same signal shown in two versions—one anonymized, one with the company name—to test for reputational bias. Participants were again asked to assess the signal individually using a form where they could select appropriate actions.
- Wrap-up: The session concluded with a plenary discussion about the tested ideas. There was an evaluation with the two behavioural experts after the session where we reflected upon our observations, notes and insights.

GEEN ACTIE

Toelichting:

ACTIE

Toelichting:

TWIJFEL

Toelichting:

Figure 5.2.1 - Coloured cards used with signal 2

ACTIE SELECTIE

☐ Verrijking
☐ Naar interventies team
☐ Naar MT
☐ Naar lopend project
☐ Monitor
☐ Overleg DC
☐ Mee in vergunninghoudersgesprek
☐ On hold
☐ Geen actie

ACTIE SELECTIE

☐ Verrijking
☐ Naar interventies team
☐ Naar MT
☐ Naar lopend project
☐ Monitor
☐ Overleg DC
☐ Mee in vergunninghoudersgesprek
☐ On hold
☐ Geen actie

Figure 5.2.2 - List of actions used with signal 3

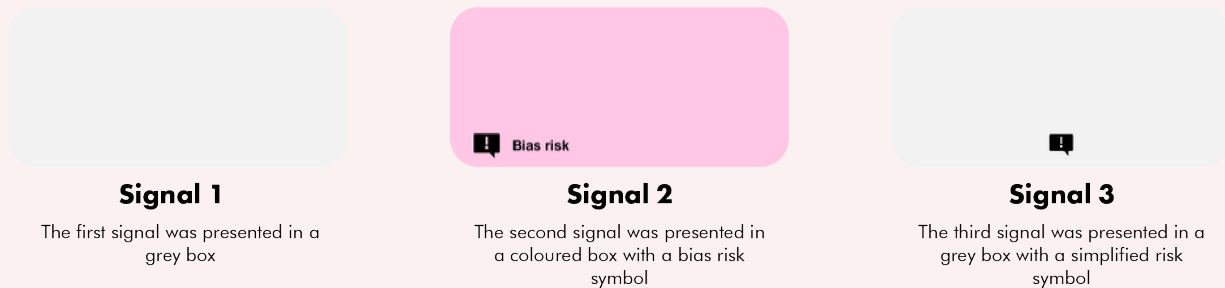


Figure 5.2.3 - Different visual representations of bias risk used during test session

Session 2

Participants: 5 supervisors and 2 behavioural experts
Tested ideas: Word Cloud, Bias Monitor

Format: During the session, three different signals were discussed. At the start of the session, participants scanned a QR code with their phones, bringing them to a digital form. Before the discussion, participants were asked to write down their first thoughts using the form. Their answers appeared on the presentation screen in the form of a word cloud. This cloud was used as a starting point for the discussion of the signal. Each signal was visually presented in a different manner. All information was given during this test, including the company's name.

Wrap-up: The session concluded with a plenary discussion. There was an evaluation with the two behavioural experts after the session where we reflected upon our observations, notes and insights.

5.2.4 Findings

Influence on Group Discussion Dynamics

In both sessions, interventions effectively changed the usual decision-making flow of detection meetings. The Word Cloud caused greater involvement from all supervisors, including those whose expertise did not align directly with the signal's legal context. Similarly, the voting cards from the Assumption Dump helped participants express their positions early, enabling more open discussion.

These interventions contrasted with current practice, where a signal is often presented alongside a proposed action. The structured formats of the Word Cloud and Assumption Dump encouraged a broader range of discussion topics.

Critical Thinking and Bias Awareness

Both sessions demonstrated the interventions' potential to surface and challenge existing assumptions. In Session 1, asking participants to identify missing information led to 11 critical questions for one signal. This showed participants how much uncertainty is often overlooked, which raised questions among participants about the definition of a signal and the assessment process. In Session 2, the bias risk label caused some supervisors to question their instincts and reflect on how reputational factors influence their judgment.

Engagement and Participation

The Word Cloud proved particularly effective at maintaining engagement. Even supervisors with limited topic familiarity felt encouraged to participate. One participant noted that while they could not contribute legal insights, being asked to input their thoughts ensured they remained mentally involved in the discussion. This suggests that interventions that focus on activating critical thinking across disciplinary boundaries can contribute to more diverse perspectives during signal discussion.

Barriers to Implementation

Several practical barriers emerged. Participants consistently raised concerns about time: individual assessments and structured inputs could substantially lengthen meetings. Given that up to 20 signals may be addressed in a single session, these formats may be difficult to scale without adaptation.

There were also concerns about feasibility. Completing materials before meetings was seen as an additional burden. For example, asking supervisors to fill in the Assumption Dump before a detection meeting would cost too much time. The dynamic nature of detection meetings further underlined the need for flexible tools rather than rigid interventions.

Additionally, the reputational implications addressed in the Bias Monitor raised concerns. Labelling a party as "high risk for bias" might inadvertently reinforce negative associations, rather than prompting self-reflection.



“It's good to have more of these kinds of discussions. I do miss that now. Often, the person submitting a signal already ties it to a specific action, and it becomes more about checking whether someone disagrees with it.”



“These signals all fall outside my area of expertise, so I find it difficult to contribute substantively. However, by filling in the word cloud, you stay actively engaged in the discussion and start thinking about your perspective on it.”



WORD CLOUD

Opportunities

- The intervention activated all participants to think about the signal and engage in the discussion.
- Participants said they usually engaged only within their expertise, but the intervention prompted them to think more actively about signals, even without legal knowledge.

Limitations

- Using phones or screens can also cause distractions (e.g. when a notification pops up).
- Doing the word cloud adds extra time, while the effective part of the intervention takes place during the discussion.



ASSUMPTION DUMP

Opportunities

- Directly asking supervisors to label their assumptions fostered critical thinking about the uncertainties proposed by the signal.

Limitations

- The assumptions did not directly influence the nature of the discussion.
- When done during the meeting it will significantly lengthen the session.
- A suggestion could be to ask supervisors to do it before the meeting. However, it is likely that it will be seen as an extra obligation.



WORD CLOUD

Opportunities

- The labels were noticed by participants.
- Participants stated that they interpreted the labels as a warning and said that they were extra thoughtful with their assessment.

Limitations

- The intervention is sensitive for wrongful interpretation. There is the risk that supervisors interpret it as a warning sign about the organisation instead.
- There is a risk that the monitor will wrongfully confirm supervisors' negative associations.



WORD CLOUD

Opportunities

- Participants assessed the signal using other data present in the signals.
- The discussion following this test addressed the bias blind spot, and fostered awareness about participant's personal associations with certain organisations.

Limitations

- Sometimes the market party is a relevant factor in prioritizing a signal, for example when a party is under tightened supervision.

5.3 KEY TAKEAWAYS

The test sessions highlighted the importance of flexibility in the design of the final intervention. Among the concepts tested, semi-structured formats such as open-ended questions, voting cards, and digital word clouds proved most effective at activating critical thinking and promoting engagement. These formats were experienced as accessible and intuitive by participants, and can also be integrated into existing meeting routines without being too disruptive.

Another key insight was the power of open-ended prompts in fostering reflection. During the group discussions, supervisors started to ask more reflective questions challenging each other's taught processes. When framed carefully, these questions have the potential to lower the barrier for participants to engage in dialogue about their assumptions and judgments, without feeling scrutinized. The voting cards used in the first session reinforced this insight. Participants found the cards to be an accessible method to signal their initial response, helping to democratize input and stimulate early engagement.

This insight directly informed the development of the Context Cards: each card presents a unique perspective (e.g., consumer, societal, legal) alongside a targeted, open-ended question designed to trigger reflective thinking. The design of these cards was also inspired by an earlier co-creation session with behavioural experts in which a bias-awareness game was evaluated (see Appendix B). During this session, it became evident that well-formulated, open questions encouraged dialogue and surfaced blind spots without provoking defensiveness. Feedback from the test sessions confirmed this: participants reported that open-ended prompts helped them engage with bias-related issues in a constructive and non-judgmental way.

The final intervention evolved into a flexible toolkit, with the Context Cards serving as one of its central components. The next chapter presents the final design proposal in detail.



FINAL INTERVENTION

This chapter presents the final design of the debiasing intervention. The toolkit, named UNFRAME, was designed to promote reflective discussions during detection meetings. The design introduces a toolkit that stimulate supervisors to assess signals from diverse perspectives, moving beyond legal considerations. First, the chapter covers the toolkit's content and explains the rationale behind the intervention. The chapter concludes with guidelines for future development of the intervention.

- 6.1 UNFRAME**
- 6.2 Design Rationale
& Considerations**
- 6.3 Future Development**

create

6.1 UNFRAME

During the Energy department's detection meetings, supervisors assess signals across multiple areas the energy market. However, participants do not always feel equipped to contribute to discussions that fall outside their specific area of expertise, particularly when covering legal implications. Test sessions revealed a recurring pattern: when a signal did not align with a supervisor's domain, they tended to disengage from the conversation entirely. This dynamic poses a risk to inclusive, well-rounded decision-making.

To address this, the UNFRAME intervention introduces a new system of discussion roles to encourage active participation: Theme Experts and Discussion Challengers. These roles are assigned based on supervisors' legal expertise in relation to the signal being discussed. When the signal falls within their domain, supervisors act as Theme Experts, contributing as they typically would. When the signal lies outside their area of expertise, they take on the role of Discussion Challenger.

The Discussion Challenger is tasked with actively observing the meeting and prompting the group to consider broader contextual and societal factors. Their role is to ensure that the conversation remains critical, reflective, and well-rounded, even when they are not the content expert. This approach activates all team members and helps to surface implicit assumptions and potential biases.

To support these roles, UNFRAME offers two tools: The Context Cards and the Bias Sheet.

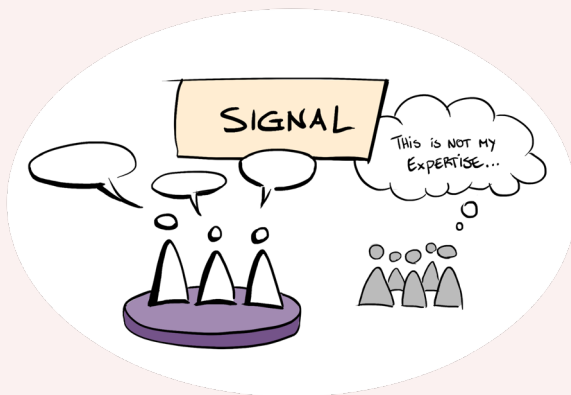


Figure 6.1.1 - Current Situation

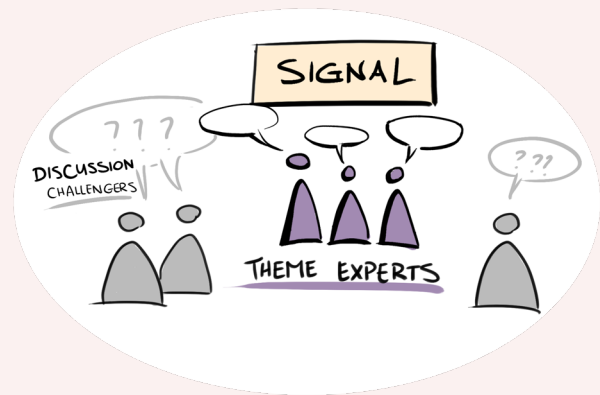


Figure 6.1.2 - Envisioned Situation

Context Cards

The Context Cards are a deck of discussion prompts organized into four thematic areas that were deducted from interviews and observations during the exploratory research phase. These prompts guide Discussion Challengers in steering the conversation toward diverse perspectives, without needing domain-specific expertise. The list of prompts can be found in appendix F.

Consumers

Encouraging supervisors to consider consumer perspectives and potential harm.

Energy Market

Examining market structures, competition, and industry trends.

Sustainability

Reflecting on environmental and long-term societal impacts.

ACM Mission

Aligning decisions with ACM's broader regulatory goals and tasks.

Bias Sheet

The Bias Sheet is a compact reference sheet composed of nine reflective questions. This sheet helps all participants pause to recognize and challenge potential cognitive biases that may influence how a signal is interpreted or discussed. Four images representing the Context Card domains are also included on the sheet, serving as a visual reminder to consider alternative perspectives. The Bias Sheet also facilitate questions Discussion Challengers can ask when the question on their Context Card is not relevant for that particular signal.

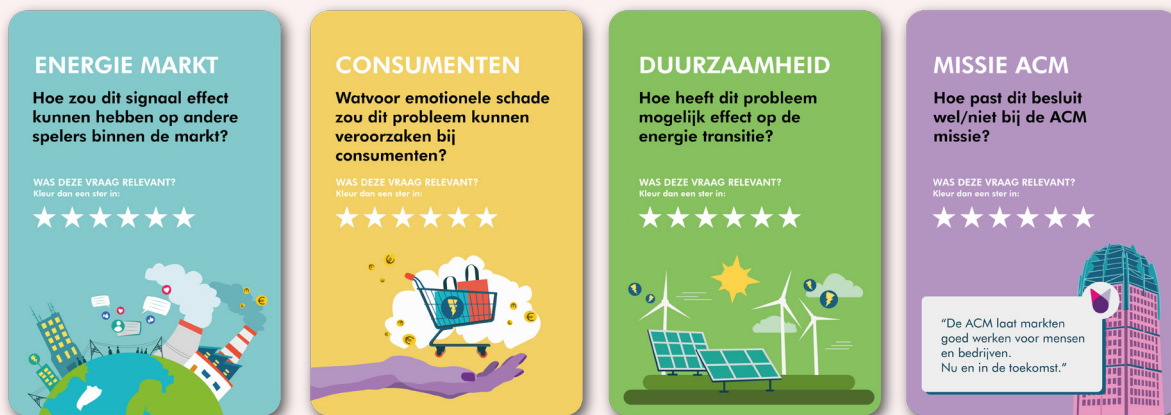
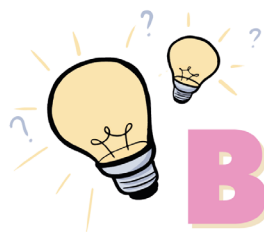


Figure 6.1.3 – Example of Context Cards



BIAS SHEET

Gebruik de vragen op deze kaart als geheugensteun tijdens overleggen of bij het nemen van beslissingen. De vragen zijn bedoeld om je te helpen aannames te herkennen en kritisch te bevragen.

- Is dit probleem al onderzocht?
- Welke aannames worden er gedaan?
- Welke informatie is er nog nodig voor een betere beslissing?

- Wat zegt het onderbuik gevoel hierover?
- Zijn alternatieven overwogen?
- Zijn er verschillende opvattingen binnen het team?

- Spelen eerdere ervaringen met dit bedrijf een rol in het besluit?
- Worden beslissingen gemaakt op basis van beslissingen in het verleden?
- Is er al contact geweest met het bedrijf?

CONSUMENTEN



DUURZAAMHEID



ENERGIE MARKT



MISSIE ACM

"De ACM laat markten goed werken voor mensen en bedrijven. Nu en in de toekomst."

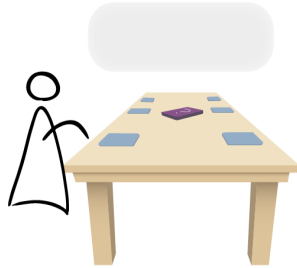


Figure 6.1.4 – Bias Sheet

6.1.1 Use Scenario

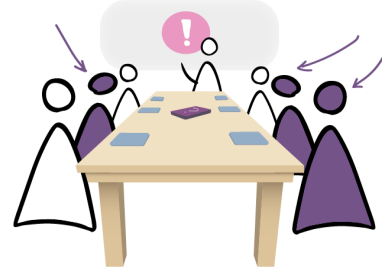
The storyboard illustrates how the Context Cards and Discussion Challenger role integrate into the detection meeting. During the presentation of a signal, supervisors determine which role is most suitable for them regarding this specific signal. Discussion Challengers select a Context Card. Throughout the discussion, the Challengers ensure that prompts are addressed, guiding the group to reflect on broader perspectives. The roles reset with every new signal.

1



The detection coordinator (meeting leader) enters the meeting room and places the Context Card deck in the center of the table. Each participant finds a Bias Sheet at their seat, serving as a reminder to reflect on potential biases.

2



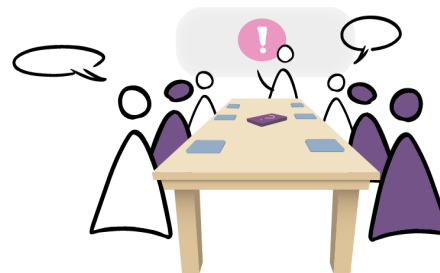
Supervisors take their usual seats. The first signal is introduced. Any supervisor without direct expertise in the signal's legal or economic aspects is assigned the role of Discussion Challenger for that round.

3



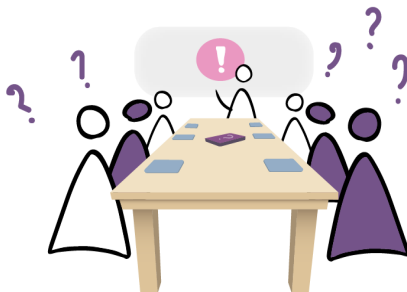
The Discussion Challenger draws a Context Card from the pile and reviews the question.

4



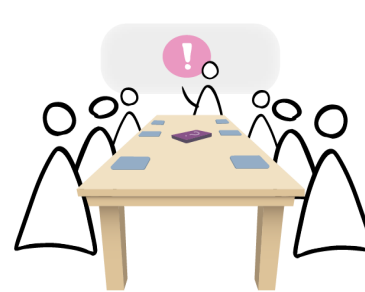
The "theme experts" engage in discussion, primarily focusing on legal aspects and known market behaviour. The Discussion Challenger listens critically, ready to introduce their card's perspective if it hasn't been addressed.

5



Before moving on to the next signal, the detection coordinator asks if any key topics were missed. The Discussion Challenger refers to their Context Card and asks the group the prompt question if the topic was not discussed. The group considers the new perspective.

6



The Discussion Challenger keeps their card as a reference for the next round. The process repeats for each new signal, with a new Discussion Challenger assigned. Once all cards are used, they can be collected and reshuffled for future meetings.

6.1.2 Envisioned Effect over Time

Although the UNFRAME intervention is designed to improve the quality of individual meetings, it contributes to the broader vision of cultivating a culture where supervisors are aware of how biases can influence their decision making. The impact of the intervention is expected to unfold progressively, as team members engage with the tools and internalise their use. Below, the envisioned effects are outlined across three phases.

Short Term Effects

In the short term, the intervention supports more structured and reflective conversations during signal assessment meetings. It raises awareness of how biases can influence signal assessment. Supervisors are encouraged to ask critical questions, consider alternative perspectives, and reflect on assumptions that may otherwise go unspoken. The introduction of Theme Experts and Discussion Challengers creates space for all team members to contribute to a signal's assessment. Additionally, the intervention aims to lower the barrier to speaking up, even when the signal lies outside someone's legal expertise.

Medium Term Effects

Over time, supervisors become more aware of their own blind spots and begin to recognise patterns of biased or habitual thinking. As supervisors engage in these discussions, they gain insight into when and how their own knowledge adds value. For instance, someone with economic expertise may contribute more confidently in that domain, while relying on others in areas like sustainability. The repeated use of prompts and structured reflection also deepens supervisors' understanding of their colleagues' perspectives and expertise. This process supports a gradual shift toward a dynamic that values open questioning and cross-disciplinary input. The intervention also functions as

a training tool, gradually building confidence in critical thinking and broader assessment practices, especially among newer or less experienced team members.

Long Term Effects

In the long term, the goal is that the new mindset and behaviours become embedded in the team's way of working, even without explicit use of the intervention. As critical reflection and bias awareness become habitual, the intervention may gradually become less necessary as formal support. Ideally, this contributes to a culture in which assumptions are regularly questioned and diverse viewpoints are actively sought. In the broader context, the intervention may also help uncover structural blind spots in decision-making processes and promote continuous learning within ACM.



Figure 6.1.5 – Envisioned Future Effects

6.2 DESIGN RATIONALE & CONSIDERATIONS

During the design process, many considerations were made to ensure the intervention would be both effective and practical. This chapter explains the key design decisions behind the UNFRAME intervention. It outlines how insights from behavioural theory shaped the structure of the toolkit, such as the use of prompts and the introduction of discussion roles.

6.2.1 Using Prompts

The Context Cards are designed to serve as a structured conversational tool guiding supervisors through prompts. Their core function is to stimulate deeper, inferential thinking and eventually enrich assessments.

The use of prompts is inspired by behavioural science research. Research on guided questioning (King & Rosenshine, 1993; Rowley et al., 2012; Arnet et al., 2018) shows that structured prompts help participants move beyond surface-level responses. It benefits overall understanding, while also supporting better retention of information. In line with this, each card in the set contains a focused question aimed at steering the conversation toward a more diverse interpretation and analysis of signals. Significantly, the AFM emphasizes the importance of making implicit assumptions explicit in order to detect and challenge bias in decision-making (Autoriteit Financiële Markten, 2017). The cards enable this process by converting vague intuitions into explicit discussion points. In doing so, they help supervisors bring otherwise hidden thought patterns into the open, facilitating critical reflection in a collaborative manner.

Moreover, professionals working in fast-paced environments tend to prefer practical tools over abstract frameworks (Arnet et al., 2018). Rowley et al. (2012) emphasize that card-based tools are particularly effective in maintaining focus while still allowing for organic insights to emerge.

While the cards offer a consistent framework, they are not rigid or prescriptive. They are intentionally designed to be lightweight and accessible. Rather than requiring intensive training or preparation, the cards offer ready-to-use prompts offering actionable discussion points. In addition, the cards can also be adapted over time to align with the specific needs and goals of different teams. This ensures that the tool remains relevant without requiring significant overhaul.

Importance of Prompt Wording

The phrasing of the prompts is a critical design consideration. Poorly worded or leading questions could cause confusion or even unintentionally bias the responses (Arnet et al., 2018). To mitigate these risks, the questions on the Context Cards were carefully formulated to be open-ended and neutrally framed.

In addition, prompts were reviewed by behavioural experts to ensure suitability and neutrality. For example, questions such as “What would a consumer advocate think about this issue?” or “Are we interpreting this based on past cases or current evidence?” challenge habitual thinking while minimally influencing supervisors’ assessments.

6.2.2 Creating a Safe Space for Feedback

Discussing biases and personal assumptions can be uncomfortable, especially when feedback is perceived as negative or confrontational. People are often unaware of their own biases and may react defensively when they are pointed out (Goedderz & Hahn, 2022). Furthermore, giving feedback can be intimidating, especially across hierarchies (Rowley et al., 2012).

The intervention addresses these challenges by externalizing the focus of the discussion, and shifting it away from individuals. Rather than presenting feedback as a personal critique, the cards centre attention to the content of the prompt. Similarly, assigning the role of Discussion Challenger signals critical questioning is an expected part of this role, rather than a personal stance. This framing helps increase the confidence of the feedback giver while also reducing the likelihood of emotional defensiveness in the receiver.

This is particularly beneficial in multidisciplinary teams, where diverse perspectives are essential, but hierarchies or differing levels of expertise may inhibit open communication (Rowley et al., 2012). By normalizing critical questioning and framing it as a collective endeavour, the cards aims to encourage team members of all levels to engage.

6.2.3 Participation & Engagement

The process of being assigned the role of Discussion Challenger aims to foster a sense of ownership and responsibility. Discussion Challengers have the designated role within the meeting responsible for initiating and guiding discussion around their prompt. This structured approach has been chosen to encourage active participation and shared responsibility for the quality of the conversation.

Reducing Cognitive Load

One of the design principles behind the Context Cards is the reduction of cognitive load. High cognitive load has been linked to biased decision-making and reduced engagement, particularly in high-stakes or time-pressured setting (Jansen & Aelen, 2015). By limiting each card to a single, clearly framed prompt, the tool minimizes distraction and avoids overwhelming users with multiple ideas. In this way, the design aims to improve supervisors' focus, so they can engage more fully with each signal, and maintain a

clear line of reasoning throughout the discussion.

Supporting Different Levels of Expertise

Another advantage of the Context Cards is their ability to support both junior and senior team members. For less experienced participants, the cards offer structure and guidance, helping them contribute confidently to complex discussions. For more seasoned supervisors, the prompts act as reminders to remain vigilant about potential biases or assumptions that may influence their reasoning.

6.3 FUTURE DEVELOPMENT

To ensure that the intervention remains aligned with the evolving needs of both supervisors and the broader organisation, it is essential to establish a structured approach for ongoing evaluation and refinement. The goal is to maintain relevance, improve effectiveness over time, and foster long-term behavioural change.

6.3.1 Continuous Feedback and Card Marking System

During each detection meeting, supervisors have the opportunity to indicate whether a prompt card was relevant to the specific context by marking the card directly. Over time, this process will generate useful data on if questions are frequently perceived as applicable or not. These patterns serve as a valuable feedback mechanism, highlighting which cards may require revision, removal, or replacement.

Scheduling Evaluation Sessions

It is recommended to schedule a formal evaluation session after the intervention has been used consistently for a minimum of six weeks, or after at least six detection meetings. In preparation for this session, the designated card facilitator (either the behavioural expert or the signal coordinator) should review the full deck and identify cards that have received three or more relevance markings. These cards will form the basis of the evaluation discussion.

Structure and Participants of the Evaluation Session

During the evaluation session, the selected cards will be discussed and assessed collaboratively. For each card, the team may decide to:

- Retain it as is
- Revise the wording to improve clarity or relevance
- Remove it from the set entirely.



Figure 6.3.1 – Example of filled in context card

The evaluation session is also an opportunity to generate new prompts. To safeguard the quality and neutrality of the questions, it is essential that at least one behavioural expert is present to help ensure that newly formulated prompts avoid unintended bias or suggestive phrasing. The signal coordinator, who oversees the detection meetings, should also attend, as they play a key role in embedding the intervention within the workflow. Additionally, it is advisable to include a manager responsible for the overall detection process to ensure that any changes align with organisational goals and decision-making standards.

Implementing Revisions and New Cards

Once revisions have been agreed upon, either the behavioural expert or the signal coordinator can incorporate the changes by creating new or updated cards using blank templates. These revised cards are then added to the deck and used in subsequent meetings, allowing for further testing and iteration in practice.

Evaluating the Intervention as a Whole

Beyond assessing individual cards, it is equally important to evaluate the overall impact and usability of the intervention. Key research points should include:

- How do supervisors experience using the tool?
- What aspects of the tool support or hinder its use?
- How might the tool be improved to better fit daily practices?

Actively involving the entire team in the development and refinement process increases the likelihood of long-term success. Ongoing participation creates a sense of ownership and adaptability, which in turn enhances motivation and commitment to using the tool (Kwasnicka et al., 2016). This sustained engagement is critical for embedding the intervention into daily routines and ultimately supporting lasting behavioural change.



Figure 6.3.2 – Blank context card templatesVV

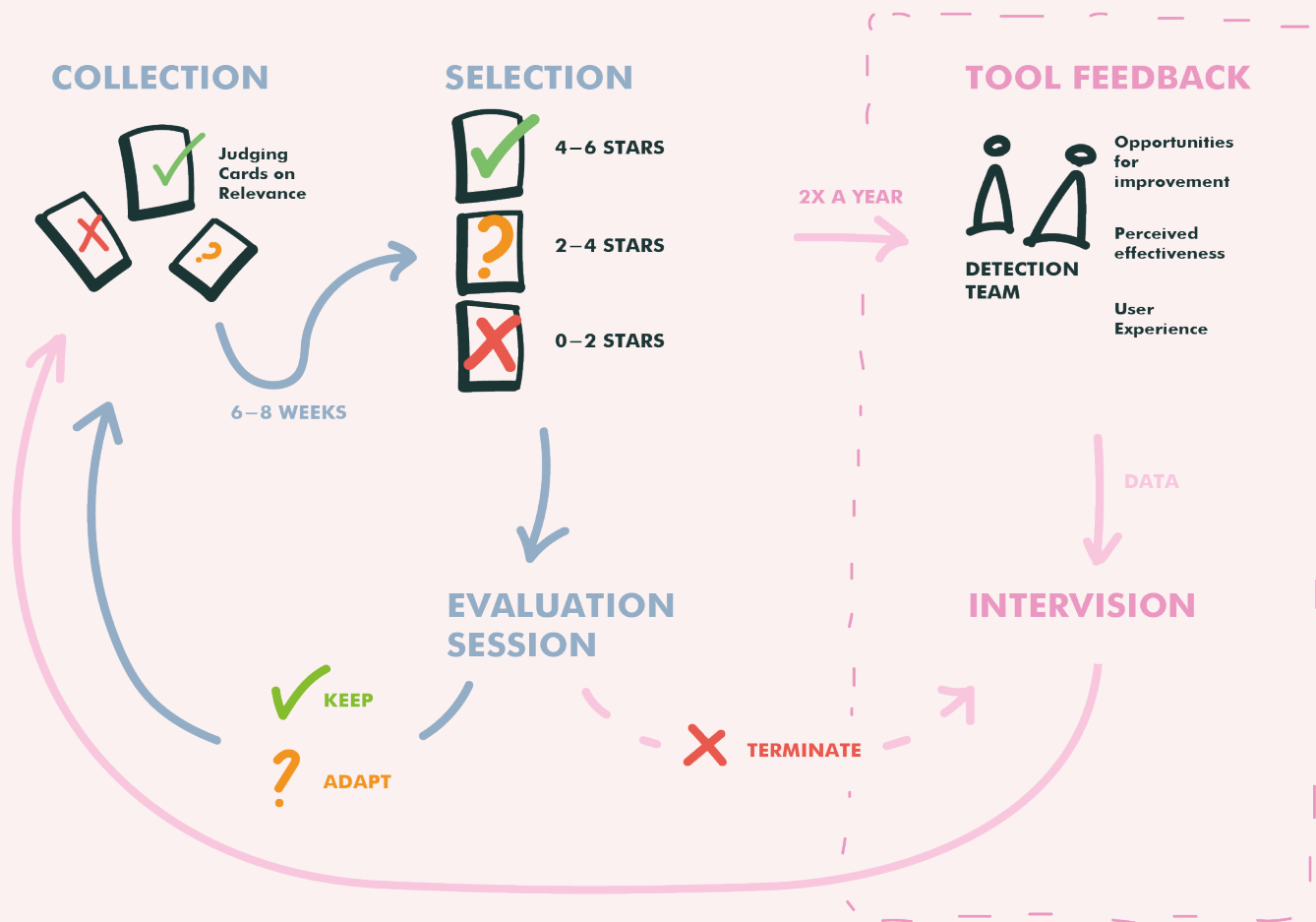


Figure 6.3.3 – Schematic overview UNFRAME future development process

6.3.2 Roles for sustaining the Intervention

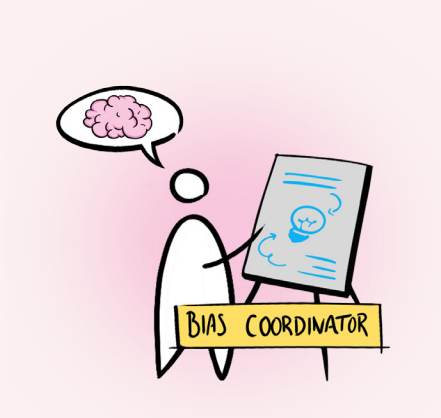
To ensure the long-term relevance, consistency, and expansion of the UNFRAME intervention, three supporting roles have been defined. Each plays a complementary part in embedding the toolkit within detection meetings and aligning it with broader organisational goals.



1. Strategist

The Strategist is responsible for monitoring the ongoing relevance of the Context Cards within the ACM and ensuring they remain aligned with the Energy department's vision and regulatory priorities. This role involves advocating for broader application of the cards across other teams and meeting formats, identifying opportunities to embed elements of the intervention into wider departmental processes, and safeguarding alignment with ACM's strategic goals. The Strategist ensures that the intervention continues to evolve in step with the organisation's mission.

Suggested profile: Manager



2. Bias Coordinator

The Bias Coordinator plays a key role in promoting active reflection during meetings. This includes encouraging the use of the Bias Sheet and prompting participants to ask critical questions. The Coordinator is also responsible for overseeing the neutrality and clarity of any newly developed prompts, monitoring the overall use and impact of the intervention, and exploring ways to expand bias awareness within the team. This role acts as a guardian of behavioural quality.

Suggested profile: Behavioural Expert



3. Card Facilitator

The Card Facilitator ensures the practical setup and availability of the toolkit. This includes storing the materials, preparing the deck and Bias Sheets prior to meetings, and ensuring that the intervention is used consistently and appropriately. The facilitator also helps to maintain the toolkit's alignment with the structure and objectives of detection meetings, making small adjustments when needed to maintain relevance.

Suggested profile: Signal Coordinator or Behavioural Expert

07 CONCLUSION

This final chapter revisits the design goal and situates the design proposal within the existing literature. It discusses the limitations of the design and provides recommendations for further development and validation of the toolkit. The chapter concludes by outlining four research opportunities that fall beyond the scope of this project.

- 7.1 Discussion**
- 7.2 Recommendations**
- 7.3 Personal Reflection**

catalyse

7.1 DISCUSSION

7.1.1 Reflection on the Project Goal

The goal of this project was to understand how biases influence ACM's supervisory practices in the energy department and explore the design space for interventions. By integrating insights from psychology and behavioural science with design research, this project aimed to develop a practical and actionable tool that helps supervisors recognize and mitigate biases during signal assessment.

This project contributes to existing research by demonstrating how cognitive bias theories can be translated into concrete, actionable interventions. Furthermore, this research showcases the intersection of design and behavioural science, demonstrating how design methodologies can be applied to address complex psychological phenomena.

Although the intervention was designed specifically for ACM's Energy department, the findings highlight how biases can be embedded throughout entire organizational processes, potentially reinforcing them systematically. More importantly, the project illustrates how a relatively simple intervention can be integrated within existing workflows without requiring fundamental structural changes. This approach could inspire other regulatory bodies and designers seeking to apply design research methodologies to analyse organizational processes, define design spaces, and develop targeted interventions.

Connecting the Intervention to Literature

A key principle in mitigating cognitive biases is the active questioning of underlying beliefs and the inclusion of diverse perspectives (Oeberst & Imhoff, 2023). This principle formed the foundation for the design of the toolkit. Rather than solely raising awareness about biases, the intervention

provides structured prompts that encourage supervisors to reflect on their assumptions and challenge each other's perspectives in a constructive manner. Research suggests that an effective debiasing strategy must go beyond awareness and offer practical tools that support bias identification and mitigation at both individual and group levels (Vinkenburg, 2017).

Additionally, group dynamics play a crucial role in reinforcing or neutralizing biases (Autoriteit Financiële Markten, 2017). One recognized practice in literature is incorporating a structured wrap-up moment at the end of meetings, allowing participants to reassess decisions and ensure that no critical perspectives were overlooked. The intervention addresses this by introducing a reflection phase where the detection coordinator asks discussion challengers whether any relevant perspectives were missed. However, further research is needed to refine this wrap-up process to not only check for missing viewpoints but also critically assess the decision-making process itself.

Encouraging a culture where biases are openly acknowledged and challenged can further strengthen decision-making practices within an organization (Kahneman, 2011). Although the primary aim of this intervention was to improve discussions during signal assessment, it could serve as a stepping stone toward a broader organizational shift where supervisors feel more comfortable identifying and addressing biases in everyday decision-making.

Expanding the Intervention Scope

Bias mitigation requires a systematic approach that targets biases at every phase of the decision-making process (De Nederlandse Bank, 2015). Kahneman (2011) affirms this

by emphasizing the need to refine all stages of decision-making, from problem framing to information gathering and outcome evaluation. While the current intervention is specifically designed for the detection meeting, the broader supervisory process also includes signal prioritization, follow-up investigations, and enforcement decisions. To fully address bias, these additional phases should be examined in greater detail, and the intervention could be adapted accordingly.

Moreover, incorporating competitive elements and role-playing exercises could further activate participants and encourage broader exploration of insights (Jansen & Aelen, 2015). While the intervention includes a role-based component with the discussion challengers, it does not currently leverage competitive mechanics. This might be an interesting opportunity to iterate on the intervention proposal. For example, a scoring system could be added, where challengers earn points for posing critical questions or identifying overlooked biases. This could enhance engagement and motivation.

Research also suggests that transitioning from traditional meeting structures to more interactive and collaborative formats can help disrupt automatic, biased decision-making (Hallsworth et al., 2018). Future iterations of the intervention could explore how the structured setup of the test sessions could be leveraged to facilitate co-creation workshops with supervisors, detection coordinators, and managers. Such workshops could provide a space to critically evaluate current detection processes and generate new approaches to bias mitigation.

7.1.2 Design Limitations

While the intervention provides a structured approach to mitigating bias in the decision-making process, there are several limitations to consider for its effective implementation and long-term success.

Implementation and Adoption

The intervention requires active guidance during the initial stages of implementation. It is crucial that supervisors receive proper support to integrate the tool into the meeting flow. This facilitation should continue over a longer period to evaluate whether the intervention becomes a sustainable part of the detection meetings. Without such guidance, the tool may not be utilized to its full potential, or its use may diminish over time.

Practical and Physical Considerations

The physical aspects of the toolkit require further development:

- Packaging and durability: No specific packaging has been designed for the cards, which could impact both their usability and longevity.
- Storage and accessibility: The toolkit's storage location needs some consideration. If detection meetings are consistently held in the same room, it would be ideal to store the toolkit there to ensure it is readily available. However, larger meeting rooms are used by various teams and departments, which may increase the risk of misplacement. To address this, it may be useful to designate a toolkit manager, such as the detection coordinator or a behavioural scientist, to oversee the toolkit's availability.

Unpredictability of Behavioural Impact

It must be acknowledged that the impact of design on behaviour is not absolute. A variety of factors—ranging from team dynamics to organizational culture—can affect how individuals respond to interventions. These factors can be difficult to predict and may influence how the intervention is perceived and adopted (Van Boeijen et al., 2020). Thus, the tool's effectiveness will depend on its continuous integration into ACM's broader processes and consistent reinforcement.

Reorganization

During the course of this project, a significant reorganization occurred within the energy department. As a result, new procedures were being established, which have led to changes in certain aspects, such as the restructuring of the detection process and meeting names. However, these organizational changes do not diminish the relevance of the research and intervention. The core principles of the supervision process and the key perspectives for the energy department remain unchanged, ensuring that the intervention is still applicable and valuable within the restructured framework.

7.2 RECOMMENDATIONS

7.2.1 Validation

Due to the time and resource constraints of this project, certain aspects, particularly the testing and validation of the final intervention proposal, were impacted. The following recommendations are intended to guide future validation activities:

- Broader Participant Pool: The participants in the two test sessions were all experienced supervisors who were highly familiar with the detection meetings. It would be valuable to examine whether the experience of junior supervisors aligns with the findings from these initial sessions. This could provide insight into how the tool works for less experienced team members and whether their use of the toolkit differs from that of senior supervisors.
- Engagement of Key Stakeholders: Although the intervention was validated by behavioural scientists who regularly attend detection meetings, it is strongly recommended to test the toolkit with other people involved in the detection phase. Specifically, the detection coordinator and managers who oversee the detection process should participate in validation testing. Their direct involvement could ensure that the tool aligns with the needs and workflows of the broader team.
- Testing in Real Contexts: For a more comprehensive evaluation of the intervention's effectiveness, it is crucial to test the design in actual detection meetings. Ideally, the intervention should be tested across 3-5 meetings to identify any usability issues or challenges that may arise in different contexts. This extended testing period will allow for additional feedback and highlight areas for improvement.

- Long-term Impact on Bias Awareness: To fully assess the long-term impact of the intervention, it would be beneficial to conduct extended testing over a longer period. This would enable the measurement of changes in bias awareness among supervisors and help determine whether the tool has a lasting effect on decision-making practices.

7.2.2 Concept Development

In addition to validation, the following suggestions are offered to improve the tool's development and usability in future phases:

- Adapting for Other Meetings: Explore how the intervention can be applied beyond detection meetings, particularly in other meetings within the energy department. This would test the tool's versatility and potential for broader adoption across ACM. Expanding its use could help increase bias awareness throughout the entire department, improving decision-making in various contexts.
- Adaptation for Other Departments: Evaluate how the intervention might be modified to fit detection meetings in other departments within ACM. The design may need adjustments to reflect the subject matter expertise present in different areas of the organization. Exploring this could lead to a tool that serves as a cross-departmental resource for improving bias awareness across ACM's operations.
- Long-Term Evaluation: Conduct a thorough evaluation of the intervention over an extended period to assess the relevance of the card themes and whether these themes remain aligned with ACM's evolving priorities.

The themes should be assessed for their ongoing utility in stimulating critical thinking and whether new themes should be introduced as the energy market transforms.

- Addressing Concerns about Reorganization: During discussions regarding the reorganization, multiple supervisors raised concerns about working in mixed teams without clear expertise labels, as opposed to the current structure where teams are grouped within specific energy domains. This concern was outside the scope of the current project but presents an interesting opportunity for future exploration. There may be potential to experiment with the card set to help navigate the integration of diverse expertise within newly structured teams. Exploring whether the toolkit can assist in fostering collaboration and bridging gaps between different areas of expertise could be a valuable avenue for future development.

7.2.3 Other Potentially Interesting Research Areas

During the Explore phase, I identified several other related topics that influence the supervisory process and indirectly impact the assessment and prioritization of signals. Although these aspects were outside the scope of this project, addressing them could provide valuable insights and further enhance the effectiveness of ACM's supervisory practices. Below are some key areas that may be interesting for further exploration:

Interface and Digital Systems

During the Explore phase, it was noted that a signal management application is in development, designed to help compare signals and gain better visibility into larger trends. This offers an opportunity to critically evaluate the interface design and information architecture of this system. How trends are framed within the digital platform

can significantly impact how signals are assessed and prioritized.

Relationship Between Strategists and Supervisors

The strategists, who work outside the energy department, advise the ACM board on the energy market, the political landscape, and ACM's overall strategy. This advice influences the focus and prioritization of the energy department. One of the strategists' primary sources of information comes from the Management Team meetings, where they discuss research proposals and projects that have already passed several stages of the process. During a conversation with a business strategist, it was revealed that there is very little direct communication between strategists and supervisors. I observed a spontaneous conversation between a supervisor and a strategist, where both parties gained useful insights from each other. This informal exchange highlighted the potential benefits of structured communication between regulators, supervisors, and strategists. Such interactions could provide a more holistic understanding of the external context, contributing to a more accurate picture of market trends and developments.

Role of Behavioural Scientists

Another area worth exploring is the position of behavioural scientists within the organization. Currently, it appears that there is a lack of formal protocols for when behavioural science expertise is needed within ACM. The involvement of behavioural scientists seems to depend largely on the initiative of managers and supervisors, and it is unclear whether all supervisors are aware that this expertise is available within the organization. Given that behaviour is a key factor influencing the choice of interventions, it is highly recommended to involve behavioural scientists more actively in the decision-making process. Engaging more with external market players to better understand their perspectives on how they view ACM could also provide useful insights.

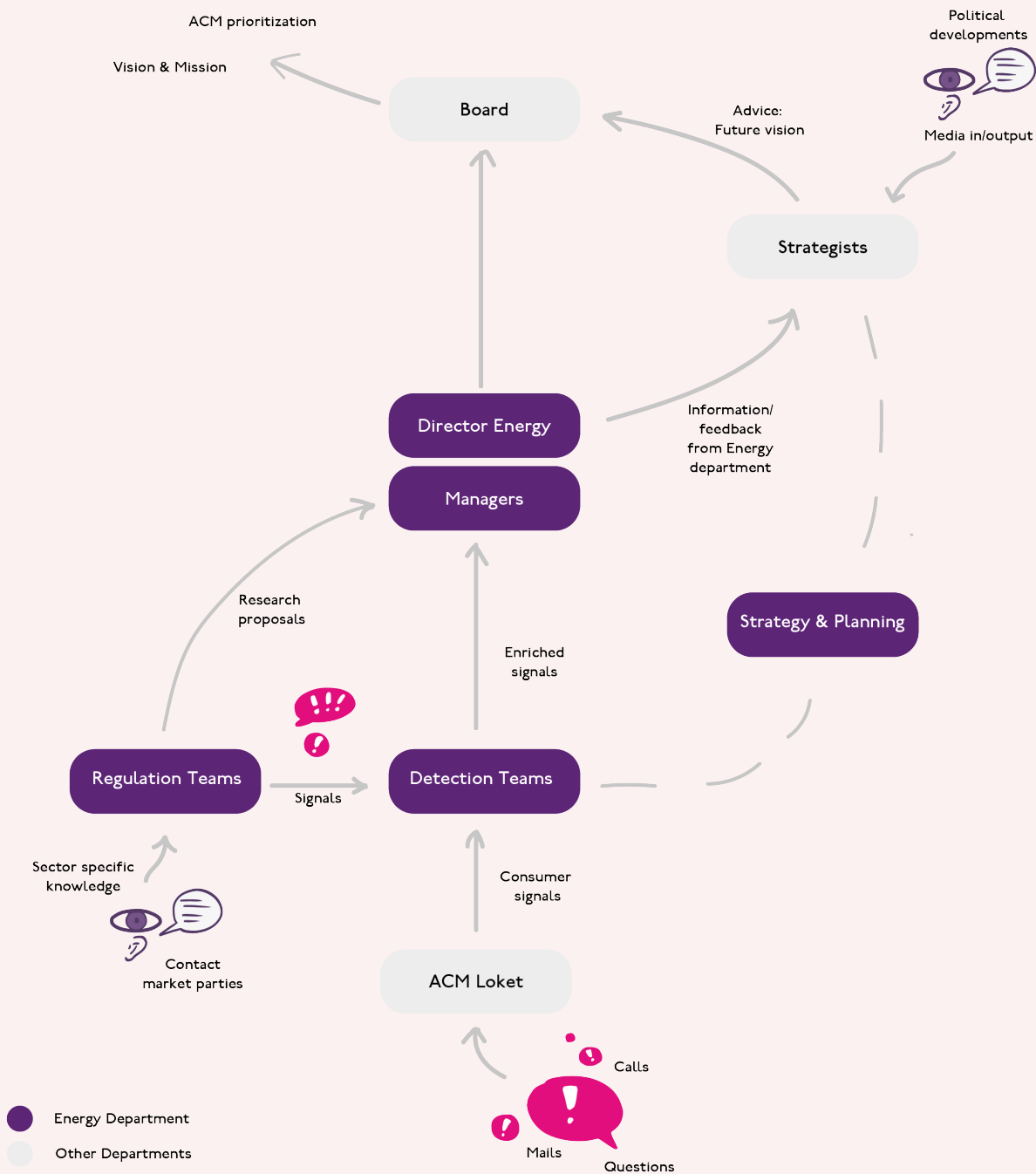


Figure 7.2.1 – Sketch of the relation between different teams within ACM

7.3 PERSONAL REFLECTION

7.3.1 Project Management

In previous individual projects, I often found it challenging to follow a detailed plan, especially in the early stages when the design direction was not yet fully defined. Because I didn't always know what the later phases would require, I sometimes struggled to create a concrete project plan from the start.

Over the course of my master's, I have learned that my way of working benefits from an iterative and action-oriented approach. Instead of spending too much time planning every detail in advance, I now focus on making tangible progress through doing and reflecting. This helps me maintain momentum and prevents me from getting stuck in overthinking.

Through this project, I've come to better understand the intuitive and somewhat non-linear nature of my workflow. While this approach can feel a bit chaotic at times, I have learned to turn it into a strength by creating flexible structures that allow for spontaneity and creativity, while still maintaining a sense of direction.

7.3.2 Personal Ambitions

With this project, I wanted to explore how interaction design can be applied within organisational processes. The start of the research phase was quite overwhelming, as it was my first time working within a large organisation where multiple departments collaborate and influence one another. It took me longer than expected to understand the organisational dynamics and to develop a clear overview of the different teams, their workflows, and the digital systems they use.

The topic of cognitive biases was also new to me. Although I had previously worked with psychological principles and

behavioural models, translating these theoretical insights into concrete design guidelines proved challenging. It required me to navigate a large amount of academic material while also trying to understand the role of an ACM supervisor.

7.3.3 Project Context

During this project, I experienced what it means to be the only designer in a public organisation. This required me to introduce design methods to people who were less familiar with them, for example by facilitating creative workshops and user tests. Working with participants who came from more legal or economic backgrounds taught me to adjust my communication and facilitation style.

The design context itself was also more constrained than in previous projects, which made ideation more complex. However, these limitations also helped me strengthen my ability to design within real-world boundaries and align creative work with organisational goals.

Overall, this project has been an important step in learning how to apply my design skills in a complex professional environment. It has deepened my understanding of how I work best, and how I can use my personal working style as a strength in future projects.

the end
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