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Responsible Innovation



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By

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Preface

This thesis stands as the finale of my journey pursuing a Master's in Management of Technology at Delft University of Technology. The journey of researching and writing this work has been both challenging and rewarding, providing valuable insights into the field of Responsible innovation regarding the four key dimensions (Inclusion, Anticipation, Responsiveness and Reflexivity).

This study explores a socio-technical problem that requires thorough analysis in order to gain a better understanding of the factors that affect the implementation of a responsible innovation framework within start-ups. By conducting this research, we aim to provide insights that enable start-ups to respond to the factors influencing the implementation of Responsible Innovation dimensions.

I want to express my sincere gratitude to my supervisors, Neelke Doorn, Geerten van de Kaa, and Martijn Wiarda. Their guidance, support and feedback have played a crucial role in finalizing the content and direction of this thesis.

Finally, I would also like to express my appreciation to my family and friends for their continuous encouragement. Special thanks to my sisters, Haida and Rezin, for their patience, listening, and feedback.

I hope this thesis contributes to the existing body of knowledge and inspires further researcher.

*Mohammed Majied
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Executive Summary

Responsible innovation considers the impact of a new process/product on society and the environment. It mainly refers to collaboration and communication between parties to obtain an ethically acceptable, sustainable, and socially desirable innovation. This study focuses on the factors influencing the implementing the RI framework, which consists of Anticipation, Inclusion, Reflexivity, and Responsiveness within start-ups.

The following research question has been investigated: ***“Which factors affect the implementation of Responsible Innovation dimensions in start-ups.”***

The data was collected among 7 participants making use of semi-structured interviews. The obtained results show that there are 40 factors which may influence the implementation of the RI framework (see Table 2 for factors).

Overall, most factors obtained were in line with what was found by other researchers. The main similarity in factors was communication/collaboration between different parties, costs, time, lack of knowledge, organizational structures, and different views and opinions. Comparing the factors obtained in this research with the literature, it can be stated that this study contributed to adding new factors such as luxury (shifts focus, less attention), not being open-minded due to lack of enthusiasm, success (thinking everything goes well), not fully conscious and cultural difference.

This study contributes to the current knowledge regarding responsible innovation (focus on four key dimensions). Looking at the factors obtained, a general overview and understanding can be created for start-ups to get insight into how to deal with these factors and implement them. This study may benefit start-ups realizing the importance of being responsible for their innovation. It has opened up a wide door for further investigation on how the implementation can be made more accessible. Most start-ups mentioned that they needed more support in the form of education, especially real-life examples that would be useful for start-ups in the initial phase of implementation, which can be arranged by discussion sessions between universities, start-ups, and other organizations (governmental/political).

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List of abbreviations

1. Chief Executive Officer	CEO
2. Chief Technical Officer	CTO
3. Corporate Social Responsibility	CSR
4. Management of Technology	MOT
5. Research & Development	R&D
6. Responsible Innovation	RI
7. Responsible Management of Innovation	RMol
8. Responsible Research and Innovation	RRI

1

Introduction: Responsible Innovation

In this section, the aim of this research will be discussed. First, the importance of this research will be explained, followed by the problem definition and objectives.

1.1. Importance of responsible innovation in relation to start-ups

Innovation may lead to a rise in living standards, provide economic benefits, and develop solutions to the world's challenges, such as climate change. However, besides the positive effects an innovation might have, there may be social-ethical concerns and questions about whether an innovation behaves at the limit of social acceptance and ethical acceptability (Lubberink et al., 2019, Poel et al, 2012, 2021). With responsible innovation it is meant to consider the impact of a new process/product on society and the environment; as mentioned by Stilgoe et al., (2013) "responsible innovation means taking care of the future throughout a collective stewardship of science and innovation in the present" (Stilgoe et al., 2013, p. 1570). Based on different papers, it can be stated that RI is an interactive process that includes different actors and innovators in order to obtain an ethically acceptable, sustainable, and socially desirable innovation process, this may be applied by including stakeholders and members of the public (first phase of innovation phase), and then the uncertainty the innovation may bring is discussed (Oftedal et al., 2019; Stilgoe et al., 2013). It is then expected that including different groups in the innovation, development may lead to more successful adoption of the innovation that fits the society (Lubberink et al., 2017).

Currently, the entire understanding of RI is limited because researchers and policymakers developed RI (Burget, 2017). This is the result of a narrow focus which relies more on the scientific and technological side of RI (Lettice, 2013). This may create problems by excluding important aspects like the social side of innovation (Blok, 2015). In order to solve this problem, a clear distinguishment between research, development and commercialization needs to be included (Lubberink et al., 2017). For example, commercialization is essential for the innovation process as its aim is the economic impact (Baregheg, 2009). In this thesis, the focus will be on the factors affecting the implementation of RI within start-ups. Start-ups have been selected due to the new developments that could disrupt innovations that could significantly impact society. The start-up aims to make radical changes (changes that occur fast and might significantly impact society), while incumbents make minor changes within the innovation. Besides the radical changes, a start-up also deals with social-technical changes, which means that there is a relation between people (sociological) and technology. Different studies have developed a theoretical framework for RRI/RI (responsible research and innovation/responsible innovation). This framework consists of four key dimensions: inclusion, anticipation, reflexivity, and responsiveness (see figure 1). The RI framework incorporates social and environmental concerns into their business and communicates this with their partners (Burget et al., 2017, Oftedal et al., 2019, Fraaije & Flipse, 2020).

However, examining the RI dimensions within the real-life setting is still needed (Egeland et al., 2019; Rouse, 2008; Yuen & Lim, 2016). For an explanation of the RI dimensions, see Chapter 2.

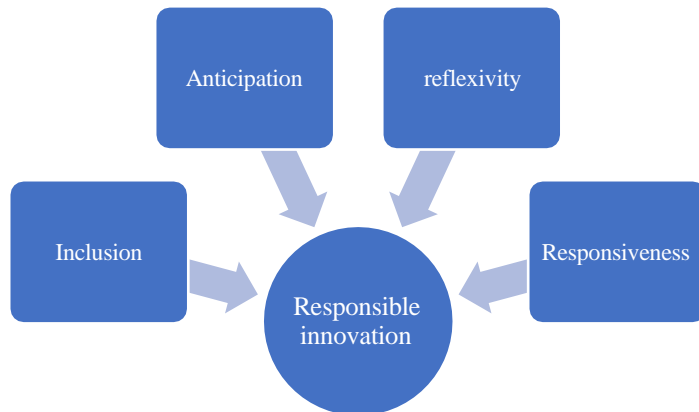


Figure 1: Four dimension of a Responsible framework [4]

There are two main approaches to responsible innovation: product and process. The product includes the impacts and outcomes of a particular innovation, so it is the outcome of research or innovation, including knowledge and technology. Conversely, the process approach consists of the activities that lead to the products (Fraaije & Flipse, 2020). It is about the researchers or innovators' activities to support the innovation. This thesis will focus on the process approach within start-up companies (Lubberink et al., 2019).

1.2. Research problem

This research focuses on factors that affect the implementation of a responsible innovation framework within start-ups. The main challenge is how start-ups try to become more responsible with their innovation towards society and which factors affect the implementation of the RI framework. Especially on how start-ups implement the four key dimensions of anticipation, reflexivity, inclusion, and responsiveness within their innovation/business. A limited number of studies have investigated the implementation of RI dimensions within start-ups. This may be due to insufficient time, resources, and knowledge to implement those dimensions (Lefebvre et al, 2012). It means that more research must be conducted in a real-life setting (research to the public) because innovations are primarily commercial or industrial. By including this, the total impact and risk can be calculated (Stilgoe et al., 2013). As mentioned before, start-ups have been selected due to their radical impact on innovation. Start-ups can be considered a firm that is new (has not been existed before), has at least one paid employee over a period of time, and is not a subsidiary or a branch of another existing firm (being independent) (Luger & Koo, 2005).

1.3. Research objectives and deliverable

This thesis aims to understand how start-ups can be more responsible with their innovation. This is studied by determining the factors that impact the implementation of RI dimensions. This will be performed by conducting interviews with high-tech start-ups in the Netherlands. Through these interviews, factors will be obtained. Furthermore, theoretical research will be conducted to compare the obtained results with the literature in order to understand the contribution of this research to the current knowledge about the factors affecting the implementation of RI dimensions.

1.4. Research questions

This thesis focused on exploratory research, aiming to obtain useful information about the factors that affect the implementation of RI dimensions in the context of start-ups. The reason for exploratory research is that information in a real-life context is preferable.

The main research question is: "Which factors affect the implementation of Responsible Innovation dimensions in start-ups."

In order to obtain an answer to this research question, three sub-questions have been formulated, including:

- What is the extent to which responsible innovation has been implemented within start-ups, focusing on four key dimensions (inclusion, anticipation, reflexivity, and responsiveness)?
- What are the factors that prevent the implementation of the four RI dimensions in start-ups?
- What factors encourage the implementation of the four RI dimensions in start-ups?

The research questions are answered using qualitative data collected through interviews with different high-tech start-ups. Chapter 3 shows the complete methodological approach of this study.

Before going into the research questions, some background on responsible innovation will be presented in the next chapter in order to understand and create a general understanding of responsible innovation. Interviews will be conducted on the four key dimensions of the RI framework to understand which factors affect the implementation of the RI dimensions within start-up companies.

1.5. Research relevance

This section describes the scientific and societal relevance of this research. The relationship with the Master of Science program will also be described.

1.5.1. Scientific relevance

This research will contribute in creating knowledge about responsible innovation within start-up companies. It gives an insight into how start-ups manage the four key dimensions and which factors influence integration. By conducting this research, the factors that may influence the implementation will be identified.

This will benefit further research on how to deal with these factors within start-ups to affect RI implementation positively. A broader view of the factors that may have an effect will be obtained.

1.5.2. Societal relevance

By conducting this research, start-ups can respond faster to the factors that influence the implementation of the RI dimensions and try to be more socially responsible. Implementing the RI dimensions may lead to a better understanding of society and reduce the risk of failure for a start-up company. Furthermore, policy, government, and other institutions will benefit from this knowledge and may respond to these factors. In the case of policymakers and the government, specific regulations and standards can be made to ensure that the risk to society is reduced. This regulation may encourage start-ups to become more responsible with their innovation. Governmental organizations could provide support in terms of financial funding, protection of intellectual property, or relationships between different institutions and the private sector, which will be beneficial for the innovation growth of a start-up. In order to apply for governmental institutions support, start-ups must meet the regulations/standards that have been created.

1.5.3. Relevance for Master of Science (Management of Technology)

This research also has a contribution or relationship to the Master of Science program (Management of Technology). This study has a relationship to the following courses in the MOT program:

- Social and scientific values
- High-tech marketing
- Technology, Strategy and Entrepreneurship
- Emerging and Breakthrough Technologies

Considering social and scientific values, start-up companies can significantly impact society with their innovation. This research will also provide insight into how companies deal with the values of their innovation in relation to society. The three other courses strongly relate to start-up companies and innovations. These courses (High tech marketing, Technology, Strategy and Entrepreneurship and Emerging and Breakthrough Technologies) make it possible to analyse and anticipate broader societal trends and how new technology affects them. It teaches us how to implement our technology and which strategies to use ethically. This study relates to these objectives of the different courses as an investigation is made about the factors that influence the implementations of RI dimensions within start-up companies.

2

Theoretical Background: The four Responsible Innovation dimensions in relation to start-ups

2.1. Responsible innovation framework and its influences

The RI framework consists of four key dimensions, including anticipatory, reflective, inclusive, and responsiveness (Lubberink et al., 2017; Stahl et al., 2013; Stilgoe et al., 2013). Before diving into the implementation of responsible innovation (2.2), more in-depth information will be provided on what the RI dimensions mean in the context of business and start-ups. The factors that affect the implementation of the RI dimensions have been included.

2.1.1. Anticipation

Anticipation in the context of a business mainly refers to (1) a way of thinking, (2) obtaining the impacts and outcomes of the innovation, (3) preventing the possible negative impacts, and (4) trying to find the right solution and opportunities (Long et al., 2020, Oftedal et al., 2019). From the point of view of start-ups, anticipation is needed to ask the 'what if..' questions to obtain possibilities; it involves systematic thinking about the future and trying to understand the unpredictable outcomes of the future (Long et al., 2020). Comparing the meaning of anticipation in the context of business and start-ups, it can be stated that it is needed to create a particular awareness of the potential danger and impact and think about the broader impacts that come across (Long et al., 2020). As mentioned by one of the participants in the research of Long (2020), it was mentioned that they continued thinking about the impacts (Long et al., 2020). Anticipation can be connected to governance, and it comes from different sources like societal, technical, political, and environmental concerns (Stilgoe et al., 2013, Burget et al., 2017). Anticipation is applicable during all phases of an innovation process, intending to create an understanding in future research/innovation to avoid potentially harmful situations. It is a process that may have implications for society and the environment through all stages of innovation. Usually, anticipation is urged to be conducted in the early stages of innovation to create valuable knowledge about uncertainty and possible surprises that may arise. Basically, by applying anticipation, an organisation increases its ability to make the right decision. Of course, it should be noted that there are always consequences that could not have been foreseen (Fraaije & Flipse, 2020).

2.1.2. Inclusion

Inclusion is about different parties included in the innovation phases, from idea generation to the launch of the product. It includes gaining all the different ideas, creativity, views, and opinions/voices (Ofstedal et al., 2019). In the business context, Long et al. (2020) mentioned that inclusion is about collaboration between stakeholders and which actors to include or exclude during phases of the innovation process (Long et al., 2020). A discussion or dialogue can be created by including all the different parties, which will benefit society. The different parties/actors are stakeholders, shareholders, customers, employees, and institutions. Inclusion is essential for legitimization and public acceptance, including different insights and meeting the values of all parties. Burget (2017) has even stated that it is a moral obligation to be involved in a collective debate that leads to collective decision-making (Burget et al., 2017). In order to implement this moral obligation, public involvement is required, which includes societal, political, and human aspects. Including the public in the innovation process at the early stages is essential for addressing technological issues and development (Fraaije & Flipse, 2020; Stilgoe et al., 2013). Brand and Blok (2019) stated that inclusion in the context of commercial markets creates tension and thus cannot be seen as high as in the context of business due to the nature of policy, government, or research settings (Brand and Blok, 2019).

2.1.3. Reflexivity

In the business context, reflexivity refers to a critical evaluation of own actions and responsibilities, in which values, motivation and knowledge are considered (Lubberink et al., 2017). Reflexivity is suggested as collaboration and dialogue between different parties; it includes public involvement, a crucial element of reflexivity (Burget et al., 2017; Stilgoe et al., 2013). Different studies have shown that employee reflexivity can be achieved through internal discussion. These discussion sessions aim to create awareness of the innovation's impact on society (Lubberink et al., 2017). Studies have shown that formal evaluation can take place to see whether the selected objectives match the performance (Lubberink et al., 2017). Reflexivity can be divided into two orders, first-order and second-order reflexivity. First-order reflexivity is about learning how the goals/views of innovation can be achieved best. It involves learning about the technology itself or the needs of the actors involved in the innovation. So, it reflects on all the factors that give the activities a direction within the value system. It is about determining whether the actions fit and meet the values. The first order does not reflect the goals or values of a particular innovation. The second-order reflexivity is about the reflection and the possibility of changing innovation goals. It reflects on the goals of the value system itself and whether the values a particular innovation has are correct. After a technology has been established, specific values reveal, and they may have unintended consequences, and these consequences need reflection. In this case, it is essential to understand and see whether the actions taken to establish the innovation are desirable (de Reuver et al., 2020). In the case of reflecting on the person and practising reflexivity in the process, open dialogue and discussion with colleagues are needed to be sure that the employees and technology meet the values of the company and society (Lubberink et al., 2017; Steen, 2021). For reflexivity, investors and owners

of companies usually do not base their decision on reality but rather on assumptions and perceptions of reality (Whitaker & Atkinson, 2019). It results in those perceptions that could impact society or technology. So, reflecting on the different values through dialogues and review sessions is needed to match society's values. It is all about collaboration and understanding each other (Harvey & Green, 2022).

2.1.4. Responsiveness

In the business context, responsiveness refers to a company's ability to make changes when unpredicted changes occur during the innovation process (Lubberink et al., 2017). Responsiveness involves changing innovation based on insights from inclusion, reflexivity, and anticipation (Burget et al., 2017). It is about responding and adjusting specific actions to a new situation or knowledge and emerging this correctly (Pellizzoni, 2004). In the case of start-ups, the barriers that can be faced are a need for more experience and resources to respond to the adjustments (Lubberink et al., 2017). For companies, it is essential to avoid problems with organizational inertia, bureaucracy, or a lack of resources, which may hinder the implementation of responsiveness (Lubberink et al., 2017). Responsiveness is also linked to anticipation; it is about the risk innovation brings, in the short, medium, or long term, economically, environmentally, or societally, and reacting just in time to these changes. It is about discovering these risks during innovation and reacting accordingly (Burget et al., 2017). A more open innovation process that is flexible is more favourable. The method of learning- while -doing is better for developing and launching innovation. This will allow the start-ups to respond to internal and external feedback (Lubberink et al., 2017). Many start-ups are willing to choose flexible and adaptable approaches because, when a risky situation occurs, the outcome will be less harmful (Lubberink et al., 2018). Thus, these approaches are more experimental, and the adjustment can be ongoing. Responsiveness can be divided into two parts, including reactive and proactive. Reactive means responding to situations after certain events happen (backward responsibility), while proactive (forward responsibility) focuses on eliminating the problems before they occur. Responsiveness also has a connection with transparency; however, it has not been included in the RI framework; this may be due to the focus being more on "collective stewardship", which is more linked to forward responsibility (Stilgoe et al., 2013, Fraaije & Flipse, 2020). This may indicate that transparency is more linked with backward-looking responsibility, which is more about the justification and clarification of decisions that have been taken in the past (Fraaije & Flipse, 2020). This indicates that backward-looking responsibility has no direct connection or contribution to responsiveness, as it only applies afterwards (Fraaije & Flipse, 2020). Looking, for example, at risk management, which aims to reduce the possible harm that could occur within an organization, the proactive approach identifies the threats and problems. It aims to prevent this before the events happen. In the case of reactive behavior, in which someone reacts after the events happen, emotions often play a role (blaming, resentful and anger). The problem with reactive behavior is that it often leads to displaced anger. Some may be upset with themselves or others for the decisions. Usually, a proactive approach is better than a reactive one because much more damage might be eliminated. (Fraaije & Flipse, 2020; Steen et al., 2021; Stilgoe et al., 2013).

Responsiveness is connected to transparency and accessibility, in which companies and institutions should be open to sharing specific scientific results with the public sector.

2.2. Responsible innovation & entrepreneurship

This section will provide an overview of the current conducted studies in the context of RI and entrepreneurship. This part aims to identify as many factors as possible that might influence the implementation of RI within start-ups.

Long et al (2020) has developed a model to implement RI within start-ups in the real-life setting, namely, the Responsible Management of Innovation (RMOI) tool, which systematically identifies possible social-ethical risks and opportunities by considering the RI dimensions (Long et al., 2020). Overall, it could be stated that this model might help the implementation of the RI dimensions, but it also raises some concerns due to the novelty of RI. From the point of view of start-ups, the approach and knowledge might be unfamiliar, which can be a barrier to implement the RI dimensions (Long et al., 2020).

Lefebvre et al. (2012) studied the integration of corporate social responsibility at the start-up level to obtain new opportunities (Lefebvre et al, 2012). RI can be seen as an extended piece of the CSR. This was a more conceptual study covering CSR integration for the last two decades. Lefebvre et al. mentioned that integrative theories are most commonly used in the case of CSR, which focuses on social issues. Opportunity-related processes were used and linked to creative thinking. This process mainly involves finding, identifying, and evaluating an opportunity (Lefebvre et al, 2012). The outcome of Lefebvre's conceptual study indicated that CRS might help entrepreneurs add value to innovation and be competitive; this could be done by increasing the motivation and ability of start-ups (Lefebvre et al, 2012). As mentioned by Grayson & Hodges (2004), the integration of CSR helps start-up companies structure their organizations in a way that helps them obtain an innovation that goes along with the social and economic needs of their customers (Grayson & Hodges, 2004).

Hin et al.(2015) created a practical guide for implementing RI; this guide aims to help start-ups reconsider their business model and develop or improve their innovation (Hin et al, 2015). The approach that has been used is a life cycle; this analysis focuses on anticipating potential development, analysing and responding to the needs of the individual, and the evaluation phase (in terms of risk and consequences for society) (Hin et al, 2015). From studies, Hin mentioned that a company's costs might decrease if more responsible approaches are used (Hin et al, 2015).

O'Neil et al (2016) studied the legitimation process of environmental entrepreneurs, with a focus on how entrepreneurs propagate their values and beliefs and what the resulting consequences will be (O'Neil et al, 2016). With environmental entrepreneurship, O'Neil et al (2016) indicated all activities that entrepreneurs seek to develop an innovation that addresses sustainable problems issues, keeping in mind that the economic effect is considered (O'Neil et al, 2016). A staged process model of legitimation has been developed inductively by conducting a longitudinal analysis of six case studies (O'Neil et al, 2016). Overall, it could be stated that the participants' behaviour had changed; first, the focus was more on their values and beliefs, but this has been transformed to taking in account the values and beliefs of others (O'Neil et al, 2016).

Lubberink et al. (2018) performed an exploratory study to get insight into the different typology approaches (rushing, way finders, ridged visionaries and negotiating visionaries) that social entrepreneurs use to develop innovations (Lubberink et al., 2018). The results of Lubberink et al. (2018) show that all four approaches' contributions to the innovation were mainly based on governance anticipatory and deliberation of stakeholders' engagement (Lubberink et al., 2018). Categorizing a social entrepreneur in one of the four approaches was based on their experiences during their childhood or professional life, which resulted in a particular behaviour (Lubberink et al., 2018). For example, the rushing entrepreneurs were less involved in reflexivity and responsiveness due to the focused mindset they may have (Lubberink et al., 2018). This mindset lets them focus more on their views and beliefs (Lubberink et al., 2018).

Kitsios et al. (2022) empirically studied goals and design strategies between 2014-2018 (Kitsios et al, 2022). The aim was to find connections between stakeholders, universities, start-ups, and governmental organisations by including different aims or implementation processes in which small groups were created to develop an innovation in a restricted time frame (Kitsios et al, 2022). The primary outcome of their investigations was that the most important design strategy was the engagement of mentors in the events; they could provide a certain degree of support to the entrepreneurs in order to increase their creativity, develop innovation, and try to bring their innovation into the market (Kitsios et al, 2022). It was indicated that the involvement of businesses and organisations in the non-government sector and the collaboration of the different companies would lead to new opportunities, which could rapidly change the innovation process.

De Hoop et al. (2016) studied bio-fuel parks; they played a role in the creation of a policy that influenced the interests of smallholder farmers, even though the researcher said that their purpose was to defend these farmer's interests (de Hoop et al., 2016). Their study indicated a responsibility gap on whom to be held responsible; It was stated that the lack of demarcation should be considered and addressed in the RI literature to eliminate this threat (de Hoop et al., 2016)

Scholten and Van der Duin (2015) studied RI among academic spin-offs, focusing on how responsible practices help develop absorptive capacity (Scholten & Van Der Duin, 2015). A conceptual model has been developed that obtains the RI practices among 61 start-ups, aiming to investigate how it may affect the capacity of a firm to obtain external knowledge. The results have shown that collaboration between stakeholders and social responsiveness increase the capacity to obtain external knowledge. By being more socially responsive, start-ups show their care towards society, which may result in a better understanding of external knowledge. Start-ups with more care make their partners, clients, and other stakeholders more open to share knowledge (Scholten & Van Der Duin, 2015).

Halme and Korpela (2014) empirically investigated what small enterprises need to develop RI that increases sustainable development (Halme & Korpela, 2014). The study results indicate a gap in resources. This resource gap could be filled by actively investing time in R&D, including collaboration with customers or other stakeholders (Halme & Korpela, 2014). Furthermore, governmental funding could encourage start-ups to become more responsible by improving their environmental and social impacts (Halme & Korpela, 2014). This shows that the government can help fill the resource gap through financial support.

Pan et al. (2022) have studied the main driving factors for enterprises to become more responsible with their innovation. This study focused on industrial enterprises in China between 2011-2015 (Pan et al., 2022). The results of this study have shown that on a national level, there was a difference between the input and productivity factors, which is one of the main driving forces for the growth of RI in start-ups. It was shown that the input of R&D personnel was slightly higher than R&D capital (Pan et al., 2022). It was illustrated that technological progress is an essential factor in the change in RI in start-ups. The main driving force for technological progress was productivity. As a result, the transformation from extensive to intensively responsible innovation models has been observed (Pan et al., 2022).

2.3. Factors affecting responsible innovation dimensions

In this section, the factors that may affect the implementation will be described based on the research conducted in the previous sections.

Auer et al. (2017) illustrated that six potential factors affect the implementation of RI practices: the regulatory framework, availability of financial resources, market orientation, customer knowledge, organisational structure, and knowledge among innovation partners (Auer et al., 2017). In the case of the regulatory framework and economic availability, they are barriers to the implementation of RI dimensions. Furthermore, the age and size of an organisation and its organizational strategy may also affect its implementation (Long et al., 2020). De Hoop et al. (2016) studied the limits of RI; in one example, anticipation was observed; it was addressed that the participants mentioned that in order not to take the entire risk, they only planted a limited number of trees on their land because they were not sure what to expect from these new types of trees. This way of doing business was applied to ensure that no actual harm was done to its financial situation (de Hoop et al., 2016).

It was stated that there are material barriers that not only affect the outcome of the innovation but may also limit the possibilities of the innovation process (de Hoop et al., 2016). These barriers include the lack of means available to enable stakeholders to engage with each other or to practice anticipation (de Hoop et al., 2016). Guston (2012) mentioned an interesting point: A lack of anticipation might also be intentional as scientists seek to defend their innovation or ideas (Guston, 2012).

Anticipatory thinking illustrates the importance of having a diverse team with different backgrounds, expertise, and experience. It may lead to more successful innovation (Nordmann, 2014). Experienced employees are usually more realistic as they have more experience and are looking for a hazardous situation, while inexperienced employees may have more radical ideas and ways of thinking (Klein et al., 2011). There are also obstacles to anticipation for start-ups. For starters, some of these obstacles are

taking a passive rather than a conscious attitude and using the wrong knowledge to explain the inconsistency and overconfidence in one's capabilities. There are also organisational obstacles that have been faced, organisational policies that filter weak signals, and difficulties with directing someone's attention (Klein et al., 2011). Long et al (2020), who studied RI dimensions within start-ups, mentioned that it is about discussing and exploring the moral limits and roles of innovators and the self-critique of own assumptions (Long et al., 2020). Another important point mentioned as a barrier to reflexivity is the interaction of researchers with policymakers and the lack of a clear view of the limits or boundaries of responsibility (political demarcation) (de Hoop et al., 2016). Furthermore, from the political side, involving the public may lead to societal awareness, as mentioned earlier, which could be beneficial for the government to create a regulation/standard to hold all the companies/institutions when dealing with decision-making processes. A standard is a manual that companies should follow to meet the laws set by the government (Fraaije & Flipse, 2020). The first observations are that firms have valid reasons to be careful when sharing insight information on innovation strategies with stakeholders (Blok & Lemmens, 2015) and engaging stakeholders does also come with relatively high costs (Orlitzky et al., 2011), which in particular for start-ups is challenging to uphold. Table 1 provides an overview of the factors that may influence the implementation of RI dimensions. Some factors apply to all four dimensions and some apply to specific dimensions.

Table 1: Factors affecting implementation of RI dimensions

Dimensions	Factor	Source
All dimensions of RI	regulatory framework	(Auer et al., 2017)
All dimensions of RI	availability of financial resources, high costs	(Auer et al., 2017), (O’Neil et al, 2016), (Hin et al, 2015)
All dimensions of RI	market orientation	(Auer et al., 2017)
All dimensions of RI	Internal & external knowledge	(Auer et al., 2017)
All dimensions of RI	organisational structure	(Auer et al., 2017)
All dimensions of RI	the age and size of an organisation	(Long et al., 2020)
All dimensions of RI	organisation strategy	(Long et al., 2020)
Anticipation	intentional seeking to defend their innovation/idea	(Guston, 2012).
Anticipation	Material barrier (no means available to enable stakeholders to engage with each other or to practice anticipation)	(de Hoop et al., 2016)
Anticipation	Experienced employees	(Klein et al., 2011)
All dimensions of RI	organisational policies	(Klein et al., 2011)
Reflexivity	the interaction of researcher with policy-makers	(de Hoop et al., 2016)
Reflexivity	the lack of a clear view of the limits or boundaries of responsibility	(de Hoop et al., 2016)
All dimensions of RI	governance anticipatory and deliberation of stakeholders' engagement	(Lubberink et al., 2018).
All dimensions of RI	approach and knowledge might be unfamiliar	(Long et al., 2020)

All dimensions of RI	increasing the motivation and ability of start-ups	(Lefebvre et al, 2012)
All dimensions of RI	social and economic needs of the customers	(Grayson & Hodges, 2004)
Reflexivity and Responsiveness	focused mindset based on their experiences during their childhood or professional life or focus more on their views and beliefs	(Lubberink et al., 2018).
All dimensions of RI	engagement of mentors	(Kitsios et al, 2022)
All dimensions of RI	the involvement of businesses and organisations of the non-government sector	(Kitsios et al, 2022)
All dimensions of RI	lack of demarcation (distinguish between science and non-science)	(de Hoop et al., 2016)
Responsiveness	external knowledge	(Scholten & Van Der Duin, 2015)
All dimensions of RI	lack of resources	(Halme & Korpela, 2014)
All dimensions of RI	difference between the input and productivity (Personal input of R&D vs R&D Capital input)	(Pan et al., 2022)

2.4. Conclusion of theoretical background

In conclusion, RI is about bringing together all parties in the realization of innovation in an ethical, social, and sustainable manner. RI will be investigated using the Owen approach, which consists of four key dimensions, including anticipation, reflexivity, inclusion and responsiveness. The challenges faced with RI implementation in start-ups are unfamiliarity with the concepts, terminology, and approaches, time and costs, available resources and knowledge. Comparing the different sections studied in Section 2.2, it can be observed that for most of the researchers, the factors that have an influence on the implementation of RI were in line with each other. For example, knowledge and cost. This gap could be filled with collaboration between different stakeholders or support from governmental organizations. An interesting difference was that one of the studies showed that personal experience during childhood or a lifetime led to a certain mindset, which has influenced the implementation of RI. This is because their mindset was focused on their own views and beliefs.

3

Research method

3.1. Methodology

In order to collect valuable information to answer the research question and related sub-questions formulated in Section 1.3, different types of strategies will be used during this thesis: literature research and qualitative research. For this thesis, exploratory research has been conducted, and more research in a real-life setting has been performed to obtain factors that influence the implementation of RI dimensions. The primary entity (unit of analysis) that will be analysed during this thesis is start-up companies. The unit of observation will be the Chief Executive Officer (CEO)/managers of start-up companies.

To obtain an answer to the three sub-questions, qualitative research has been performed in the form of semi-structured interviews. This type of interview has been selected because it may allow the participants to take time and open up, especially on personal or sensitive issues. The interviews were applied to generate data that can be useful to obtain insight into the four key dimensions concerning start-ups and the factors affecting their implementation within their business. However, due to the COVID situation, the interview was held online. Due to the limited time, the research focused on a limited sample size. To obtain a representative number of respondents that allows us to create plausible research, the sample size target has been set at 10 companies. In order to not lose important information, the interviews were recorded, of course, with mutual consent. In Section 3.3. explanation of how the interviews are analysed will be described. (Longhurst, 2003; Pandza & Ellwood, 2013)

When applying these strategies, some advantages and disadvantages come along. The advantage of qualitative research is the possibility of understanding the behaviours of start-up companies regarding responsible innovation and its implementation, and it can create insights specific to that high-tech industry. Start-ups that have been established 1-5 years have been selected for this research. The interviews have provided us with personal thoughts and experiences of the different start-ups and how they deal with responsible innovation (with a focus on four key dimensions).

Other aspects that may influence the research are the main aim of the researcher, the experimental setting, and the type of industry used. The downside is that analysing the interview will be challenging, including experiences, feelings, and opinions. It may require multiple rounds, which can be costly and time-consuming. The reliability of qualitative research could be higher because interviewers follow different methods of questioning or evaluating the interview. This is mainly the case if unstructured interviews are used. Because of the low sample size this study has low generalizability. The interviews that are conducted in this study are different and unique compared to other studies, due to the close connection with the founders of the start-ups. The information

obtained was personal and thus provided the personal behaviour and attitudes of the respondents. The respondents could easily ask more in-depth questions if they do not understand something and provide in-depth answers to the questions.

3.2. Structure of the interview

In order to be able to answer the main research question and the sub-question, the interview has been built into three parts. The first part of the interview is contextually based on collecting data about the respondents and determining if they fit the criteria set in Chapter 3.4 The second part of the interview focused on what RI dimensions meant for start-ups and the factors influencing the implementation of the RI dimensions in start-ups. The third part will reflect on the interview itself, requesting feedback to improve and giving the respondents the option to come up with questions regarding the research. Table 2 gives an overview of the three parts.

Table 2: Overview structure of interview

Part 1	Contextual questions
Q1	Could you briefly explain your role within your organization?
Q2	Could you explain how long you have been working in this role/organization?
Q3	Could you explain how you are involved in important decision making within your organization?
Part 2	Focus on factors that affect the implementation of RI dimension
Q4-Q10	Question will mainly be about how the dimension are integrated within business.
	Question will mainly be about what factors may influence this implementation.
Part 3	Closing questions
Q11	Are there any improvements/idea in general that would have helped your company to make the implementation of the dimensions easier?

3.3. The interview questions

This section will give a detailed overview of the interview questions. From table 1, it can be observed that the interview consists of three parts. This section will focus on questions related to the factors that affect the implementation of RI dimensions within start-up companies.

Q4: *What does Responsible innovation mean for you?*

Q5: *Did you ever hear about the four dimensions of responsible innovation (inclusion....)*
Yes.....No

Q6: *Can you briefly explain what inclusion means for your company? (Same question for the other dimensions)*

Q7: *To what extent have you already implemented inclusion in your business? (Same question for the other dimensions)*

If fully implemented, go to Question 8.

If not fully implemented, go to Question 9.

Q8: *Which method and how did you implement inclusion within your business? (Same question for the other dimensions)*

Go to question 10

Q9: *What factors prevent you from implementing inclusion within your business? (Same question for the other dimensions)*

Q10: *What factors led you to implement inclusion within your business? (Same question for the other dimensions)*

Q11: *Are there any improvements/ideas, in general, that would have helped your company make the implementation of the dimensions easier?*

3.3.1. Part one of interview

As stated earlier, part one focuses more on the personal information of the start-ups. The data is gathered from the CEO/Chief Technical Officer (CTO) of the start-ups, who are actively involved in the critical decision-making processes. This part will describe the respondents and their fit for this research.

3.3.1.1. Response rate & participation

In order to find the respondents, different start-up incubators of universities have been contacted (UtrechtInc, YES! Delft, HighTechXL). The three universities were Delft, Eindhoven, and Utrecht. Additionally, the social media platform LinkedIn has been used. All the start-ups that are younger than five years old have been contacted. Out of every 10-15 start-ups, one positive response was obtained. This inadequate response can be due to different reasons, like the COVID situation, interviews at the beginning of the year in which most companies are busy, the holiday period, the informed consent that companies do not want to sign, and sensitive personal information that will be obtained. Initially, the aim was to interview ten start-ups. Unfortunately, seven interviews were performed. One of the start-ups did not fit the study after checking the criteria with the respondents; another was too busy to conduct an interview and could not find any free time; and one did not attend the interview meeting. One company could not attend the meeting, so afterwards, he answered all questions through the mail. Due to time constraints, it has been decided to keep it with 7 participants. Most respondents were from UtrechtInc and High-Tech, and one was from Yes! Delft (but did not attend the meeting), and another was from LinkedIn.

3.3.1.2. Respondents

The start-up respondents were all the co-founders and the CEO/CTO. The participant's background was from the technical/business side. The aim was not to select participants in a particular sector but to find high-tech start-ups (companies which may have a significant impact on society and the world). Most participants were active in data-related sectors (from industrial to health care). This means that there are various sectors, which makes the research even more attractive due to the different views and opinions. There was a variety in the age and experience of the respondents, which led to exciting and different views of the four key dimensions of RI.

3.3.1.3. Respondent involvement in decision-making processes

The last question of Part 1 has been asked to provide insight into the organization's decision-making process. In this research, all the participants indicated that they were actively involved in the decision-making process. It should be noted that the rest of the team within the company will be asked for their views and advice, but in the end, the co-founders will make the final decision. However, the inclusion of the entire team may differ per start-up, depending on how big the start-up is and in which phase they are currently.

3.4. Data Collection

To obtain valuable data, semi-structured interviews were conducted. It is chosen for this type of interview since it provides us with qualitative, open-ended data, explores participant thoughts, feelings, and beliefs about the specific topic, and gets into deeply personal and sometimes sensitive matters (Pandza & Ellwood, 2013, Ranney et al., 2015). The population of interest in this research is high-tech start-up companies. The sampling method that has been chosen is purposeful sampling, as this is a technique that provides us with in-depth information about the subject of investigation. To create a plausible study, the following criteria were selected:

- The respondents need relevant working experience of at least one year or more within the start-up company. This has been selected to ensure that the respondents are actively involved in the business and have in-depth information.
- The respondents must have a managerial position within the company, as managers participate in decision-making process.
- The respondents must be 18 years of age or older, due to the requirement of the Human Research Ethics Committee.
- This research involves the personal information of attendees, and approval from the Human Research Ethics Committee of the Delft University of Technology has been obtained.

3.5. Analysis of the data

The data that has been obtained from interviews is important for the analyses. This section will briefly discuss how the data has been applied to provide useful information for the research.

3.5.1. Language of the interviews

The research has been performed in English, and the interviews are also conducted in English to make it easier and more time-saving. In cases of difficulty, the respondents may answer in Dutch, which is more comfortable for them. By executing the interviews in English, an extra translating step from Dutch to English has been eliminated, which saves time.

3.5.2. Transcribing of Interview

During the analysis phase, the interviews were transcribed to make them useful for the research analysis. The interviews have been transcribed precisely as spoken by the respondents to avoid bias. For the interview, MS Teams were used; after transcribing the audio, the records were deleted as they consisted of personal information.

3.5.3. Coding

To analyze the obtained data, two methods will be used. For the semi-structured interview, thematic content analysis will be applied. The text will be coded, finding themes with a meaningful pattern, defining them, naming them, and then writing up a coherent conclusion from the interviews (Ranney et al., 2015; Vaismoradi et al., 2016). The coding consists of three main parts: (Open, axial, and selective coding). For this study, only open and axial coding will be applied. In the open coding, sub-categories will be created, in which the factors will be categorized (axial coding). Furthermore, each factor is labelled as a driver or barrier; when it has a positive effect on the implementation of the RI dimension, it is a driver; in cases of a negative impact, it's a barrier.

- **Open coding:** Turned data into small pieces.
This is the first step in the analysis of the qualitative data and is used as the initial coding. At this stage, qualitative data has been collected from the interviews. The data will be broken down into parts/themes (five Sub-categories, see chapter 4) with open coding, and a label will be created. These five sub-categories have been created to make it easier for the reader to understand the main barriers or drivers that affect the implementation of RI dimensions. So, this phase results in a certain number of codes. (Pandit, 1996, Williams & Moser, 2019, Oturu, 2021).
- **Axial coding:** Code each piece of data with a descriptive label.
In this coding part, different factors will be created that have been obtained in the open coding phase. The factors will be organized into the five themes that have been created in the open coding phase (Pandit, 1996, Williams & Moser, 2019, Oturu, 2021). See figure 2 for the coding structure.

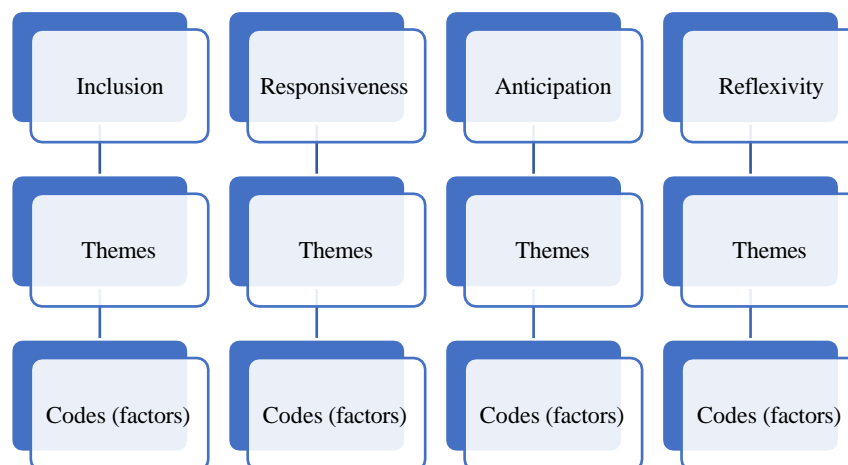


Figure 2: coding

3.6. Research quality indicators

The quality indicators that are of importance for this thesis are reliability and validity. In order to increase the reliability of the interviewer, the same questions are used for all participants. The interviews will be fixed so that other researchers can arrive at the same conclusions. Validity can be separated into different types, such as face, content, construct, internal & external, statistical, and criterion-related. The important validity in our case is both internal and external (external validity is essential and, to a lesser extent, internal validity is also relevant). Construct validity refers to a concept that cannot be observed directly. In our case, the RI dimensions of integration within start-ups could be more apparent. The measurement of implementation will indeed be done with the key dimensions. With this, we want to ensure the correct match with the construct. The interview must only contain questions that measure the known indicators of the subject, in our case, the factors that influence integrations of RI dimensions. In the case of internal validity, we want to know to what extent the study establishes a cause-and-effect relationship (Chen & Rossi, 1987). Doing this makes it possible to eliminate different explanations for a particular finding. It is about the observed results, which should represent the population we study. The thesis cannot be generalized to broader start-up companies because the sample size is small (10 companies). In order to minimize the number of biases, the following options have been incorporated (Adams-Quackenbush et al., 2019; Ranney et al., 2015). Job-related questions have been asked.

- The same interviewer has been used.
- Records were made during the interview.
- Open-ended questions have been asked to obtain more in-depth information (semi-structured interview). A wide range of start-up companies have been selected. (Aiming ten companies).
- The length of the interview was between 45-60 minutes.

3.7. Conclusion of the Methodology

This research will make use of qualitative research, which will be performed in the form of semi-structured interviews. The interview has been chosen due to the need for more information about responsible innovation dimensions within start-ups. The interviews were applied to obtain insight into the four key dimensions concerning start-ups, and the obtained data will be coded to understand the four RI dimensions.

4

Results

This chapter presents the interview results in the same order as the interview questions. In this part, the coding is also applied to understand what the RI dimensions mean and which factors influence the implementation of these dimensions. This section will first explain the extent to which RI has been applied within start-ups. Then implementing RI dimensions and the factors that may influence them will be described.

4.1. Responsible innovation in context of start-ups

The first question asked to the participants was, "Explain briefly what responsible innovation means". The data obtained from this question was mainly to get insight into the understanding and extent to which start-ups deal with RI.

Comparing start-ups 1, 4, 5 and 7, sustainability, society, and ethics are part of their meaning. Start-ups 1 and 4 also give attention to making a profit. Start-up 4 also mentioned that the innovation should be available and accessible, indicating that they want to be open to their partners and society. This may create trust due to openness. What also attracts attention is that only companies (1 and 4) mentioned the economic side in their meaning of RI by stating that technology should make quick revenue and the focus should also be on volume and scalability.

Most start-ups mentioned that innovation should positively contribute to society, the environment, and the world. From the answers provided by the start-ups, it can be observed that they are aware of RI and trying to include it in their innovation. One of the start-ups mentioned that showing responsibility towards society is important by considering their views and opinions. This event may create an opportunity to gain investors' trust because of the awareness and responsibility. Start-up 6 stated that they donate 1% of their time and revenue to environmental activities to affect the world positively. This may lead to more trust from society and create a better picture for the company's brand. In order to add value to society, one respondent said that their focus was on finding projects in which the aim was to alleviate an urgent knowledge problem for policymakers or sustainable energy projects. By participating in such a project, the aim is to bring citizens and government closer together. For a detailed analysis of this part, see Appendix E.

Before diving into the factors that may influence the implementation of the RI dimensions, the participants were asked whether they had heard of the four key dimensions. This has been asked to determine if the start-ups knew the dimensions. A short explanation of the meaning of the definition of the dimensions was provided to the participants in case it was needed, without giving a full explanation (In order not to bias the participants responses).

In the case of anticipation, it was clear from the answers provided by the start-ups that thinking ahead is important. As stated by start-up 7, "It means seeing/feeling, getting an indication and deciding to quickly be ready for what we think is coming". This answer shows us that anticipating what might come in the future is needed to anticipate quickly. Quickly could also refer to finding the right time to adapt the innovation to the market, which was also mentioned by start-up 4. For start-up 4, it was observed that market

timing could be important, as could investigating the market and finding the right spot to penetrate into the market. The start-ups have addressed people from outside, obtained ideas from them and anticipated accordingly.

Comparing the answers provided by the start-ups about inclusion, many of them mentioned a team with different backgrounds, ages, genders, religions, and experiences. Further points included different parties/public to obtain different opinions/views. As Start-up 2 stated, "The main aim of our company is to make public involvement in governmental decision-making more inclusive". Interesting to see is that start-up 2 mentioned public involvement in governmental decision-making. It could be because the focus is specifically on what Inclusion means for them and what is needed for their technology, rather than the general meaning of Inclusion. Overall, the meaning of Inclusion was the same for most start-ups.

When asked about the meaning of reflexivity, it was surprising that some start-ups also mentioned how they implemented reflexivity within their businesses. It also shows the importance of reflexivity within a company. Start-up 1 mentioned that reflexivity is needed to be sure that the technology fits society's needs. On the other hand, start-up 1 mentioned that it is a logical flow, which makes it unnecessary to make many changes. It may indicate that applying within the company is an easy process. From my perspective, it was expected that this might be a problematic dimension to apply fully, as fitting the value of society is more challenging. Of course, it should be noted that this may also depend on the type of technology. Besides that, start-up 1 focuses on technology instead of providing a general meaning of the dimensions. The answer provided by start-up 3 was hard to deal with; start-up 3 stated that it depends on how the customers use the technology. On one side, it is evident that a start-up needs to deal with different views/opinions and that it may take time and effort to satisfy everyone's values and views and integrate that into the technology. Another observation was that two start-ups mentioned the economic side, focusing on volume, scalability, and revenue. However, the innovation needs to meet the customers' preferences and should morally fit society while looking from the perspective of the start-ups; the focus is mainly to survive. Overall, the main message was to keep reflecting on the whole process, evaluate it, and make changes based on these observations.

For the start-ups, responsiveness was about obtaining useful information from different parties and trying to react to that. Start-up 2 mentioned that finding the right balance in applying these dimensions is needed, as it is easy to do too many analyses. Start-up 5 mentioned that it is an iterative process in which analyses are done repeatedly and react accordingly. Additionally, there was also a link with reflexivity, in which it was stated by the start-up that evaluating the values and views and reflecting on them to adjust the technology is needed. Further in-depth analysis of the meaning of these four dimensions of RI can be found in Appendix E.

4.2. Implementation of RI Dimensions

In this section, the implementation of the dimensions has been investigated. First, the extent to which start-ups implemented the RI dimensions will be explained (4.2). Then the method of implementation and the factors affecting the implementation of RI dimensions will be explained (4.2.1-4.2.4). For the complete answers to the interview question, see Appendix A, questions 5-8 (pink mark). Table 3 gives an overview of all factors (numbers are given to each factor, next to it a B for barriers and D for drivers) that influence the implementation of the dimensions. See Appendix A questions 9 and 10 (brown marked for barriers and grey for drivers). For each factor, it is stated whether it is a barrier or a driver.

The table has five sub-categories in which all factors will be categorized: social, technical, financial, emotional, and management. Regarding implementing inclusion within the organization, five of the seven start-ups tried to be more inclusive. For anticipation and responsiveness, it was four out of the seven, and for reflexivity, it was two out of the seven start-ups. These numbers only indicate how many start-ups implemented these dimensions in their organization; it is impossible to express the implementation of the dimensions in numbers. As start-up five mentioned, it is an iterative process in which the more it is applied within the organization, the better the implementation will be.

Interestingly, for anticipation and responsiveness, the same number of start-ups (four out of the seven) have implemented these dimensions to a certain degree, which is also expected. As stated in the previous section, anticipation and responsiveness may be crucial for the survival of the technology. It can be observed that reflexivity has the highest number of start-ups not being implemented (3 out of the seven start-ups). One of the start-ups also stated that reflexivity could be a luxury, as the focus is on profit and less time is invested in these dimensions, as stated by Auer et al (2017), which indicated that the availability of financial resources is one of the factors that affect the implementation (Auer et al., 2017). (See Appendix A, question 7, blue mark).

4.2.1. Factors affecting Implementation of Anticipation

All the start-ups mentioned that there was no particular formal implementation method for anticipation; the more a start-up involves it in the innovation process, the more it learns how to do it. From table 2, it can also be observed that the drivers and barriers are the same. In the case of anticipation, it was more linked to risk. The main barriers were time (19B), success (20B), and limitation of knowledge (21B). As stated by Auer et al (2017), one factor affecting the implementation is knowledge of customer and innovation partners (Auer et al., 2017).

Start-up 1 stated, "by the time we do it more and more, it becomes clear how to use this dimension". The start-up mentioned that it is a process of trial and error while having conversations with different parties. Start-up 2 indicated that by applying this dimension more and more, the understanding of implementing these dimensions would be more clear. It was stated that the information is internal as well as external (start-up 1, question 5). Trying to know the technology's limitations and see if it makes sense. The downside of this is that there are limitations in the available knowledge (21B), which makes it easy to make a wrong assumption; this may lead to going in the wrong direction.

It can be observed that the limitation of knowledge is a barrier. Firms can overcome this knowledge gap through internal and external activities; it requires learning by doing, experimentation, and R&D (Lubberink et al, 2017). The approach investigated by research is knowledge management, in which knowledge is created or obtained, which can be achieved by having internal platforms/networks and sharing information within the departments (Lubberink et al, 2017). For start-ups, internal knowledge will be complex as they are small firms, so the use of external knowledge is important to fill this knowledge gap; this can be achieved through partnership or communication with stakeholders who may have practical knowledge (Lubberink et al, 2017).

As stated by Start-up 3, "You can make an assumption, but you can quickly go down the wrong path. To make an incorrect data-driven decision, you must keep on doing and understanding." This shows the importance of knowing what to do and involving different people to minimise the number of possible mistakes. It is possible to connect this statement of start-up 3 to a gap in knowledge, which may lead to wrong assumptions and decisions.

An interesting answer was from start-up 4: "The early adopter are experiencing already pain and issues and mainstream not yet, agile strategy, we take on monthly base a checkout and where we stand what is developing and looking at the developing pace of our market. We are a small company with few departments, so it is easier to develop something fast. We have a lean organisation". This shows that a lean organisation may be needed for a start-up, and indicate that it may be easier for small companies to implement RI dimensions as the lines between the departments are more closely connected. Small firms with fewer employees may adapt faster to organisational changes, while larger companies may take more time to adapt to certain changes.

It shows that a monthly base check is performed to know the technology's position in the market. As mentioned by Long et al (2020), workshops have positively affected the implementation of Anticipation; through the workshops, awareness was created, which led to a change in the mindset of start-ups (Long et al., 2020). After the workshop, they keep working on these dimensions, and as stated by Start-ups 4 and 5, they also have a monthly base check, which may indicate that awareness of the importance of these dimensions is clear. Start-up 5 mentioned, "Not a method. It is intuition. We do not make swot or any formal method/assessment". The interesting thing here is that intuition has been used instead of imagination. The difference here is that intuition usually indicates one knows something from natural feeling and is not based on conscious reasoning.

Most companies' anticipation and responsiveness were linked. As stated by start-up 2, "We do our best to improve ourselves, but also need to invest time (19B) in management, human resource, finance, and privacy. So, we cannot do everything at the same time and need to be patient". This clearly shows that, as a start-up, many pursuits could keep them from implementing the dimension. In general, for RI dimensions, time is a main issue; as mentioned by Long et al (2020), RI practices need time, and many start-ups need more time to implement RI (Long et al., 2020). This also indicates the importance of having an efficient tool/method that takes minimal time for start-ups to implement the RI dimensions. Also stated by start-up four is that time takes focus away from dimensions, especially when a start-up wants to grow: "In the beginning, it is easy, but when you want to grow, other factors take place, leading to a large demand (valley of death). You can end up doing things that you do not want to do.". Another barrier mentioned was success, which could lead to danger, as thinking everything is going well will prevent one from anticipating possible dangers.

On the other hand, some drivers ensured that anticipation was important to implement. These were innovation fits target (22D) and core competence (23D). In the case of "innovation fit target", it was more related to create an innovation that fits into the market and that there is demand. For core competence, start-up 7 stated, "it is not a luxury; it is too important it helps you to survive." Because this dimension has been seen as competence, it motivated the start-up to apply this dimension within the organisation more.

Collaborating and reflecting more is essential, ensuring the innovation fits the target. It should be noted that poor implementation of anticipation is not the result of a lack of knowledge, time, or growth. As Guston (2012) mentioned, that lack of anticipation may be intentional as scientists seek to defend their autonomy (Guston, 2012). The problem with anticipation is that there is a certain degree of wrong predictions (Macnaghten et al., 2014; Stilgoe et al., 2013). This may be solved with public engagement and practical technical assessment to obtain desirable outcomes (Stilgoe et al., 2013). This may show that applying Anticipation will also create room for the product's market fit as the start-up seeks to improve the technology. Trying to create the best market fit for the innovation was also one of the drivers of implementing Anticipation.

4.2.2. Factors affecting Implementation of Inclusion

The start-ups state that inclusion costs little effort and is integrated into the business naturally. As mentioned by start-up 1, "Not a kind of method; it is something that goes; naturally, not much effort is needed. We go for the best profile, not that it should fit the picture of inclusion". This indicates that inclusion goes naturally, as mentioned in Start-Up 1. The focus is to find someone with the right skills and qualities, and less on obtaining employees from different cultures and backgrounds. Start-ups also mentioned that they were not in a luxury position to find the appropriate employee. Start-up 4 stated that inclusion was a core value of the company and not a particular method. They focused on finding someone with a different cultural background, personality, and perspective (Question 8 start-up 4). For start-up 4, it was more coming to their values; they look without prejudice and try to bring diversity. For them, it was more about building a company's DNA, the way of thinking, and approaching people. It can also be observed that start-ups 1 and 5 focus on finding the right employee with the quality and skills needed for innovation. Most companies stated that they take into account the culture (differences in the culture of Europe and Asia), religion (Muslim, Christian, Agnostics) and gender; by doing this, you create a diverse group of people with different views and opinions, which at the end should be beneficial for innovation. What also stood out was that start-up 7 mentioned, "Try to find the match between company culture and employees you want to hire; after that, we try to find out what kind environment they prefer and try to facilitate that as much as possible". This indicates that for the start-up, it is essential to create a pleasant working environment for the employees to function well. The aim of Start-Up 7 was to build an emotional connection with the team. Overall, most of the start-ups mentioned teams with different backgrounds, ages, males/females, religions, and experiences, including different parties/public.

In the case of inclusion, the main barrier is a difference in generation (2B), views (3B), communication (1B), lower speed of development (4B) and luxury (5B). The selection is usually based on the person's technical ability to hire employees. This may lead to a decrease in inclusiveness. Some start-ups see this as a luxury, and in the first phase of the start-up, the focus is more on trying to survive, which means less attention is paid to

inclusion. As stated by Start-up 2, "we cannot include everyone. It is a problem for early adopters. So, you leave out people who are not open to this change or innovation. Including everyone can take very long, so the decision-making development goes really slow." This may be linked to a lower speed of development; finding qualified employees has more focus, as this will increase the development of innovation instead of creating an inclusive team. As stated by start-up 6, "select other person because he is better from a technical perspective. When hiring somebody, look at his values, which can influence inclusion it may be lower". This may be because, as a starter, the focus is on creating a technology that fits the market, and success is essential in this stage.

Interestingly some barriers may influence each other; for example, the difference in views, generation, and communication may lead to a lower development speed. Start-up 7 mentioned "try to survive," and sometimes this means focusing less on inclusion. It is a kind of luxury." The main driver for inclusion was different views/opinions (6D), personal motivation (7D), and the development of the product (8D). As a company, it is necessary to have different opinions to ensure that the right decisions and steps are taken. It is important to receive feedback from different parties, forcing a company to re-think and evaluate in order to be more inclusive. As stated by start-up 6, "Personal motivation that I believe in an inclusive society. You need different opinions to ensure you are doing the right things." Overall, it may be good to be inclusive, as this leads to better development of the innovation/product. As one start-up stated, the generation gap may lead to a less inclusive team; for a start-up, the focus is more on trying to survive, revenue, and developing innovation. Thus, having team members who may create a lot of dialogue is not preferable. This may delay the development of the technology. This was also one of the reasons a start-up mentioned that they seek to find an employee who can positively contribute to innovation and has the necessary skills. The downside for start-ups is that including different parties will lower the development speed (barrier). Callon et al. (2009) have offered three criteria: "intensity – how early members of the public are consulted and how much care is given to the composition of the discussion group; openness – how diverse the group is and who is represented and quality – the gravity and continuity of the discussion" (Callon et al., 2009). By applying these criteria, the process of being inclusive and including all the different parties gets more structured.

4.2.3. Factors affecting Implementation of Reflexivity

For most start-ups, reflexivity was a collaboration and discussion between the parties (universities, governmental organizations, companies, incubators, customers, stakeholders and broader society). The number of reflection moments differs for the start-ups; some do formal and informal reflections every month. Another company stated that they do it when they see something is going wrong. During these reflection moments, the employees will reflect on themselves to see whether their values are morally responsible. As indicated by the research of Long et al (2020), the participants mentioned that they try to do it more daily (Long et al., 2020).

Furthermore, there is also a reflection moment on the values of the innovation to see if it still fits the market and society's values. Start-up 3 stated, "Finding out the values and beliefs is hard. It changes over time. Customer can have different values, and you constantly need to look at that and analyze it". Another observation was that start-up 4 mentioned, "A drive is also to build a company with corporate value, which is very important, the company DNA, in how we work, are we trustworthy, do we promise what we say, are we transparent and open". The team must develop a clear company strategy to deliver positive outcomes. Besides this start-up, four stated that society is the check-in and out, at which position the start-up currently is based; on that, goals and views are defined. Start-up 6 mentioned, like start-up 5, that a company's core value is essential. They stated, "once in a year, we have kick-off and start with company core value and see if we are acting on it and need to change it, and we do it with the whole team".

Additionally, they also have a 1-to-1 meeting and receive internal feedback on the team. This happens once every two months and mainly reflects personal development and values. From the literature, reflexivity mainly refers to collaboration and dialogue between the different parties and trying to meet the company's and society's values (Burget et al., 2017; Stilgoe et al., 2013). As can be seen in Chapter 2, reflexivity can be divided into two orders (first and second). The majority of the start-ups needed to learn about these orders. This also indicates that full knowledge about reflexivity was lacking. This may open a gap for universities and research organizations to study how this gap of knowledge can be filled.

Regarding reflexivity, the main issues were too much other work/no time (26B), which shifts the focus to implementing this dimension. The difficulty also lies in finding the customer's value (24B) and specific use (25B). As stated by start-up 3, "How do we tap in pools of values and how do we find customer's value and specific use". Here clearly, it can be seen that there is difficulty in finding the correct values; this could be the company's value or the value of society. As stated by Stilgoe et al (2013), the factors affecting the implementation of reflexivity were re-thinking the moral division of labour and redefining the role of responsibilities; these factors may align with the start-ups' difficulties in finding the correct values (Stilgoe et al., 2013). The drivers for reflexivity were product-market fit (28D) and technical challenges due to change (29D). As stated by start-up 7, "if you do not do that, you do not realize actual position and have a biased perception, and that can be dangerous". For start-up 7, it is a must to apply reflexivity to survive. Overall, it was stated that it was essential to implement this dimension as it could benefit the product's market fit. Therefore, it is related to the adoption of technology. As mentioned by the start-up, it is important to be reflexive to survive. This may be beneficial for the market fit of the technology.

4.2.4. Factors affecting Implementation of Responsiveness

The type of method for implementing these dimensions that some start-ups use is related to risk assessment/business assessment. These assessments are both technical and financial. As stated by start-up 1, "it is a kind of risk assessment/business assessment and how to go into the market or fit the market". However, the start-ups actively try to receive feedback from the parties and find the right solution. One start-up mentioned that they changed their business model to fit the market based on their feedback. It was recommended by one start-up to use iterative methods like Agile innovation principles, lean discipline, and lean start-up. It was stated by start-ups 5 and 7, respectively, "Agile innovation principle, and we actively use this. Innovation accounting (lean discipline method and lean start-up). It was recommended when starting a company to keep studying, and after a few years, it started to make sense. It includes financial risk-assessments" and "iterate methods (agile, lean start up), includes feedback in the loop of iteration". It should be noted that this needs to be performed carefully, as stated by start-up 7: "We do not want to fill in assumptions because we have the risk of assumptions. However, of course, we do not want to put out redisclosure stuff because then we have reliability issues.". Also stated by start-up 4, "it is important to have internal values when making decisions. We follow that.". They study the market and carry out risk assessments and react accordingly. Another interesting mark was stated in start-up 3: "It depends on the type of project which you select. For building new solutions or propositions, it is better to go with a start-up mind step because it maximizes your level of learning about learning how to determine the outcomes". It could be observed that there is a dependency on the type of technology, and based on that, a particular strategy could be selected. Nevertheless, as indicated by start-up 3, if the innovation is in the initial phase, it might be better to go with a start-up mind (open and risky way of thinking), which could maximize your level of learning and development. As mentioned by the research of de Hoop et al. (2016), a barrier to responsiveness might be the different and contradictory interests; due to this, personal interests may become more important (de Hoop et al, 2016). Regarding responsiveness, most start-ups mentioned the risk of thinking there is enough knowledge (9B) and time available (10B). Further barriers were difficulties with implementing clear definitions in an organization (11B), not being open-minded due to a lack of enthusiasm (12B) and having no guides (13B). As mentioned by start-up 1, "time, not good structure, not good system (management in order to implement it know). Lack of organizational structure. Less organized, extra help needed.". Here, it can be seen that a good organizational structure is important. This can also be linked to "no guides" as a start-up; it may be important to have clear guidelines for the employee. By providing this to your team, less risky decisions and mistakes could be made. It should be noted that there is also a lack of guidelines on how to implement RI dimensions, and as can be seen from the results, each start-up does it his way. A pitfall may be that, as a start-up, it is thought that all knowledge is already in-house. As stated by start-up 3, "we know already/everything or have the knowledge and time (19B)". In this answer, it can be observed that there is a possibility of thinking that there is enough time. The risk is that the company will not ask for ideas/feedback and will go further with its development, which will negatively impact the business. This is also due to a lack of guides (13B) and reflection. For most companies, receiving feedback and being

proactive to minimize the risk are essential. One of the start-ups stated that responsiveness is a core value (17D); it is important and not a luxury as it helps the company to survive. It is a key value since it has direct financial implications. Reflecting on a product, society, or company is important to realize the actual position and not have a biased perspective (18D). Stilgoe et al (2012) mentioned in his research that various approaches or techniques could be used to implement responsiveness, namely, stage-gate, regulation and standards, open resource, and value-sensitive design (with the value-sensitive design, different values are considered in the innovation) (Stilgoe et al., 2012). In the case of state-gate, it was stated that it might also create new responsive governance choices. With the value-sensitive design, different values are considered in the innovation. The factors affecting implementation from the literature were institutional structure, culture and leadership, openness and transparency, and technological standards (Stilgoe et al., 2013). Comparing the factors found in this thesis, it could be observed that they are in line; there was a missing guideline, a clear organizational strategy, and no openness.

Table 3: Overview of barriers and drivers

Dimension	Barrier/Driver	Sub-categories/Themes	Codes	Source 1	Number
Inclusion	Barrier	Social	Communication issue	Interview (brown marked question 9-10)	(1B)
	Barrier	Social	Different generation	Interview (brown marked question 9-10)	(2B)
	Barrier	Social	Different view	Interview (brown marked question 9-10)	(3B)
	Barrier	Technical	Lower speed of development	Interview (brown marked question 9-10)	(4B)
	Barrier	Financial	Luxury (shifts focus, less attention)	Interview (brown marked question 9-10)	(5B)
	Driver	Social	Views and opinion	Interview (gray marked question 9-10)	(6D)
	Driver	Social/emotional	Personal motivation, believe in inclusive society	Interview (gray marked question 9-10)	(7D)
	Driver	Technical	Development of product, due to feedback	Interview (gray marked question 9-10)	(8D)
	Barrier	Technical	Thinking you have all knowledge/experience/knowing everything	Interview (brown marked question 9-10)	(9B)

Responsiveness	Barrier	Technical	Thinking you have enough time	Interview (brown marked question 9-10)	(10B)
	Barrier	Management	Difficulties with implementing clear definition into organization	Interview (brown marked question 9-10)	(11B)
	Barrier	Social	Not open minded, due to lack of enthusiasm	Interview (brown marked question 9-10)	(12B)
	Barrier	Technical	No guides	Interview (brown marked question 9-10)	(13B)
	Driver	Technical	Lack of knowledge	Interview (gray marked question 9-10)	(14D)
	Driver	Technical	Minimize risk	Interview (gray marked question 9-10)	(15D)
	Driver	Technical	Innovation fits target	Interview (gray marked question 9-10)	(16D)
	Driver	Technical/Financial	It is core competence, helps you to survive (direct financial implications)	Interview (gray marked question 9-10)	(17D)
	Driver	Technical/Financial/Social/emotional	you don't realize actual position and have a biased perception and that can be dangerous	Interview (gray marked question 9-10)	(18D)
	Barrier	Technical	Time, we need to move on	Interview (brown marked question 9-10)	(19B)

Anticipation	Barrier	Technical/Financial	Success, thinking everything goes well	Interview (brown marked question 9-10)	(20B)
	Barrier	Technical	Limitation of knowledge	Interview (brown marked question 9-10)	(21B)
	Driver	Technical	Innovation fits target	Interview (gray marked question 9-10)	(22D)
	Driver	Technical/Financial	It is core competence, helps you to survive (direct financial implications)	Interview (gray marked question 9-10)	(23D)
Reflexivity	Barrier	Social	How to find customers values	Interview (brown marked question 9-10)	(24B)
	Barrier	Technical	How to find specific use	Interview (brown marked question 9-10)	(25B)
	Barrier	Technical/social/financial	Time due to load of work that needs to be done, importance of work	Interview (brown marked question 9-10)	(26B)
	Barrier	Technical/social/financial	Survive mode	Interview (brown marked question 9-10)	(27B)
	Driver	Technical/Financial	Product market fit	Interview (gray marked question 9-10)	(28D)
	Driver	Technical/social	Technical challenge due to change	Interview (gray marked question 9-10)	(29D)

General applicable to all dimensions	Barrier	Management	Lack of organization structure/system (no management to implement it)	Interview (brown marked question 1-11)	(30B)
	Barrier	Management/Social/emotional /financial/Technical	Lack of courses/teaching	Interview (brown marked question 1-11)	(31B)
	Barrier	Management/Social/emotional /financial/Technical	Time, growth & capacity (large demand)	Interview (brown marked question 1-11)	(32B)
	Barrier	Social/emotional	Not fully conscious	Interview (brown marked question 1-11)	(33B)
	Barrier	Management/Social/emotional /financial/Technical	Cultural difference	Interview (brown marked question 1-11)	(34B)
	Driver	Technical	Creative thinking will stimulate innovation	Interview (gray marked question 1-11)	(35D)
	Driver	Financial	Investors looking more for responsible companies	Interview (gray marked question 1-11)	(36D)
	Driver	Technical/Financial/Social/Emotional	Awareness and communications	Interview (gray marked question 1-11)	(37D)
	Driver	Technical/Financial/Social/Emotional	Geopolitical changes	Interview (gray marked question 1-11)	(38D)
	Driver	Technical/Financial	Scale up	Interview (gray marked question 1-11)	(39D)

	Driver	Technical/Financial	Leads to adaption	Interview (gray marked question 1-11)	(40D)
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4.3. Conclusion of results

This chapter has provided insight into the factors influencing the implementation of RI dimensions within a start-up (Table 2). The research's theoretical side provides information on whether there is a fit between the theory on RI dimensions and the data obtained during the interview. This research focused on the factors that influence the implementation of key RI dimensions. It aimed to understand how start-ups managed to be more responsible with their innovation and implement that into their businesses. The interview results indicates that some start-ups understood responsible innovation, mainly focusing on society, and there was a fit between theory and practice. On the contrary, it should be noted that the factors influencing the implementation of the RI key dimensions were different; it all depends on the start-up itself, in which phase of the innovation they are, and the expertise/experience they have. Table 3 provides a clear overview of all possible factors that may influence the implementation of RI dimensions. In Chapter 6, more in-depth information will be provided on the results obtained.

5

Discussion

This chapter contains a discussion of all the results. First, a discussion about RI in the context of start-ups will be provided (5.1), and then the meaning of the factors that may affect the implementation of the RI dimensions will be provided (5.2).

5.1. Responsible innovation dimensions

In the current research, there is still a gap in the factors affecting RI in the context of start-ups. This study fills this gap by analyzing the factors that affect the implementation of RI dimensions.

First of all, from the point of view of a start-up, the meaning of RI is about sustainability, responsibility, society, and ethics. Comparing this to the literature, most of the start-ups were aligned with the definition of RI based on the literature. However, the main aim of the first sub-question was to identify the extent to which start-ups implemented RI and its dimensions. Overall, most were aware of the importance of RI and its impact on society. One of the start-ups mentioned that it is important to express to society that you are responsible by considering their views and opinions. This may create an opportunity to gain investors' trust because of the awareness and responsibility they demonstrated by donating 1% of their time and revenue to environmental activities to positively affect the world. Comparing this to the literature, there are similarities; different studies have illustrated that to be more responsible towards society's engagement of different stakeholders, the government is important. These involvements will help start-ups rapidly change and become more responsible with their innovation (Grayson & Hodges, 2004, O'Neil et al, 2016, Kitsios et al, 2022). One of the respondents mentioned an interesting point: participating in programs may encourage start-ups to be more responsible. The literature encourages this kind of program by supporting start-ups through financial funding from governmental institutions (Halme & Korpela, 2014).

5.2. Factors affecting implementation of RI dimensions

This research's main contribution was to obtain factors through interviews; factors were found that prevented or enabled the implementation of RI dimensions. Comparing the answers provided by the participants with the literature (see table 1, chapter 2), there are similarities in the obtained factors (see table 3, section 4) that affect the implementation of the RI dimension.

As can be seen from the result section, technical and financial factors may influence the implementation of anticipation. Regarding inclusion, most barriers and drivers were social/emotional factors. For responsiveness, technical factors have the most influence; this holds for barriers and drivers. For reflexivity, most barriers and drivers were a mix of technical, social, and financial factors. From table 3, it can also be observed that some of the factors hold for all dimensions. The barriers impacting all four dimensions were time, growth & capacity, and a lack of knowledge. As mentioned by some start-ups, lots of time goes to other essential tasks, and it is impossible to do them simultaneously. This may result in a poor implementation of the dimensions, which can increase the risk

of failure. Overall, it was observed that factors such as time, limitation of knowledge, poor organizational structure, and different values and views (social & economic needs) were in line with what was found in the literature. Different start-ups stated that obtaining and incorporating values of stakeholders is essential, not only for innovation but also for the world and society. This may indicate a certain degree of awareness and care towards society. This factor was also obtained in the study of Grayson & Hodges (2004), in which customers' social and economic needs were analyzed (Grayson & Hodges, 2004). As Stilgoe et al (2013) stated, "Responsibility demands reflexivity on the part of actors and institutions, but this is not straightforwardly defined" (Stilgoe et al., 2013). This may indicate that it is difficult to define the correct values, not only in the case of customer value but also in the values and beliefs of the scientists themselves. Exactly what start-up five also mentioned, "we do something if it does not feel good, we take it, but values differ but is not good or wrong". Stilgoe et al (2013) stated that second-order reflexivity might be built through connections between values systems and scientific practices (Stilgoe et al., 2013). Being reflexive and considering customer values may lead to gaining trust from society, and a certain degree of awareness can be developed.

The interesting part is the difference in factors compared to the literature and, thus, the contribution of this study. It was observed that factors such as luxury (shifts focus, less attention), not being open-minded due to a lack of enthusiasm, success (thinking everything goes well), needing to be fully conscious, and cultural differences are not precisely mentioned in the literature. In the case of luxury, it was mentioned by the respondents that they were not in a position to implement inclusion because they are a small sized firm and need support finding the right employees for their company. Another important factor was success, the risk of a start-up if everything goes well, one might think that it is optional to develop the innovation further. A limited amount of research (~15 papers) has been conducted, so there might be studies that came to the same conclusions.

In this study, the relations between the four dimensions are not studied; however, the research results indicated connections. Stilgoe et al (2013) mentioned that reflexivity and inclusion are related or that anticipation might increase participation (Stilgoe et al., 2013). Guston (2012) mentioned that scientists might intentionally restrict specific dimensions to protect their ideas (Guston, 2012).

Comparing reflexivity with inclusion, it can be seen that time is also an issue, as stated by start-up 6, "if pressure is on, then you do not have time". Start-up 7 stated, "survive mode (27B), then the focus is not a lot, and reflexivity become less". Also mentioned by start-up 4: "The Main risk is that when you come in stage, the daily operations ask much attention when seeking this growth and acceleration and then you still need to reflect on if everything is on track". This all leads to the slow implementation of reflexivity. This opens a new door for further research in which different organizations need to be involved, like incubators, universities, start-ups and governments, in order to understand the practice in the best way and the relation between the dimension

6

Conclusion

This section will discuss the answer to the research question. The research question was formulated: "*Which factors affect the implementation of Responsible Innovation dimensions in start-ups*".

An important component of the research question is "start-ups", which is the analysis group. The focus group was high-tech start-ups as they could significantly impact in a short period of time. For conducting the interviews, the participants were in the position of CEO/management, which was decided because they participate in crucial decision-making processes.

To a certain degree, the start-ups that have participated in this research were aware of RI and its implementation within their innovations. Looking at the key dimensions, the meanings were slightly different. This, of course, may depend on the experience and expertise of the respondents and their background. For start-ups to be responsible towards society, collaboration and communication between different actors, like customers, stakeholders, and other university organizations, have taken place. Their views and opinions were taken into account.

For start-ups, it is essential to create an innovation that makes revenue, which shifts the focus on implementing the RI dimensions. Especially considering being inclusive seems like a luxury, mainly due to the start-up's position in the market. Finding the right employee and expertise/experience is so complex that, as a start-up, you are happy if someone believes your idea and wants to collaborate with you.

Most start-ups were busy implementing the dimensions into their businesses, as some dimensions were crucial for developing innovation. The implementation process needs to be faster due to the factors described in the previous sections.

Comparing the factors obtained in this research with the literature, it can be stated that this study contributed to adding new factors such as luxury (shifts focus, less attention), not being open-minded due to lack of enthusiasm, success (thinking everything goes well), not being fully conscious and Cultural difference.

Overall, most factors obtained were in line with what other researchers found. The main similarity in factors were communication/collaboration between different parties, costs, time, lack of knowledge, organizational structures, and different views and opinions.

In conclusion, around 40 (see table 3) factors may affect the implementation of responsible innovation dimensions. It should be noted that some factors are the same for some dimensions, and some are also linked. In this research, the relationship between the dimensions has been left out.

6.1. Theoretical Implication

This study's contribution to the literature is that factors in the experimental setting have been developed that may influence the implementation of RI dimensions. Our research differs from previous studies by adding up some factors that may influence the implementation of RI dimensions. This opens the door for researchers to conduct more research to analyze whether they could arrive at the same factors. Besides this, more study is needed to understand the factors that may harm the implementation of RI. Based on these studies, governmental institutes could respond to this to make start-ups more responsible.

Further research needs to be conducted on how start-ups could deal with these factors obtained in this study; this can be achieved by creating general course/study material. One of the respondents mentioned that this could be achieved by creating onboarding programs with different start-ups in which experiences can be shared. Doing this will create more awareness, and the lack of knowledge will decline, resulting in more responsible start-ups.

This research has shown that start-ups feel lack in knowledge and real-life experiences exchange between different stakeholders. As one start-up stated, if there were more real-life examples, that would have helped us to create a certain degree of understanding, and implementation would also go faster (Voegtlin & Scherer, 2017). In order to tackle this need, different stakeholders (universities, incubator) should work closely together with companies and create conferences/programs/meetings in order to exchange knowledge and experiences (Julia Peric, 2012; Lubberink et al., 2017, 2019).

6.2. Practical Implication

This study has created an understanding of the factors that affect the implementation of RI dimensions within start-ups. The majority of the interviewees mentioned that there was not a particular RI implementation method that has been used to apply it within the organization. It was more of a process in which the more it is applied, the better understanding will be developed of how to implement it. It is more based on trial and error, and a monthly base check is recommended to understand the market position. One of the downsides of this approach was that there were limitations in the availability of knowledge, which increased the risk of making wrong assumptions. In the case of inclusion, it was stated that it goes more naturally and that, as a start-up, the focus is on something other than being inclusive, as it needs effort and time. The aim was to create a team that functions best to maximize the product's success. Regarding reflexivity, which has the problem decision based on assumptions and perceptions of reality, it is essential to continuously reflect and start review sessions and dialogues (Harvey & Green, 2022, Whitaker & Atkinson, 2019). Public involvement, ethics, a code of conduct, risk management assessment, and other approaches may benefit the implementation of the RI dimensions. However, it should be noted that it is important to apply this on multiple levels; Stilgoe et al. (2013) stated: "what counts as responsible innovation at the macro-level of public policy, the micro-level of laboratory research, and the meso-level of institutional structures and practices that connect them" (Stilgoe et al., 2013). Based on the factors obtained, a general overview and understanding can be created for start-ups to get insight into how to deal with and implement these factors. These can be created as practical courses for start-ups to obtain helpful knowledge. As mentioned by some

respondents, there is a lack of education, especially examples that would be helpful for start-ups in the initial phase of implementation (Macnaghten et al., 2014).

6.3. Limitations

This research itself had some limitations. Firstly, this research focus group was high-tech start-ups; focusing on a specific group, a complete and straightforward overview of all factors can not be obtained. So different fields should be incorporated. More research in the experimental field should be conducted to have a complete overview of the factors currently obtained by other researchers. Only seven interviews were held, resulting in fewer factors that may influence the implementation of the RI dimension within start-ups. However, it implies that the result cannot be generalized over the population (start-ups). It is important to understand that the data obtained is based on respondent opinions, views, and beliefs regarding responsible innovation. Proof of answers delivered by participants was unavailable because early-stage documentation needs to be applied and sensitive information will not be shared during the interview. Some respondents were in the first phase of their start-ups, while others were busy with it for a few years (Max 5 years). So, their experience and expertise also lead to different answers and views. Finally, it should be noted that one researcher executes the interpretation of the data (coding process). The coding table (table 2) intends to show insightful and rigorous information. However, it must be acknowledged that the identification and interpretation of the factors depend on the researcher's view and understanding.

This research was conducted by only one researcher, which means the interviewer's skills became important since no other research was involved during the study to check the whole process. In order to minimize the bias, the same questions were asked to the participants during the interviews. The interviews can be found in Appendix A, which can be used in further studies by other researchers.

7

Future research & reflection

This section focuses on future research for MoT students and reflection on the whole thesis.

Initially, this study was started since there is a gap in explicit knowledge about how start-ups implement the RI dimension and which factors may influence that process. The starting point for this research was a literature study in which the general meaning of the dimensions and the factors that play a role in the implementation of RI were explained. The next MoT student could further elaborate on this by adding more studies conducted in the context of start-ups. By doing this, a more precise overview could be created of the currently available factors affecting RI dimensions' implementation in start-ups. This could be achieved by selecting start-ups in different fields like e-commerce, healthcare, educational and Big Data backgrounds. In order to broaden the generalizability, more interviews need to be conducted with more start-ups (Golafshani, 2003). Furthermore, policymakers could be considered in future research to understand their influence on the implementation of RI dimensions. This may be achieved when policymakers integrate RI into their policy framework and evaluate, restructure and optimize RI activities (Pan et al., 2022). An in-depth study is needed to obtain insightful information regarding the effect and relationship of these factors on the implementation of RI. This includes the relationship between the dimensions and the factors' effect on each other. Besides this, more interviews (only seven) must be performed to obtain a decent conclusion. It is recommended to start research on this by including different organizations such as universities, governments, start-ups, and incubators to arrive at the best result for the practice.

At the beginning of this thesis, I experienced several problems while working on this research. These included personal issues, which will not be described in this section. It turned out that the duration of the thesis was extended, thus resulting in an unwanted delay. First, I found it challenging to collaborate with the research group due to my focused mindset. The previous research that I have conducted has contributed to this way of thinking/working. I was glad that I got the opportunity to finish this thesis still, and improvements regarding collaboration and communication have been made during this thesis through monthly meetings.

Regarding the research, the understanding of the scope of the research could have been clearer at the beginning of the thesis, which may have influenced the interview, as they were conducted in the first 1-4 months.

This could have been resolved by more collaboration. An important aspect that I have learned is to clarify the scope of the research before starting with the study and to stay in close contact with the supervisor to eliminate misunderstandings.

8

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Appendix A

Company 1:

Q1: Could you briefly explain your role within your organization?

Yeah, so very briefly I am the CTO, so the main technology person and I am also the one that came over to technology. And I'm also the one now that is mainly responsible for trying to, uh yeah, I did bring this to a next level, to develop it, develop new systems. But also yeah, eventually leader research team. We have a small team now, it's R&D but also lead the people too, well uh, participate in this.

Q2: Could you explain how long you have been working in this role/organization?

Yeah oke so I guess, let's say as in focal the start-up that, let's say I mean to start on 2019. It had a restart in bin of corona, like almost two years ago. Uh, it. Let's say that's when I started really full time. Uh, I have been in similar roles for a while. Let's say that that I'm having a leader leading technology precision

Q3: Could you explain how you are involved in important decision making within your organization?

So yeah, like because we have a, let's say with in the founding team, So we have one of my Co-Founders CEO, and he is a physicist but also commercial background and not one. Uh, my CFO of so really on the financial side and really not having a technical background but really its own the business side and start up site and and financial side. Uh, we quite often try to do it in a way that. At least people that are most heavily involved in whatever that decision needs to be. They have the bigger say in it. But if there's, let's say, a certain decision that we really required three of us like strategy wise, etc. Time, it's always to three of us, but we usually let the expertise that matters the most make. It's contribute the most to the decision, that's it. So we we, we we try to divide the rules like that.

Yeah, you make the important decision together. Basically, it's not only one person that make all the decisions.

yeah, but if it's a technical thing then my uh, my say is heavier than the other ones and we always accept that and that goes for financial site the same the other way.

Yeah, OK, yeah, so we now we're going to focus on the implementation of the responsible innovation dimensions. So within your company. Uh, first question. Basically, what does responsible innovation mean for you and for your business?

Q4: *What does Responsible innovation means for you?*

Yeah, so I'm trying to understand because you you said it before, like so responsible innovation is more that it will give a benefit to society, right?

Yeah, of course of course benefit to society. Plus you also take into account the benefit for your own company. Of course, if you have started business you must. You must make profit. If it doesn't make profit is it doesn't work, but the focus of course is to the society and that it should be done in a social and ethical and sustainable sustainable manner basically.

OK, yeah. Yeah, so we come so did. Let's say that if you're looking at the. Ink from production lines **which is really like sustainable as a sustainable aspect**. And of course we are using that also a little bit for explaining the technology where they can do, and giving it a, uh, motivate people as well as investors etc. Uh, we If you look at the technology itself for the company so we we have a platform technology where we can. It's an optical technology can be used for a lot of different things but we we at the moment we focus on the application that is closest to the market so that we can **indeed quickly make more quickly make revenue** and we unparalleled 5 to develop the the ones that are a bit further away from the market so that we yeah we will be able to make revenue and then. Uh, quicker instead of like going for the high end applications first.

Yeah, and how do you take in account the impact of the application to the society?

Yes, well we are looking at. OK, so so part of it is that, uh, there's maybe some background needed. Restarted as High Tech XL, offensive building program within the High Tech Avenger building program. You do check a little bit at at these kind of things, so like if you look at the United Nations Sustainable Development Goals. You look at a couple of things that that you can check how important it would be for society. Uh, because of my previous background, sort of previous I've asked this company in YesDelft they often includes and and there it was. Let's say I've been looking at that case the the business case for that for the many years that was also removing ink from society in a way. So when I notice that with our technology we can do it in a also but in a different way. Yeah, that that was making it a bit easier to find the connection and and and already. Uh, yeah, let's say get the motivation for that so. But together with the the program from High Tech XL that was forcing you to also look at these kind of aspects of sustainability, etc. It it clicked, let's say quite easily together.

Q5/Q6/Q7: *Did you ever heard about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation and reflexivity). Can you give a brief explanation of what inclusion mean for your company? (Same question for the other dimensions). To what extent did you already implement inclusion in your business? (Apply same question for the other dimensions)*

did you basically hear about inclusion and? What does it mean for you?

Yeah, so inclusion, UM? Just I mean, but I think like nowadays yeah yeah, of course like it's kind of topic that, uh, inclusion as in like, uh, for, let's say a equal amount of. A male, female team inclusion as in like having different nationalities from your team. Uh, It's something that luckily we don't have to. Doing much effort for it, because actually we have roughly 50/50 male, female. Uh, I think we have like 8 different nationalities in our team. It just so happens to be the people that also apply for us and we work together with, Yeah, come from all different kind of backgrounds. Uh, it's like a competence is like that has been, yeah, we tried to get it just makes it possible to get. Come also, yeah within our team we have a large experience variety as well. So for making these decisions. Uh, have you tried in the beginning? Definitely relying on having a very diverse team on it.

And and do you also include different kind of parties within your companies? So example universities or other companies?

Yeah, indeed, so some people have been from university backgrounds from, a because we also cooperate quite heavily. For example with Phillips or some people from these companies that have been in our team from start, apply from your corporate life different bodies.

Yep, uh, and did you ever heard about responsiveness?

Uh, yeah, but explain the context with that one.

Yeah, so basically responsiveness. We mainly focus on a. It's basically reactive attitude. Here you know you it's related to transparency, accessibility. It's finding basically out what are the risks during the innovation and trying to react on that, and so did you heard about that and how do you implement that? Or how do you what does it mean for your company?

Yeah, so we we we've been doing. I think what we were doing that each time quite actively yes and we have. We started with the basic idea with our technology can do but we really try to listen to other kind of clients and really try to get signals from the market to get it verified that indeed this is what they're looking for and we have been changing our business model, but also the. Yeah, but we think our technology, uh, how our technology benefits to the customers. So we started off with the technology that we think it can be helping a certain customers. Then we got signals from the market at it's different. We responded to that by making our business model fit to that and we still are yet trying to. Try to respond to these kind of for signals.

And to what extent? Basically, did you implement that already?

Well, it started also from the beginning because one of the things is that the market research. But because we are speaking to. Uhm? Yeah, certain kind of customers. Uh, sometimes we get a confirmation that indeed we are on the right track. If it's not in there, we check. Let's say if it's still if to kind of signals or how big that market is and it's just like it's just maybe like a kind of a one off. It's just like niche. Uh, should we put our efforts on that so? Or in that way we're constantly looking at it.

OK, and uh, let's go to the next one, the anticipation, and so basically it's just the way of thinking about, uh, yeah, arriving at the critical concerns and try to find basically a right solution and opportunity you can already see at these dimensions are in way connected to each other and in a sense, but slightly different. So yeah. Can you tell me something about what anticipation mean for you and for your business?

Yeah, so uh anticipation I uh, I see this and that. You're always. Yeah, you're not so much stock in in one way of thinking and you keep on being flexible to see what is happening, but it's also depending on maybe a well if you look at let's say in the beginning of a startup, especially very deep tech startup that you don't know exactly what your technology will do, so you'll have to adapt. Up to that. So there is a. It might be that technology can instead, like your first time they can do 10 times as good as another one. Maybe it is 8 times and will that affect your market so, but it's also it might be that you expected it. Your customers want to have 10 times, but turns out they're happy enough it five times or what? What uh, yeah, but effect adjusted have on your your business model. They technology development is.

Yeah, because in which yeah can you say that? What extent did you already implement that? But as you said, you already starts from the beginning with looking at that and taking care of that. Let's say in that way.

Yeah, so it's. It's especially with us. It was the technology very much in the beginning. We didn't have much of a knowledge and how good it would perform and there it was like if you were building basically business case based on a promise or a certain say like back on the envelope calculation, but we couldn't do much more than let's say the back of the envelope calculation. But we now we know much more and then it each time we try to see how well it matches with you with the application with new insights and new applications.

Yeah, that information you obtain that from the trial and error. Let's say that experience, or with other companies.

No, no, so so some of these are literally linked to the actual experience and and indeed some are. If you look at let's say how well it fits with the kind of market that that is done with. Yeah, I guess you can call a trial and error conversations looking at like how well it fits in this. This feedback from the market to implement.

Yeah, OK, let's go to the last dimension. And that's reflexivity, yeah. So it basically is just the, UM, gives us a reflection on the values and the belief that someone has during an innovation. And it's also taking into account the collaborations and the discussions between the different parties and, and we can divide it basically in two kind of reflexivity we have the 1st order, which is about learning basically the goals and the view of the innovation. Itself and how you can achieve that in the best way. And we have also a second order it's more basically the goals of the file system itself. And what, uh? And if this value meets also? Basically the yeah, the norms of the society basically so. And it has the certain system has a correct value. If we look at around us at the society and for the for the society, it must also fit basically, and the values must be in a kind of the same as OK. We have certain values that technology has its certain values, but does it fit what the society also want? And and so that that kind of two reflexivity, we have two orders. Can you basically say if you heard about that or what do you think about that?

Yeah I. I heard about it, but in a different, I mean, I guess called different. Maybe I'm not sure how you would call it. But uh, so yes. Uh, and I guess like a yeah I think the. One of the things is that, uh, yeah, looking what society needs. So if you yeah, we could see that uh within our technology, for example, replacing the ink yet from production line here you could see that already. There's a push on removing ink from production lines. You see the bigger companies doing that? We have another application where, for example, directly marking on fruit and vegetables because people want to get rid of plastics, stickers, etc. And yeah, you can see that like the normal text is good, the comment, the current technology. Even though like people doing it. Uh, it's fall short and we can actually bridge that gap for implementation. So I think in this case, yeah we are. Yeah, we trying to fill the gap of what society I guess already once, but they cannot realistically do it. So then people still keep using plastics etc and yeah so we try to jump into that that gap.

Yeah, can I say that it is like partially implemented, not fully, but trying to.

Yes, uh, yeah. So maybe it's the kind of thing that. It's maybe it's also reflected on the. Uh, yeah. The application that we already having, that it it's seems to sort of logically flow and we don't have to do that much effort into it, but we are trying to. Put it in our, uh, each time we have a pitch. We definitely try to point it out. But luckily, yeah, we by itself the things that we're doing, the fit quite well in what society wants. I noticed like there's some other technologies where, yeah, you really being pushed? Try to show, to showcase that. Yeah I think in our case maybe we're a bit lucky that we did.

Yeah, but you focused more on a currently then on the uh, how to achieve? Uh, or your goals within the innovation in the best way, is that more to focus, or is your focus also? Uh, more on, OK this this the value system or the product itself should also meet the value of the society? Or does it go together or in? In which way? Where the focus more?

Umm, I've been working in this. Let's say before, uh, it's at the other company was for many years on this goal to remove ink and now again so I've been. I guess I've been like adapted to understanding the strength of having that kind of message. It's still motivates me as in like that I think we can do something good for it, but I see that also they render team. There's a lot of people that they really get also good motivation because they starting with the new technology. Which new technology that excites them but also the application that excites them, their possibilities with it. So I think there's a whole team we it is. It's really good to work on something that has a good society impact

Q8: Which method and how did you implement inclusion within your business? (Same question for the other dimensions).

Yeah, OK, now we go more towards a the methods and how the implementation, uh, more goes uh. So basically can you tell about inclusion? Uh, is there a kind of method that you used to make sure that you in a kind of way have implemented within your company? And how did you find that? And how did you organize that?

It's a kind of thing that we I, I think if we wouldn't have it by ourselves and then we would really try to look more for it, but. The inclusion it it's if I look at the sales or the even for technical positions are actually the first person that we hired on my technical team is 1. A lady from that that graduated in Eindhoven in and she stuck to the company after a graduation. She's talking to company and we have two more from industrial design, both female that are doing internship now. Female founder. If you look at all the balances is it's just there and it's I don't have to do much effort for it. The different nationalities here at all so. Yeah, I'm not really sure. I think yeah, If it wouldn't be the case then we would do more effort for it, but we never really had to do an effort for it. It's we've been able to attract people from all the different backgrounds quite easily and it seems to match also quite well, as in like I do call for the best profiles, not just because it fits better. Let's say within this this picture of inclusivity.

and is there also a kind of a? OK, let's say within the company you try to have that differences within the department and the people you taken from all kinds of parts of the world over maybe the religions or whatever. But how do you deal with taking in account different organizations and universities? And regarding also trying to be sure that someone

does not take your technology to make sure that everything is in the right way? How do we include that kind of people?

So far we have been, let's say the heart of the all the technology is let's say the really the optical part the. They say that it is there. **A handful of people that that that we've got access to that** also because they really need to work on the on the on. On the core of the of the technology some of people have been working on the let's say that it because our optical part goes into a system and you know they've been working on the outer part. They haven't had anything, so some technical people that have been just working on that. You should look at the industrial design people, they **we keep it limited because we know that. Yeah, if we know that the most dangerous part is our technology. If it gets into the wrong hands we luckily we did file for a patent, so at least. Even if it would now leak out, it is, uh, it will be less of a problem surrendered,** at one point more people get to know it, but if you're really looking at the core, Uh, it's not that we distrust certain person more, but like if you don't need to know it, you don't get to know it.

And then and then in society, how do you include that within your technology?

Yeah, so that's it, that's it. Just different ideas, and it it's because like I wanna, uh, for sure my my co-founder, CEO, CFO. **She really said like hey we need to have a system in there that if an unauthorized person opens it that there isn't a self destruct mechanism. Uhm we are careful a little bit with you.** You have you ever still careful with it? I mean we could. We going to have a test in Brazil and we want to at least make sure that yeah the company they put a camera on it so that we know for sure that nobody on authorized to learn. Though I do have access to it. Yeah, you cannot keep on doing it forever. Uh, in any case I want pointed patent becomes publicly available and people will see it anyway, but for the meantime, yeah, we've we tried to be as careful as possible.

And for responsiveness. So basically try to find out the risks for your innovation and reacting on that. Is there a certain kind of method you do within your business within company that everyone knows that and try to follow a kind of structure?

Yeah, so the main because like at the responsiveness six years. I don't see my other co-founder. He says that sometimes a quite well. I guess, because we are physicist, even though he had a commercial role and he's not a person that is going in the lab. But yeah, we are both quite often drawn by the technology as in like OK, this is sounds cool. isn't always the one that's OK, but how are we going to make a business out of this? So we try to. Uh, overstand, look at, let's say what? What does it mean for the business? This is need sounds like our technology can is problem that our technology can solve. But it it should make sense to do it.

Yeah, but there's certain kind of risk assessment. Is that also a part of the.

Yeah, it's a kind of. Yeah you can call it like a resource assessment login, but what is the the time to go to market with this? Uh, how much of a benefit to be give and how much money can we make with it?

if we go to the way of thinking. Basically the anticipation at the try to find the right solutions and opportunities for your technology. As they're also, uh, kind of method that you apply in your company.

Uh, I guess a couple of things are, as in like the core of our technology, is that, uh? Because like if you have light that you normally it's white with a magnifying glass, you focus light. And in our case. That normally means that by the moment that you focus after the delight diverges away and you lose the ability to do anything useful with that light and our case we have make this focus a lot longer. Uh, which means that it's relatively easy to already know that the limits of current technology, and at that means, and then you can say, OK, we actually increased the focus, but does it make sense for that application and? And what benefit does it give? So because of the limitations that are known, because they are, we can. Yeah, relatively, then easy check if it makes sense to use our technology or not is the current. Application limited yes no. Yes then maybe we stand a chance.

And and if suppose that there is a concern within the society about that technology you have, how do you try to find solutions for that? And try to find yeah, opportunities to make it better again.

if I understand we just said so like the there are maybe in in society some some issues and and we think that we can solve it with our technology and how we. Yeah did. Did they have been a few that? Uh, some things, for example, that we didn't completely think of that it's for example to brainstorm with with the kind of company that they have, and thinking about our technology and yet and then. We are open to these kind of ideas always and if that's indeed there's new ideas. And then we jump to that that happened a few times.

OK and and then to the reflexivity. So basically the values and beliefs. Off the innovation it itself and of course the value of the system itself. Uh, how do you? Uh, yeah, basically implement that between your company and how do you take care of the values also? Outside your organization that you take in account within the technology. Yeah, so basically, uh, as a company you have a certain kind of goals and views. Yeah, how you can obtain the optimal situation for your technology and how you can improve it in the best way. There's a Facebook. It has a certain impact on the society which they didn't take in account. Especially with the privacy side. And that's basically the goals. And at the end of the value system itself it had certain values which you cannot take out. But as a company, have also certain values. How do you match these two? Either or whether you did already business OK, is there a value that doesn't meet the value of the society? Yes or no you maybe you should do an investigation on that part fails to be to know the answer to that. But just how do you deal with the values and the beliefs of yourself.

From that, that's bad, so it's it's. I think that it it falls within how you use the system itself.

But is there a kind of method like for example a structure like? OK, suppose someone has an idea and he came with something OK, yes for sure some kind of goals, that he thinks I if we do that we can. I'm going to make that technology better. But does it does there's? Is there also a reflection on the goals of the file system itself? What is this? Suppose I come up with an

idea. Let's do this in this, but there should be a risk assessment on that value that could have a big impact.

OK, so this is. So yeah, so that it might be somebody in a in a team that says, like, oh, you haven't thought about this, but this is how you could use and then how do we deal with it? Uh, do we take it? Serious, uhm, I think it's the one that I just mentioned before. Uh, because there are some people in the team that did some crazy ideas and it doesn't always make sense. It has to forward in a certain reason, to first pick it up some sounds we have to answer for it. And sometimes it doesn't meet. Yeah, any kind of technical then depend on like if it's there needs to be a kind of connection. I mean if it doesn't make sense based on what we already know business wise finance wise or technology wise it might be dismissed. If it is a sounding interesting then it's like. OK, well we can. We can take a look at it and maybe we, uh, we give a person a small task to look a bit more on the background and come back.

Yeah, so basically understand it right, right? It's not like someone just came up with something and he can just implement it, but it's more collaboration and discussion between the different departments within your company and try to look if it's really the right move to do or not. It's in that way more.

Yeah, because it is indeed sometimes or people comes out. I know this person from this company and they were interested in like OK we have you assess it but it then goes through the same kind of list of checklists but just mentioned before.

Yeah, OK, OK, let's go to the last two questions of the second part of the issue. It basically about the factors that prevent you prevent you to implement this dimension. So maybe in general, just the four dimensions, inclusion, responsiveness anticipation and reflexivity. Maybe you can tell us something about the what, what, what are the factors that prevent you to fully implement it that within your business?

Go to question 10

Q9: *What are the factors that prevent you to implement inclusion within your business? (Same question for the other dimensions).*

Yeah, I know, but I think at the at the moment because we are on this transition now and we've I guess we we've been starting at the beginning and there's a lot of people that are volunteering because she just likes to be part of it. And some people they actually become part of the core team, but it they do it for some small shares eventually. But there's a lot of people that are, for example, have been advisers say they joined for the meetings. It's a bit, really putting a good structure there because it's so much if you don't pay people you cannot be too strict on them. I think uh, so sometimes meetings take it longer than what they should be. Because of that, we are. We don't have too much of a good system to just say, OK, listen, yes you know. And there's just. There's less management know too. To implement it, so I think that is preventing us now from a from doing it in a in a correctly.

So basically a kind of good organization structure

Yeah, it's it's still lacking, yeah.

Yeah, and is there also lacking knowledge or something? That you think there is not much knowledge about this part? I mean like this dimensions.

Now this is. I think the people that we have in the team they should uh they should know but like I think some. Have been maybe less. Organized in in in the previous, they've been relying on. Other people may be to do it. It's not, uh, we shouldn't be able to do it, but there might be a eventually some extra help needed to get everything a bit more organized. So I think we're we're looking for looking for some organization people as well.

And what is there a lack? Why is it that that part lacking?

No, I don't have. I mean the my two Co-founders did they. They basically admits that they are not organized. And then, uh, so date. It is no secret, so it, they admitted and so they really need to look for something. Somebody that helps them and their management and organizational tasks. So I think that that will then be implemented more as a company wide thing as well, but. Yeah, for some needed more than others I guess.

Yeah, and is there also another kind of rule from the government that says you need to be or meet this kind of standards? Or with this kind of dimensions, I don't know whether they put that already in certain kind of standards. I didn't find anything but.

No. Well not today no.

Yeah, and order kind of motifs that you have a factors that you have that you say they say you know. Basically I really want to implement this. What are their motives that you could have to say no? I want to implement dimensions witness on station and.

Q10: *What are the factors that leads you to implement inclusion within your business? (Same question for the other dimensions).*

Now that I've I would love, I guess at one point, especially because while there's more for my side, I guess maybe the the R&D part. Uh, it's so of course like we now with a small team and we were really working hard. Turn on, uh, making goals, but you have also certain companies, like the bigger ones that allow half a day in a week for creative thinking and it will be in a ideal situation if he would be able to do that. So that means, like people can come up with ideas himself and develop it themselves, and I think that something like that really stimulates. Uh, data innovation.

Yeah, OK, uh, last question of this part. Basically they are there any improvements in general that you that would have helped you and your company to make the implementation easier? If you have known it before?

Q11: *Are their any improvements/idea in general that would have helped your company to make the implementation of the dimensions easier?*

I've been in. I've been in other startups or so before. I think in this one it has gone relatively smooth, but it's always a startup and and always have things are. Uh, messy and fix done. Maybe always get followed up and and it's a, but sometimes some people called the charm of a startup. Uh, I think this one is the best I've been in so far. But yeah, still of

course it's gonna be a smooth or some of the. Companies that are very well structured to recognize that the asset, I guess on all parts we. Can always do better I guess. I mean I know I know that there's been sometimes some misunderstanding when people I see that more from this happened also in that event wrong in some other starters where **for example people think they understand what the technology could do and it promised things to people and then it turns out it's not and they should have just checked.** Oh, so it happens a big institutes and companies as well so but it can be deadly if it's really. Goes wrong, so I think that that one I would like to not see again.

Do you have or do you want to add any extra information regarding the questions?and do you have other questions regarding the research in general?

By just mentioned indeed, like within differential building program, there was at least to have some aspects that maybe they they let you think about it. But do you have you seen this? For example, coming back and maybe some of accelerated programs? No, not the kind of research, but like that that they make people think. I. I mean before when I was at English at it was literally like there may be some small. Some courses that people could take? Or maybe some startups for startups going into some counseling, maybe here and there, but like in general it was like OK, you have an idea. It's just all those like. OK then go for it and you you left on your on your own and with some of these accelerated programs and also defensive building programs are very large accelerated program basically then sometimes you you do they ask you to think about it and of course maybe not as deep as how you just were asking me things but do you see that it's?

Yeah, basically I don't. I don't find really good programs that I already explained this kind of stuff really good for startups. That's lacking basically. Uh, yeah again thank you. And yeah, good luck with your company and all the best.

Oke, Thanks see you.

Oke bye bye

Company 2:

Q1: Could you briefly explain your role within your organization? **I am the scientific director responsible for the quality of our research projects and my aim is also to integrate new scientific innovations into our work.**

Q2: Could you explain how long you have been working in this role/organization? **Started December 2020**

Q3: Could you explain how you are involved in important decision making within your organization? **Important decisions are made by the management team which includes me and my team.**

Q4: *What does Responsible innovation means for you?* **Our aim is to conduct research projects that clearly add value to society. For instance, our focus is on finding projects in which we aim to alleviate an urgent knowledge problem of a policy maker, or we try to find topics on which there is a lot of polarization such as the COVID-19 crisis or sustainable energy projects and in which our work has the potential to depolarize the situation (e.g., bringing citizens and government closer together).**

Q5: *Did you ever heard about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation and reflexivity).*

Yes.....partially.....No. **Partially. I am aware of the responsible innovation literature but not necessarily of the four dimensions.**

Q6: *Can you give a brief explanation of what inclusion mean for your company? (Same question for the other dimensions)* **The main aim of our company is to make public involvement in governmental decision making more inclusive. We aim to gather knowledge on citizens' preferences and values towards proposed government policies and this allows governments to better align their decisions with preferences of citizens making the decisions more responsive. Also, the knowledge we generate about citizens values and worries allows them to anticipate protest and it encourages reflexivity towards the goals and principles of their policies.**

Q7: *To what extent did you already implemented inclusion in your business? (Apply same question for the other dimensions)* **We try to achieve these goals but are still in the midst of improving ourselves. For instance, we aim to improve the inclusiveness of our method making it better accessible for people with low literacy.**

If fully implemented go to question 8.

If not fully implemented go to question 9.

Q8: *Which method and how did you implement inclusion within your business? (Same question for the other dimensions)* **see question 7.**

Go to question 10

Q9: *What are the factors that prevent you to implement inclusion within your business? (Same question for the other dimensions)* **The main barrier is time and capacity. We do our**

best to improve ourselves, but also need to invest time in management, human finance and privacy. So, we cannot do everything at the same time and need to be

Q10: *What are the factors that leads you to implement inclusion within your business? (Same question for the other dimensions)* **It makes our products better. This leads to more value for our clients and more value to society.**

Q11: *Are there any improvements/idea in general that would have helped your company to make the implementation of the dimensions easier?* **If we had more funding, we can speed up our ambitions**

Company 3:

Goeie middag,

Hi goeie middag, aangenaam kennis te maken.

Insgelijks, ik vind het heel fijn dat je mee wilt doen, dat waardeer ik zeer

Graag gedaan, ik weet niet waar ik precies voor getekend heb.

Het zal ongeveer 45 min pakken.

Ik zal eerst kort uitleggen wat ik doe en doel ervan is. Het is wel handig als we het in het Engels doen, het interview zelf, die gebruik voor verslagen en alles moet in engels.

In principe waar ik mee bezig ben is onderzoek doen hoe start-ups maatschappelijk verantwoord omgaan met hun innovatie. Hoe doen we dit onderzoek door te kijken naar 4 belangrijke dimensies, inclusion, anticipation, responsiveness en reflexivity en hoe passen bedrijven deze toe in hun bedrijf. Wat je nu vooral ziet is dat er geen standard is elk bedrijf doet het op zijn eigen manier. Doel van dit onderzoek is ook hoe doen start-ups het en wat kunnen we eigenlijk doen voor dat ze überhaupt starten met hun bedrijf dat ze door hebben, dit bestaat en zo kunnen we het implementeren in business.

Er schiet veel dingen door mijn hoofd, want zijn we eigenlijk een start-up, ik vind eigenlijk van niet. We zijn al 6 jaar bezig en hebben 20 werknemers en klanten over hele wereld, maar tegelijkertijd zijn we ook gewoon start-up, we maken bijvoorbeeld geen geld nog.

Dat maakt niet uit, ik had in doel gezet tussen 0-5 jaar, maar 6 jaar is ook goed. Of het profit maakt of niet maakt niet uit, het gaat om dat je product maakt die impact maakt.

Misschien wat ik merk he, verschil tussen 6 jaar ervaring in start-up, zeg maar dat de Start-up social responsibility dat is, dat was 6 jaar geleden een soort van after thought van o ja we moeten dit ook in business plan kwijt, ik merk dat er een enorm kentering is dat de maatschappij echt een enorme switch is juist richting responsible innovation gaande is, wat ik echt fantastisch vind.

Het is ook echt belangrijk kijk maar naar facebook als je het vergelijk met begin en nu heeft zo een groot impact en als je in begin niet goed oplet op bepaalde aspecten dan kan dat heel groot invloed hebben op maatschappij. Facebook is ook een interessant case, ze zijn begonnen met we willen mensen aan mekaar koppelen, ja is goed ik ben geen expert, ik denk wel dat ze nu net een andere motto hebben

Ik denk het ook, is totaal andere business is geworden, maar dat kan met elk bedrijf, ook bij jou, dat het onschuldig begint en dan hoop je dat het zo blijft dan kan het een richting aannemen zo dat je het wilt.

Begin van interview zal meer over jouw gaan en wat jou rol is binnen bedrijf en vervolgens over 4 dimensies en kijken hoe jij er over denkt en vervolgens een closing part waar je vragen kan stellen.

Het word uiteindelijk alle smaal vernietigt en niks persoonlijks en privé, en je krijgt ook alles teruggestuurd

Ik kan vrij open zijn over sommige dingen niet maar daar kan ik vrij transparant over zijn.

Alle dimensie zeggen mij niet veel, dus dat mag jij mij kort uitleggen. Ik al kort uitleg geven en dat jij daar dan op kan reageren. En wat je iedee er over is. Oke we gaan nu switchen naar engels.

Q1: Could you briefly explain your role within your organization? Yeah. So I'm the CEO, so that means I'm the end responsible, mainly work on the, at the moment, mainly getting new financing in. But it's just because we're in the middle of a funding round but normally so I manage the management team and manage the stakeholders and shareholders. Uhm and Uh, as someone described it to me the other day, whenever there, there's a hole somewhere I have to fill it either myself or with someone.

Q2: And how long you have been working in this role/organization? Yeah. So uH, I'm not original founder, so my previous partner founded the company in 2012, actually found that the technology in 2012, we were founded as a company in 2015 and I joined about around that time. First lets say as a freelancer and months later also as a partner, shareholder, there was a director two of company, so other one was director. Yeah and since then we work mostly as a so my partner was the sort of technical director and I was commercial, say yeah we called it operation at a time, it is basically anything, marketing, sales, finance and supply chain. And then later, so he got a illness, stepped away, unfortunately. And that means that I became the CEO and ended up yeah backfilling all the missing skills and now we're sort of normal company

Q3: And how are you involved in important decision making process. Yes, I'm formally the only person who can sign for the company. So whenever something really important is happening it always has to pass my desk. What I try to do and it's a culture I'm trying to build, which is easier said than done by the way, but is to allow people as low in the organization as possible to make their own decisions, things really important not just because I don't like to manage, but I also think its better if people know by themselves. While it is important, then why and that they can take actions quickly. And I think that just altogether brings breeds a better organization, Having said that, it's sometimes easier said than done of course, but that's with the new things.

What did you do for study before? **Mechanical engineering. So technology still at hart, but I really missed the link to people, really so did loads of math and simulations and all kinds of things which is nice puzzles but not really fulfilling to me at least.**

I have same feeling, I did chemical engineering which is quite a lot of math and physics and this kind of stuff, but then really missed the side of talking with other people and being a part of all important steps within business. And that's why I did a second master. management of technology also.

Ah oke I did not get that, maybe I should have read you're mail, because you know study in Rotterdam right,. Yes so I did two master, the first I finished one year ago and this is the second master. And with second master management of technology is more about the innovation, and organizations strategy and that's the part I like and that's why I too this step.

Oke bow we will go to the main part.

Q4: SO basically can you give me definition what it means for what responsible innovation mean. What is responsible innovation means, so for met personally, that could mean one of two things. So I think at the minimum that it is important at any innovation that you bring to the world is at least not negatively impacting the world directly at least. Uh, I think that's the bare minimum. Uh on the say on the optimal/maximal side with your innovation also bring important or something meaningful to the world. Uh, and uh, yeah maybe I'm already answering them in, and one of the questions that comes next. So if I look at what we do, so build technology for Robots, so I think we are with this company with products we are more towards that. I think we are little bit beyond the minimum but definitely not at the maximum. So when I look at maximum, I think about things like solar panels research, like solving important medical issues, preventing wars or something like that, but it's very direct and I think what we do is little more indirect, so I think se we contribute to a larger thread of robotics which will in the broader sense bring yeah, I think overall bring good things for the world. With robotics and automation, you can basically make supply chains a lot more efficient. Looks simple or more local, which in the end will help reduce the carbon footprint of the world. But at the same time we're not directly contributing because our technology just makes that more efficient, which is not bad, but we're also not directly contributing, so maybe a bit of long answer, bit hope this make sense.

So in general what you can find in literature usually they say RI is all the important processes or steps you take with all stakeholders and parties that are involved in it to produce a product from idea till the market in an ethical manner, basically that contribute, has a positive contribution to the society.

Uh, immediately opens up quite a few, yeah so to me one of the questions that pops up then what is what I think, the right level or enough. But lets maybe. So, this is a hard one to questions.

I think what we try to do here is, we try to at least keep it in the back of our minds. Anyway so I disrupt you're interview format. No problem , I like that it is oke. Oke lets go to the four dimensions which with what we basically scaled Responsible Innovation. Then we, to which degree do we implement them. The first one is inclusion, what is means as a definition, only as a definition not on the implementation. If you don't understand or wants me to explain it ask that.

Q5: *Did you ever heard about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation and reflexivity).*

Yes.....partially.....No.

Q6: *Can you give a brief explanation of what inclusion mean for your company? (Same question for the other dimensions)*

Inclusion: Is that a as in form of verb inclusive, yes. So the definition, so what it means for me in particular to not, it is maybe a definition from the negative, so I think to me it is not to be exclusive in the sense that I think it's important to hear broad opinions, not to listen to everyone but hear broad opinion not exclude someone because I don't know, like from a different background or schooling system or something. So, to me it is making sure, more difficult that I thought actually, yeah so to me it is primarily about not excluding people or views because of the background in the broader set and being open to input and judging them on merit.

So lets go to next one responsiveness

Responsiveness: Yeah, I don't know what it means to be honest. So this is one of the dimensions that I wasn't really, this one is not clear to me.

So with responsiveness we have, focus on a reactive attitude, so about finding out risk during your innovation and reacting to that accordingly and we can have different approaches, you can be proactive but also reactive if you're something happens and then you try to fix it. While proactive you analyze it before it happens to minimize the risk.

It's about striking the right balance. Because I think if you are on scale say of hyper start-up to hyper corporate, I think there's the basic tendencies in a hyper start-ups you basically just go and figure it out as you go along and hyper corporate side you try to analyse every outcome beforehand and then stay on that. There is no right or wrong. So it means all about balance. So in some projects it's about getting things right exactly, like for instance our, product quality. We cannot, there's no compromise we could have on that. So if they failed and worse, yeah have problem. But in building new solutions or building new solutions or building new propositions towards the market, you. it is much better to go in it with a much more of a start-up mind set, accepting all the risks because it maximizes your level of learning, and it is not always about getting the right outcome immediately. It's also about learning about a field such that you can later determine the right outcomes.

It is like kind of finding a mix between being reactive or proactive.

Yeah so to me it is about balance on the whole, so because if you're hyper proactive you're to slow, if you are hyperreactive then probably also too slow in the long run. Overall it is all about balance and then project by project can look at what's the most clever here. So do I just want to execute the plan, I want to explore and that, I think it's important also let's say at that's a conscious decisions. Cause then you can uh you can be clear to everyone and you can get very far and choose what works the best.

Oke and the the next one anticipation, more about a wau of thinking and trying to arvie at critical concern and find opportunity and solution. You can see that they are connected with each other.

So what was thw term again, I just missed it. Yes, Anticipation

It's about getting people alien.

You try to involve the different sources you have at the company, in order to, you need to apply it in all steps of innovation from the idea to the product, it is certain kind of risk assessment. Then you trying to involve all the knowledge that you have, all the parties that you have and try to figure out the critical point and find solutions and opportunity.

So, this is if you look at the, it is about thinking a head and thinking out the different lets day solution path or scenarios. So to me this is pretty linked to responsiveness, is about balance a bit of boring answer maybe, but. On one side it's good, but I think there's also you can over do this quite quickly. So as an example, so we're in a pretty young market, So the markets that we are in, so we started six years ago, it basically did not really exist. And right now there's a like a million robots a year being built. So it's some crazy growth. So if you take that as a given there is only a certain degree of anticipation you can build in , because there are certain things you fundamentally cannot know, and I think it's like a mistake to think that you can, so you make all kinds of assumption, but you have to constantly keep on testing these assumptions otherwise you quickly go down the wrong path. Only at least as a risk of taking, say a incorrect data driven decision. That's why it's so, yeah I think it's, you hav to keep on understanding what you're really uhm whay you're doing.

Then the next one, reflexivity, so reflecting on the values and beliefs not only on the innovation itself but also on the society. So from two side, of course as a company you have certain type of aim or goal to achieve within your technology, so learn the goals of the innovation itself and how to achieve that in the best way, bit also reflecting the goals of the value system itself and if that value is correct for the society or not.

I think it is important for people working on innovation that it is part of bigger perspective. Just as an example, so we built as far as we know the most accurate robotics positioning system in the world, and the fact that we're so cutting edge, that in itself is a important driver for the people and that helps technology moving ahead and that's an important value for many people. The second question you said do these value fit in their value system, that brings a bigger, ah

Yeah, so basically, we have certain value or belief about the innovation itself but the value system itself has also certain type of goal, so the technology itself and does that meet the value of the society for example.

So to make it really tangible, so we make better

Yes so you have a certain value or belief that the innovation should do this and this and you create that type of technology and that value system has value in it self and you learn to know does it have the right value

So just to make it sure I understand this correct, because when you talk about value is that then value in metaphorical sense, or is it value to our customers.

For example facebook the first aim for them was as you said to connect people with each other but then the system that has a different value that came out, which they didn't think of it. And then you after that you ask is this a correct value or not, so the technology itself.

So in our case we started making this because we saw big opportunity to make robots better and that's something that I think we get confirmed so far that's what people want, as that keep on ordering.

Technology itself is value agnostic. Except for a atomic bom or some crazy things, generally a tool. A tool you can use it to fix a bicycle of hit someone in the head

So I think it goes with many technologies. So you always start with value system about a technology or it can possibly do, but you don't always have it under control what it actually do. I think facebook is a really good example saying hi to your grandma too information warfare. Who expected that. I think that it is hard to predict, you can 't always predict the future. What was it in chemical terms, entropy always increases, like that, then it goes here too. So that means that you fundamentally cannot know what will happened. And the same goes with technology. And the only thing that I think is different from with technology from other things, is that technology is often a catalyst for scaling. Often technology help to do things better, more efficient, quicker etc. So it always scales. So whatever good or bad you put in, always it scales with that.

Q7: To what extend did you already implement this dimensions into your business.

I think in all honesty, quite basic, so I think we try to think of course, and we try to observe and take good decisions and try to be clever about it. But the dimensions in itself, so what we do try to do is to think about balance between exploring and executing, that's something we do actively, but we are still in a relatively young state, so that means we, yeah every day is a, well I won't say struggle but it's, we just work very hard and sometimes look back and hope that we did the right things and otherwise try to learn from it. So we are not really in a phase were we can give ourselves the time to really reflect on how do we do things. It's getting better but we're more of a roll up your sleeves, their face. Definitely, not fully. But you can see the first hints with a bit of optimism.

If fully implemented go to question 8.

If not fully implemented go to question 9.

Q8: Which method and how did you implement inclusion within your business? (Same question for the other dimensions)

And the method you used for inclusion is it just different type of people from different regions, religions and background and etc. to create that their diversity within your organization.

Yes and it's uh, so we're at the moment we are so internationally. I won't say that we actively search for people that are non-Dutch, but we just search for people and then

someone could come by and then we say we want, to join us and it's so we, so to me that's the pinnacle of inclusion that you try to look beyond.

So that means it is about the quality of that person you hiring the skills that he has and what he can bring in.

We like English, so English is the language in the company.

Responsiveness: That's something we try to actively steer on in the I our development projects. So in practical way, try to be very practical because that keeps it fast. So we either when we do projects, we either want to explore something to figure out what we have to do or do nothing or we build something that means so we know what we want. It's basically 2 problems, one we don't know what we want, let's figure out. The second thing is we know what we want, now we're going to build. We want to make this distinguish quite clear, it's also helps the team of course because they know what to do. And it also helps the execution.

Go to question 10

Q9: *What are the factors that prevent you to implement inclusion within your business? (Same question for the other dimensions)*

So lets go through all the dimensions.

Inclusion: So actually inclusion is a good one because we so we are actively hiring for inclusion, so we have got about half of the staff that we have is from other countries other than the Netherlands. There is also sometimes some **communication issue** generally. It's actually really good thing cause you get all kind different opinions, different viewpoints. Uh, yeah. So I think in that sense where I work quite well, we're also very flat organization, so that means that even though I'm the director, I often get, yeah pretty harsh feedback even from the youngest people in the company. And I thanked them for it too. So I think it's really important, we're doing well on that actually.

Responsiveness:

we **know already/everything** or **have the knowledge and time**. And **implementing clear definition to organization is difficult**.

Anticipation: It's something that we are learning as they as a start-up you get so many opportunities and challenges and everything and what we have learned and this is especially I think in a management team. We had to learn better and better, so we really had to make that shift from saying yes to everything and failing at 80% too, being way more selective thinking through all the different options. So I think this is more a, I think this is something we will do more naturally, uh if we by working more together, longer being conscious about what went well and what didn't. So this is I believe this is something that will say come up in the in our tribal knowledge in our way of working. Reflects a look back at, so that's something we try. Every quarter we try to look back at what we do, and was it good or not.

Can you tell me the factors that prevent you to fully apply this within your organization. Or the factors that will lead you to do it.

Reflexivity: Since I guess part of what makes it difficult is that, so what happens so yeah, we started and then we kinda went on and many things happened and we're now trying to almost figure out the values. Uh or reinvent our value system about technology and about the impact of the technology and about the organization mostly about the organization actually. Uh, but it's now, since we're doing, that's relatively late we you could argue that we should have done that way long ago, but we're trying to it now and it is just difficult. It's hard work to do next to all the other things. So it just really we have to spend the time to be active, actively communicating with the team and figuring out what is important and why what it impact is.

So basically more it's time based, that makes it really hard and is it also more the value of the technology itself, because I can imagine that oke I'm making a product then I have a certain goal and few certain belief or certain value for that innovation you have already before you start making that product. And then do you think that part is missing within the organization. The technology itself is hard as you already said you cannot thing about everything that's difficult. So is it that side that needs more time and attentions or both of them, even the value of you're self that you have that can change.

Yeah I think well actually both to be honest, so because it sounds so logical. But we actually so the values of the people that's quite hard to find out. But also the value of the technology. If you look at this over time or thoughts and insights have changed quite a bit, so we're doing a new technology in super new market. So that makes it not so obvious what really works. So for instance if you haven't uh just making this up, if you have a like a 3D rear view mirror for cars, you know we've had cars for ages, because I've had rear view mirrors and ow you go from 2D to 3D or uh that's actually not true, but then you only change a small thing on something that's already there and what we do is we go for a new market and new product which is a newer way of working. We find sometimes at the customers actually get more different values from it than we thought. So we have also it's constantly we have to look at the market, this customer what are they doing is it a say prototype of a bigger trend or is it just because they chose some part of things. Yeah so this, and to me it boils down to basically two product market fit and how the product market fit is, that's something that we are for six years already looking into it almost on a weekly basis, doing the right things and if we have new insight. **How do we we tap in pools of values that are not so yet unlocked. and how do we find specific customers problems that we uniquely can solve.**

And is also another factors that the involvement of the society is less

No I wouldn't say that because it's we have pretty good relationships with our customers, So we can get loads of help. So it's not that they order and we don't hear anything for a year and then they order another or something like that. We work quite closely with him.

So you het in touch with them also like trying to get feedback.

Q10: *What are the factors that leads you to implement inclusion within your business?
(Same question for the other dimensions)*

Inclusion: **different views and opinions.**

Responsiveness: **So I think we could, we could be. So we now do this, we try to be explicit about this, but we don't always do it so clearly, so I think that if we had more say time to reflect on these things, I think we would be able to do this better.**

Could the implantation also be limited due to the lack of knowledge.

We only have so all of people are at the very least bachelor, but mostly above that. So I don't think it's a uh, it's the concept is not too complex, but I think implementing some clear definitions and agreeing on them and implanting it through the organization that could, there could be help.

Anticipation: **working more together, way of working, more reflection.**

Reflexivity: **Product market fit benefit**

Oke now we go to a more general question

Q11: *Are there any improvements/idea in general that would have helped your company to make the implementation of the dimensions easier?*

I found it difficult because I think in hindsight it's easy to judge to say yeah we should have done this before, we should have done that. But I also think there's sort of like natural order of things building a company, you don't implement SFP on a day for instance and same goes with this. I think it's good that you go through a, in the beginning that you scramble to get all your customers and scrambling development down and do all the non scalable things.

For example usually a lot of start-ups are connected to incubators for example in Tuedelft or Utecht. But do they provide certain type of course about this before you can start even.

Well we did it, so we went through HighTechXL in Eindhoven. We did not have it at time as far as I could remember, I'm fairly certain that they do have it now. Actually there is one, so I think so the points that you asked will fairly focused on at least in my view on the organization of the company. But if you look at this in a slightly broader sense, I think what investors are more looking for responsible companies. Even if you do XYZ that you till support one to two UN development goals and some direct way, simply because their LP's asked that basically, rich people want to make their money count in a good way and also a pension funds want to make sure that their money is spent I a say long term wise way, which I think is awesome step by the way, so if I look at what's happening now at hiding, so always, you know pretty well, I think they are much more focus on that and then they were before. I think I'm just, not 100% sure.

Lets go to the closing questions, can you just provide any feedback regarding this interview.

So first of all I liked, so there was, it was way more philosophical, actually then I thought. So I expected it to be much more about things, how do you handle ethical supplier, right

materials. But it went much more at least for me on the how do you organize, it's like the meta level.

What I wonder is so, what I found from, say from my daily reality. I did find it a bit hard to connect directly to the terms, so the terms into the concepts. SO I really had to think through, so what is how we handle that. It is one or two layers away from our normal reality. DO you understand what I mean?

Yeah, its like you don't feel that's already in your system. It's like something you have heard about it somewhere and it stays there. Some stuff are know and integrated in the system fully, and with this we really missed that.

Yeah, so the problems is also we **don't have luxury to look at** ahead. Sometimes we make conscious decisions to brush problems under the carpet, knowing it will pop up, timestamp, but we simply don't have the bandwidth to do it now or we want to do something else. At some point we worked with some software bits. We now not anymore which we found out later we couldn't use in our product, those kind of things. You've got like for the moment, oke now lets leave it in, we'll fix it next week or next week and then or suddenly blows up and we had to solve it. It was minor thing by the way, w could have solved it immediately in two weeks and now we had to solve it later in three months. But this shows the reality it's not that we don't see these kind of like Facebook, they probably saw this privacy thing coming a mile away we thought yeah, we can either try to proactively solve it now and not know exactly what the problems will be, or we can just push on and because in start-ups it's all about growth. And uh energy not spend on growth is can be perceived as is often perceived as in like a waste, and that's what makes it, yeah a waste of time. I think so, you can always get more money but you can never get more time because the markets and the world goes on.

Is it also that you're afraid you're missing the important point to get in that market because you're waiting for the right moment to come in to the market and really focus on that and missing the other important points.

So the way we approach is we just from the beginning we spend every minute possible just, basically becoming better, better product, better sales, better customers, better solutions. I think in the end also that's where you win and all the other things. In this model, I think if you're in a slightly slower growth model, then there is different dynamics. But in a start-up model you have to really perform otherwise you don't get, you don't grow enough and you don't get VC funding. It's not so easy to as much as this is important, it's not that easy to always spend the right amount of time on it.

Is it also maybe because of for example you have a new idea, you don't want to share with everyone because you're afraid someone will take it from you, of course you have certain kind of patent or whatever, but still you're afraid to give it away and with this, being inclusive and anticipation, including other parties, is that also a factor that can be like, hey let keep it slow and we will see it when we really are settled in the market.

I think not so much, so we basically with out IP, in the beginning we were very close and later we were a bit more open and but just on the key IP items. No not really. **It is primary how do we spend our time.**

Maybe it is like that because you're a small company especially in the beginning. And you can not do a lot of stuff. And you think I need that product and everyone need to hear about that product and other things come later.

Yeah but ironically, I think if you would spend say if spend one, what I would recommend young companies to do is to spend one day a month. Yeah probably they won't work, so there it will probably lose. One day a month reviewing your one a quarter reviewing your strategy, your values, your purpose these kind of things again. You could use with that it makes it much easier

I have no more question, if you have question or whatever kind of questions outside of this you can ask.

I am curious if there is something you can show about the model

I will send the final report, but this research will not create a certain model, but will give insight in the meaning of the dimensions an how they are implement and the factors.

So to me to be really useful in all honesty, I think it must be one level more tangible for us and so we have really translate this to what does this mean for people inexperienced. We expect from people what's the culture and norms we want to set, but then once we do that it might be useful to bring it lets say in our onboarding material, what we want people to do and how to work together.

Thank you for you time and it was really interesting

Same here its really great thank you, you really made me think.

Company 4:

Dankjewel dat je mee wou doen met dit interview, ik zal eerst kort uitleggen wat doel van het onderzoek is en dan zullen we beginnen met interview.

Q1: Could you briefly explain your role within your organization?

I am the founder and the CEO. Do you want me to elaborate little bit on the role itself?

Yeah. Explain it.

Uhm, I started as a founder and it's key as a startup that you, did you all develop a good team? If all different dimensions of company in in a team? Uh, I'm a tech startup on the charging infrastructure and innovation on charging infrastructure. And uh, besides to see overall a we have a technical officer and innovation product developer.

Q2: And how long have you been working on this position or role on this, your Co exist?

Exists from December 2020. And as a start and well, we are now in the in the kind of scale up phase. I started the loan. We merged the start up with another start-up company, so we build a team and from this team on we will develop further business.

Q3: how you are involved in important decision making processes

We take that the most important we take this these kind of decisions as a team. We have a smart, a management team of three persons. Yeah. In the functions I mentioned. And we take all the decisions themselves, and we do. We also decided that we are the company owners. Uh, we designed a kind of a management structure and also formalized how we how we take decisions. When you were three, it's always there. There's a 2/3 majority. I make a bond with one of the guys that I have a majority. So we thought about this, OK, how we make the decisions, but basically, yeah, it's part of the team.

Q4: can you give me an explanation? What responsible innovation means for you?

What comes down to what we do? It's in the uh, we work in the energy transition in our company goals. Uh are, let's say our company. Why? Is a, uh, responsible mission that we want to a contribute and accelerate energy transition. Uh, with the result that. We are we create a more leefbaar environment. I don't know the English term for that. So it's uh, we innovate charging structure so the use of the charging infrastructure at companies will be more efficient so they can serve more electric cars. So it's uh, we innovate charging structure so the use of the charging infrastructure at companies will be more efficient so they can serve more electric cars. So it's uh, we innovate charging structure so the use of the charging infrastructure at companies will be more efficient so they can serve more electric cars.

Yeah. And basically also then it means that all the steps you take to reach that goal. Is there in each part or a certain type of a review on whether you did something right or not, or uh. But for example, if you have an idea, you start from a of course idea generation, and then you both up to the market phase, but every face has a certain kind of responsibility. And is there also is kind of review within each phase you go through?

The app. No, no, let's say on each decision. Uh, it's this. This fishing is embedded in the things that we do. True. It comes down to scoping and what we focus on and what we do, what we do not. While working on innovative charging infrastructure, it automatically serves, let's say, the company goals because we focused on that specific aspect of the energy transition making it. Accessible. Uh, that infrastructure is available in terms of there is infrastructure, but also there is sufficient. Electricity to load cars and you can also have the infrastructure at places where without inefficient it's not possible to charge. And that's our business model. Uh, in terms of what you refer to your question is we want to accelerate. The energy transition. That means that in every decision we take, it's important that it's scalable. Uh, and that's that. That is something we take into consideration when we make management decisions so. Uh, it's focused on volume up. Scalable solutions, not just for a few situations, but. On the situation on a on a larger scale and our business model is designed surfing that. Uh, the technology we developed is also designed to serve on that because it's. Our company philosophy wanna make impact as startup. And by doing that it it should be scalable.

Q5: Yeah, of course. Yeah. OK. Uh. And then let's go to the dimensions of responsible innovation. So inclusion, responsiveness on patient reflexivity, did you ever heard about this?

Yes, I have a. Uh, I have some clue.

Yeah, so partially, let's say a little bit, yeah.

But make makes. Yeah, we need to make sure that we have the same understanding, but yeah.

Q6: So basically the next question was, can you give me an explanation what inclusion means for you or for the company?

Inclusion

So with inclusion think about like including different parties into the innovation from the starting phase, still the bringing it into the market and gaining different ideas views and things like that.

Well, two aspects pop to mind. first is inclusion is. I'm uh aware of the importance of having an inclusive management team, which I mentioned is that we bring. Uh, knowledge, expertise to the table. Uh, which helps us create more value than on the individuals, in terms of experiences are or abilities are within this team to make it a successful team.

Yeah, so trying to reach a diverse team basically.

Yeah, uh, inclusiveness is also that, uh, we are building if a supply chain and for us, it's also important that uh we use companies or sometimes we go to companies who have will work with people who have a distance. Uh to the to the labor market. It's pretty bad translation from Dutch. Uh, uh, but uh, kind of social work that we involve for the work, which can be done by people who are have limitations in what they can do. Uh, and if it's possible that we

outsource, we also look at that aspect. Because, but that's, that's what we think is management team. It's important to have also impact on the on the society.

Yeah, OK. Yeah, look and then responsiveness. So basically focusing on a certain type of reactive attitudes. So it is, it is related to transparency and accessibility.

Most efficient.

Uh finding out certain kind of risk during your invitation. What do you think about that?

Finding risk of innovation.

Yeah. So basically it is about finding out the risk during an innovation and reacting to that.

For us, uh, in the in the market of charging infrastructure. Uh, they are really big players already active in that. They focus on mainstreams market segments. And our focus is on innovation and on companies. Our business model is also. Uh, we cannot compete too large players in the market, for example, when there's a public offering from a local government or from the airport Schiphol. Public offering for 10,000 uh, chargers, we are too small to compete in in that segment. So our segment can exist if we work together with all the parties in the industry. Uh and are innovative. And the main risk is a if that if we are not continuing bringing and new concepts to the market, yeah, we will be eating or overruled by the biggest parties, for example, Shell. It is also focusing on new energy. Uh, they have more market power than we have or infesting power, so we need to be agile and smart. And uh, we constantly. See where market issue is developing?

OK. Yeah. The next one, can you then give certain type of explanation about anticipation? Yeah. And that's also certain type of way of thinking about, uh, the other critical concerns and try to find the right solutions or find the right opportunities. Can give explanation of what that means for you.

Uh, it means to us is that we are an innovative company. Uh, that the biggest pitfall. Can be that we developing something which is not ,Uh, where there's no market fit. So what we organize is in the market in, in the validation of our products, we really see what our competitors are developing in the market and worse marked readiness. For our products and what is the demand from the market, I have a student who graduates on this approach. Uh, he's investigating, how these markets will develop? 'cause it's highly promising that there will be a huge demand for charging infrastructure in the Netherlands and in Europe. But market timing is crucial and we had a concept and the markets, validation learned us that it's still too early for discount for this concept other than let's say the early adopter group there Yeah, experiencing. Uh, already pain and issues, but mainstream, not yet. So yeah, we adapt that to our strategy and our strategy in that sense is agile. We take or uh part as part of our routine where we went there we were in a starting business. We have uh on the monthly basis kind of a check out check-in where we stand compared to what we see, what what's what's developing 'cause this this market is developing on a on a certain pace. And we want to be agile on these developments that that's our competitiveness compared to Shell and. Uh, I'll responsiveness is is high. That means that. If we get a uh requests from the market, can you do this as well? It's not there. It's not developed, but we can develop it. And uh, our advantage that we are small

and short communication lines and we have the expertise in House to develop example new product with hardware and software with duration of a few weeks. And when you ask a large company then you have to deal with departments and they work with specialist and develop time and the lead is much longer? And that that's our that work is what way she is our competitive advantage.

Yeah. So basically it is trying to analyze the situations and reacting on that. On the right moment, basically that's the once patient for you. Then as a company. And trying to find the right moment to pop into the market basically.

Yep. And what we see is that. To give an example. We have a discussion. With a company is active. What will be the old market, they work on well, uh, spare parts for cars. For electric cars there is much less of this market, this will diminish. So they are in the process of exploring new business models. And they need. Collaboration with parties who have expertise and who are agile because they assessed that their company is just too big. And the people who work there, I've worked for more than a decade in this whole business model and they are not able to step outside and think outside in. So it gives us a also a license to operate a license to exist that we are responsive to market segments and our organization is lean in the sense of adapting. I do use and then the in developing it.

Yeah. OK. Uhm, the last dimension so reflexivity. So basically reflecting on the values and beliefs. Uh, that you have basically as a company or the value or beliefs of the innovation, uh, trying and then then basically you have two orders. We have first order reflexivity and 2nd order. The 1st order is a basically more about learning the goals and views of the innovation and how to achieve that in the best way. While the 2nd order focuses on the value system itself and the values.

Sorry.

From the value system itself. So yeah. So on the technology itself.

Is it the company value or personal value?

Yeah. So that's more the 1st order where you have a general values and goals to achieve that innovation basically. But the second one is more focused on the technology itself that it has a certain kind of value as itself. Uh. And then? Then you want to see whether this meets with the value of the society. So for example, Facebook OK, their value or belief was we want to connect people from all over the world. But then the system itself, the problem they got with privacy. That was something that's inside that system, which you cannot take out basically. So it's technology has that you have a view on value on certain things, but the system itself or the technology itself gives also evaluated and you try to match. Of course there's two, but what does this reflexivity for you mean?

Yeah. Well, when I want to see that in in dimensions, what I see is, I think that people who will start at start-up. Having idea that they want to pursue and to see how to make this a success. But also is kind of. Uh, inherent, Uh, and motivation to make impact on something. And when I reflect that to our company. The disrespect of having impact on, Uh, the energy transition is a really mode failure for our for our company and for our team. This this brings us together and we are aware of that and Uh, I think because this

aspect is very important to build up our organization. As an example. Uh, I could earn more money in the work I did. And I worked as a manager or director in large companies. With a lot of responsibility, huge teams. High status with company car and secretary and stuff like that. Uh, but my decision to work at the start something for myself. Uh, was driven by this kind of internal motivation and that's what we also seeking in the, In the other team members and the partners. So that's the internal motivation. It's also a driver is that we build a company with company values. And I've worked in several start-ups and several companies, and I have learned how important that is. The company DNA is also, Uh and an important aspect in the way how we work, how we trustworthy and do we say what we promise, We are open, we're transparent. Do we have these kind of things, that's really important. Also, it's kind of motivation, but also in the way how we work and I've learned that this is part, consciousness is very important to build up a successful start-up. Uh and lot of people have this kind of motivation also to start a start-up

Yeah, it's not always about the money, yeah.

Because it's it's off the beaten off the beaten track it it's. Yeah, it's interesting to see what drives people, when they have their comfortable position in an uncertainty, etc. So these drivers and that's where we find each other in our stock.

Yeah. And do you have also, like reflection moments like, OK, you have of course you have certain values that you want to reach. You create a certain type of system, but you also reflect, hey, does this system the value of the system meets the values that we have and does that also meet the values of the society?

Yeah, society is up there, It's the impact you make on society. Yeah, that's also a kind of check in, Check out. Hey, where do we stand, we had this idea. How do things go, Uh and when you define your goals on a more, Yeah, in intrinsic. We say, OK, we work hard, we have fun, you make impact and. Uh, we are happy when we come up with new solutions, new things and that's the checkout you make on a formal level, OK, are we still happy, still on the right track or not. And but how does it feel?

Yeah. And it's also like basically also looking at does the innovation that I have has a positive effect on the society then then you look also on that set and.

Yeah, it's it's also that's also part of that check, yeah.

Society is the impact we have check in check out, we stand here how do things go when you define goals on more intrinsic, we work hard we have fun, we make impact are happy if we come up with new things and this is the check out, are we on

Q7: Yeah. OK. Uh, OK. And if you look at this dimensions, uh, to what extent do you think you already implemented this in your business? It's not like fully or partially or?

It's uh, it's embedded in our why. The uh, let's say the impact on society is we want to make a difference. Our why is that, we want to create a better environment and it comes really down to uh, our believe that we want to leave the planet better than how we found it. That's the underlying value. So yes, it's the check you make on how are, how do we achieve our goals. It's not formalized. We OK, let's. Let's, let's plan a teams meeting and we discussed. On the ratio work, what's your impact on society? I think it's because the

things we do, we have an impact. Yeah, it's on. Uh, yeah, accelerating electric cars at the use of electric cars compared to.

Now what they also see with other companies is like, OK, they say we heard about this dimensions, for example inclusion or anticipation. Uh, not knowing exactly what it means, but if we look at a further in deeper into it, which is already, see that we have implemented it in our business without knowing it. So that also what I feel now like, you know this you try to implement this and every time you try to do it better and better and better step by step then basically.

Yeah, that's what I'm trying to say. It's it's, it's part of the business model, I mean. You can attract people's. Yeah. OK. This is a real huge new market. I want to make money in only part of that. Uh, but our core values are also on having impact and making the planet better. So it's not only, let's say, making a lot of money.

Q8: No, not true. Yeah. OK, then we go a little bit more on into the method and on how you did it basically. So if we look at inclusion again and uh, which type of strategy or method you use to include that within your business? Inclusion. So yeah, increase. Yeah. So, but taking in account to all the parties and all the ideas, the creativity, the opinions, the voices of everyone, is there a certain type of strategy or method you use in order to have that within your company? Maybe set of rules or something? Or is this really open or? As a sort example that there are some companies, they say when we hire people we have a one person that hires people. And I said to him like you need to hire one person from different each different area. So you have basically Europe, Asia, Africa and from each area you take one person uh we want equality within women and men and in with their religion also different kind of religion. So you have tried to create a diversity within your company that's a certain type of way to do it.

Yeah, the we have another kind of formalized way of doing that, I think it's. It's part of the core values and if we look at let, let's say, our team and the people who work with it, we will, we look without prejudice to people. It's so it's not like, uh, OK, we have a lot of young people. Let's hire a 60 plus person. If a 60 plus person will apply to work in a company which is kind of rare because they're not focused on startups, but if that could be the case. We are open to see what people bring. We had it. We had a discussion like that. On the father of one of our shareholder, he is over 70 and he's still he's still working. And that it's his personality. And he said, well, he retired. And he said, well, I, uh, really getting almost depressed by doing nothing. And that comes down to let's say our values we look without prejudice in that sense, but not in the way that we say, OK, we need to have all kind of backgrounds in our team. I think that this will go with it, but when you look at a person and we look at. Uh, bringing diversity in the way of thinking in the way of approaching, etc. Building a accompany DNA.

Yeah, trying to just find the right one who fits within the idea of the company then basically, it doesn't matter whether it comes from Netherlands or Germany or whatever place. And it's also really opened then, yeah.

Responsiveness/Anticipation: we discuss within our founder team, it is important to have internal values/guideline when making decisions and we follow that. Risk is what do we see as important and what brings success or fail. Study market, risk assessments and reacting accordingly on that. The main risk is that you have alignment on the market, how can we make impact. Put all perspective in discussion in order to create product that fits the market.

OK. And then for your responsiveness, so then let's say trying to find out the risk during innovation and reacting to that. Is there a certain kind of method you apply?

Apply for methods for that. We **discussed the these kind of decisions**. Uh, with within our founder team and it's in every it's important that you have your, let's say, **internal guidelines or internal values when you, when you make these decisions**. Uh, we we followed that basically. So do you risk or their response to the responsiveness is also OK. What do we see is important and uh. Yeah. Well, what brings success workbook by makes us fail. It's part of we are small company so we produce around products, yeah the. Uh, if we if you make a failure in technology and we have, let's say, over a few years, we have to replace European, have a product recalls, there will be the end of our company life. Yeah. So we were sensible to that that kind of risk taking.

But it's like you said earlier, it's like you're studying the market and try to see whether your product still fits within the market and try to find out if there is a risk. And then? Find the solution or the opportunity for that. It's more that way.

Yeah, that. Well, there's not one single risk. Uh, the main risk if your innovation driven that's important that you have this alignment to the market to see how we can make an impact with new technology. We have technology developed and it's very handy, but it's not marked. So we brought these angles in into the team. **Added secure that we have all organized all perspectives in these kind of discussions that we reduce risk**. So that's uh, innovators as well I can make this, et cetera and then the person who talks to markets as well, we need to focus on other technologies because that is the logic next step for companies and clients.

Yeah and are there are some risk assessments that you need to do as a suppose, but I'm working for complying, OK? I'm working on a project and the following, uh, or designing certain units, then they say, OK, once you also to do a risk assessment on it.

Yeah, we, we do that, uh. And we do that from the angle of an investor or a bag because we can have the perfect idea. We know it needs to **be validated by , Uh and investor** or from the finest perspective?

Yeah, **risk benefit, economical assessment**, more in that site.

Yeah. Yeah. And after that, from that perspective, we look at, OK. Hey, uh, is this uh, can we take this risk? Is the return on a compared to the risk we take sufficient if we do a guarantee on the product, but does it mean how long and it's so from that perspective we do that?

OK. And then, uh, under reflexivity, is there a certain kind of time, for example once a month or once in two months that you have and reflection moment on the values you have as a company, but also on a let's look again at our technology, does it still meet that values and or do we need to change it?

Yeah. Yeah, we have a uh, a formal, informal moment. We say out. Yeah. For us it's important we work hard. Uh, we have fun, but also have a kind of informal, formal informal moment that every month we will have a dinner. We don't talk about the day-to-day business, but we don't we will reflect on. Are we at right track and we still happy in the things we do is our growth path growth pace is that is that still oke, How do you deal a et cetera, and that's a formal informal reflection because. When you are in we were getting traction on our business now and it's very easy to lose track on this, this this perspective.

Q9: And can you tell me that? Uh, which what are the factors or with what are the points that prevent you to fully implement this dimensions for example.

So I think that's the, main risk in this is that when you come into a stage where, the daily operations get asked a lot of attention because you have a process which is not, for example, a production process we because it's not. Yeah. So, uh yeah, needs improvement or you will get the big client, which brings in a lot of work to get it done and get the data. Data on Sony Detention is on the way. You are seeking this accelerating and growth. After company and on the other hand, you need to till reflect on is everything oke because I've experienced that if you do not do that then you have a risk that you will end up, uh, yeah, the in a situation that things are running out of hand.

So it's more like a time based the time and growth that the prevents you to fully focus on the other side let's say. Especially in the in the first phase of a start-up.

Well, it's also important that you will take space. With each other to see are we still doing the right things, and uh, in the in the in the growth phase, uh, get in start-up it phase in the beginning it's, easy. Yeah you're working on your beliefs and all your idea here and this is where what you started. But then when you want. So, uhm, grow and operated more than other factors will come into place. Large clients said demands, etc. So I think that that's more critical. Defined in the in the in the in the growth path of a start-up you have this valley of death, 123 it's in the theory. But you can also apply that on the values on the, on the impact you have. You can end up when not doing that in some things about I I'm exactly doing the things I didn't want to do. I was part of a, also a start-up and memos facing walls. I want to grow. I want to bring in the diversity in teams want to set the DNA of a small team. I want to be agile, I came from large companies who had to deal with a new business model or a change in the business model and always change or transformation was part of the work I did it. Now I want to be agile and et cetera and well this was we are quite a long runway and we are ready to lift off and I ended up in reorganizing and this is not what I was looking for so that that can happen in the company. So therefore I think it's really important to have this value discussions in the teams I worked. Uh, with the most the in the most. A fine way is. Where we agreed on core feelings. Ah OK, this is what I want to bring to the team and bring that discussion to the table. Really accept exaggerates in the work. Uh accelerates the work how you work and also with work pleasure. So that's the check in. Check out. We are constantly doing.

Q10: Yeah. And basically if you look also at the factors that lead you to implement this dimension scale, look, as many as you mentioned already, it's like oke, you want to reduce the amount of risk also. So then it's nice to have that reflection moment or that the yeah, the group comes together and look at the, the risk analyst analysis and then try to find a resolution for that. So that can be one of the factors that why you want to implement these dimensions. But do you think there are other factors also that you need to take in account, why this dimensions are important for a business or for company.

Yeah, I think that's what like what we call the company DNA, it's. How do you define what's really important to you? And uh, I think we're also in. Into a coming into a new generation of young people, they think different differently then. The people from my generation, I'm 52. When I started working, I had one goal and getting out as soon as possible at a salary of €100,000 by only yearly basis. That's why I worked for a status and. The the generation now it's more about inclusiveness is OK. I'm happy if I. Uh, I can have a apartment and it can go the 1st fall and have impact. I'm still the idiot. Who the kind of awareness and if you are able to communicate on that awareness and where you really stands for. Uh, that helps us bring building a an organization. Uh, where we're happy to work with that it's not our purpose that. So let's say the old perspective, if my person uh. Uh in the age of starting a business at that time, when I would have started the business, it was OK how can I make as much money as possible at? Now things are different, and yeah, it comes to impact and how you. Also communicate on these on these values. And the, the, The funny thing is that. When I talk to my children, there are the at the age and and going to the university. Uh, they have complete different perspective on social and from society perspective that I have. And that's important. That's why I think it's funny to see how you can. Contribute or add to to let's say. Do this perspective, I think that people want to work with us. It's not. Only about salary.

No. So I think now it's in general, it's like that, yeah.

Course, I bet the other the other aspects are even more important.

Yeah. Yeah, that's that's right. That's true. So it's basically more the difference in generation you can see. So the difference in the goals in the fuse and how the way of thinking and what they want to achieve. That taking that in account will be more helpful for the business also to make it back bigger or better or whatever, yeah.

Yeah, it's it's not only the business driver, but it it comes to the values we bring to the table. It it coincides that because we have the same drivers and our driver is a green world better. Or uh liveable world. Yeah, you have to reflect on that. And if you do that or structural basis, I think that you have appealed to people who have the same ideas.

There may be the awareness that we have seen that we really messed up the world for long periods, that we need to fix it now. Maybe that's more the way we think now or see it.

Q11: And in general, are there any improvement or a idea that? If you have known it, that could help you to to we have implement this dimensions to your company, a way easier. If you have known it about it, that it makes it easier to implement it. Basically, for example one told me one company told me like, oke, we started the business, but no one told us

about this at all. So we just focused on something totally different and then later on you came across this kind of stuff.

Now The funny thing, it's a it's it's a part of a process in in a start-up. I part of Utrecht ink you took in incubator. Uh, I'm inexperienced. I've worked more than 30 years, and as I mentioned in big companies. Who in transformation from my old business model to new or there is an impact from society where requirements on kind of services, public services when different or different legislation where, business models changed or whatever so. That's the pattern in my career.

So can we say the inexperience or to experience?

Let's say in in in the startup process it's it's it is in this kind of validation is that. Uh, my my big pitfall is that I can think I've done a lot of things already so I can start up a new company. At at the incubator program helped me on this blind spots. Uh, but also help me develop kind of open attitude and kind of constantly monitoring and checking what is the market, was the market, what was the problem I want to solve it cetera. And it also helped me on ability and knowledge or what comes with starting a new company because it's not like you have been a CEO of large company or a manager of great teams that you can do this. Other way of looking in in in perspective. And that's why this is a common pitfall. Uh, but this program helped me in. Uh understanding and also yeah, it brings knowledge on our awareness that that you don't step into these pitfalls.

Yeah. oke. Uh, yeah. And then for the closing part more, can you just give up, Yeah. Do you want to clarify any question or add some extra information or.

Yeah, well, not, but maybe it's an interesting aspect, if you will look at it, it's startups. What, the more in general, without being too philosophique is that we are entering, Uh newtypes. Other times, Yeah, it comes through the planet of new generations and. Anyway, if you look in history, these kind of recognizable patterns and but on the other hand. Uh, you. You've looked at responsiveness and, Uh developments all society, and I think that. There was main drive for me to do things differently is. Uh, uh. The Society is changing, and as individual or you need to adapt to that and to be responsive to that, in order to be successful. Add a so you will take it from a kind of academic academic point of view. But I have a belief and it's all experiences, has nothing to do with science. But I never believed that. We need to be adoptive too. To the developments in in in what's going on, Recent developments in the Ukraine and Geo geopolitical developments in the it's so our values are also in that sense changing and that makes for me working in this kind of environment and. Uh, being more manager of that process order, then have a important role in the in the old type of company. I really see that this is their things are shifting anyway how we work together. How we work based on our cultural backgrounds, etc. In our business, for example. There are few. There are huge challenges. One is on the technology. We need to realize infrastructure for electric cars that are electric, Uh Transportation network is complete insufficient and we need to realize a charging infrastructure without the hands of people who can install it. At you see that. Yeah. Also in other kind of segments. Uh, yeah, that's a unique come up with another way of thinking in the most challenging and, Uh, in the way in, in the field I work in, in the infrastructure is also you cannot apply all models and always thinking into the new world. For example

Fastnet, you know Fastnet the infrastructure. They build the infrastructure on the idea of a tank station. Not realizing that most of the charging of vehicles will be at companies, why should you charge at, Where you could charge at your company. This is a predicament change. Which makes it interesting if the retry to think in the future and. Uh, and checking in your business, uh, uh, it checking in my business on today and what do we need, what steps do we need to take.

OK. Do you have any general feedback or a question about the research itself or something you want to ask or no?

When I sense from your questions, you are seeking in how to deal with a, let's say, also developments in society is it's. Uh, most of my my responses were. Uh, it's part of the the values it more in in intrinsic and in beliefs and so is it, there are people constants of this, I don't think so. We are kind of concerns on it. Uh, because we have a clear idea on how we build this, our organization, whatever core failures, etc. Uh, those aspects are, I think two kind of self-assessment and oke, what is my achievement then, then translated it to core values and building teams on that core value, I think that that's an important. I worked in many teams and also we failed on certain new initiatives because we have different kind of values. And it can be as simple as that.

Yeah, that's a good one too. And I think that also in account, but not every company sees it in a different way. And you see it all. So if a company is really young with the young CEO, then it thinks totally different as like you for example. So that's also nice to see the difference between that. Yeah.

Yeah, that could be and that, that's that's funny. If I look, let's say from an old man's perspective. When I started first working most of the startups are young people that wanted change. **If I think a lot and, Uh, they are not at conscience,** I think, as I've learned, I mean, I've paid. I would have done a completely different as now and but I'm in that sense. Uh, I don't see a lot of people from my, Uh age really starting. Yeah, I started because. Yeah, my main risk is. **Yeah, I have a family to support kids who want to study, etc. So there's a lot of pressure on me. Stepping out, let's say the safe**

That's right. Yeah, that's right. That's right. OK. No, that was basically the end of the interview. Uh, I really want to thank you for participating.

I see that it took longer than 45 min, but it shows also the appreciation and thinking along with you and your investigation. So my pleasure.

Exactly, exactly. And if it's finished, the report, I will send it also to use because I was sent to all the participants. Yeah. So you will hear from me. And if in between you have a question or we want just to know something, you can always give a call or send the email.

Yeah, I I'm curious. Yeah.

Well, just stay in touch. So yeah, thank you again. Yeah.

Company 5:

Q1: So the first part, the is about you. So the first question is, could you briefly explain your role within your organization?

Uhm, so he found it inside, which is a start it in Utrecht. Uh, which uh does. Maybe it's good to start first with what the company is. What we do is we make software for universities basically to measure competencies of PhD. So there is movement in academia which says, hey, publication is one thing, but the balance, it's kind of out of balance. So other things like that giving education, teaching. A patient care and medical centers, and federalisation so giving talks in the media or building a sort of company, those things are not really at the same value as publishing yet. And there's an policy movement which say we want to equalize that more. You want to get that more balance again because we kind of the balance is really out of out of, yeah. She gave a I don't know if that is mission. Uh, anyway. Uh, so that's what we start with. Uh, and my role is basically talking to uh, It is basically sales and business development. And so yeah, talking to to potential customers talking to other relevant parties that could help us. Yeah. Get a grip on this market and what this market is, how we should approach it, what are relevant. Uh, yeah. How do how what the product should look like, what the product should be. Uh, so basically finding the product market fit?

Q2: And how long have you been working in this role?

Yeah. So we started the two and a half three years ago, but with this concept we were like it's because we pivoted a couple of times. I think it's a year now.

Q3: Could you explain how you are involved in important decision making within your organization?

So we are with five people, of which two are more. Yeah, not part time because all of us are part time. But I put two are less active. And so the core team is me and two programmers and then there are other two programs which are less active, more like hey, guys, could you help us with this because that's kind of your area of expertise and your question was? Uh, what's my role in the decision making? Yeah. So it's, it's, it's kind of a yeah, it was more on decision making.

Is it mutual? Is it like one person that has all the responsibilities? OK.

No, it's mutual now. It's mutual indeed. So we do with the three of us, but I think I'm sort of in the lead because I'm the only one with a business perspective. Uh and uh, of course. Technology is following the market. And so at the market needs, the need of the customer. So and of course I have to check whether something can really be made and if it's really complex and what the cost, of course it's you communicate with each other. But I think, yeah, I'm in sort of in the making worse decisions, Informally.

Q4: OK, let's go now to the second part, basically. Uh, first question, can you explain to me what responsible innovation means for you?

Uh, I think making something that is of value for the client and not harming any others. I'm trying to relate it to our company, but it's a bit hard because no. Then maybe it's not. Uh, because we built a software that would help these years in making even wiser choices. For example, who to collaborate with? There was before we pivoted. But that would that would mean that people that have or software or even more competitive than others. Uh, but the point is that in the academia, a competition is an issue because there's way too much. Competition is kind of unhealthy competition. So we decided, like, hey, guys, if we're in building your software and we sell it, sell it to party A and not party B and party A huge competitive advantage over B, which is good for sales, but there's not really the movement that we want to encourage in the yeah, in academia because academia kind of wants to go away from that movement. So in that sense that's definitely something we kept in mind. Who's responsible innovation? And that's also, yeah, sort of. Why we made the pivot towards this new model.

Aiming to create something to be positive for all the parties basically benefit for all parties are not only one.

Uh, yeah. So uh. And not per side for all the parties. Uh. What? What's more on mine mind is then the greater good. So what is good for the greater good. So what we had before the pivot was not good for the greater good and what we have now is good for the great good, of course you still have people that are kind of hesitant to know what should we do this and it's my position not in danger because of what you guys are doing but I think it's a healthy. Uh, sort of, yeah. Movement and it's a, you're not increasing a systemic issue. You're gonna helping to solve the systemic issue.

Q5: *Did you ever heard about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation, and reflexivity).*

Yes, for inclusion, responsiveness

No, anticipation

No, reflexivity

Yes.....partially.....No.

Q6: *Can you give a brief explanation of what inclusion mean for your company? (Same question for the other dimensions)*

Yeah, I think it's about it diversity in your team, man.

Yeah. So different parties that are included from idea to the product basically.

And then responsiveness. So basically the focus on a reactive attitude, uh, relates to transparency as ability. Did you ever heard about that?

So response safety towards clients, to customers or like to movements in the market or any it's society or?

General, it's a finding out the risk of innovation and reacting to that. And so it's it applies to all of it. It's not only one.

I think, yeah, I think that's pretty is something that's very agile. So you respond to all the trends and movements and things that are in the market that are happening, running the society.

And then anticipation. Did you hear about that? it's about at the way of thinking about arriving at of critical concern. So try to find the right solution and opportunities that come across.

And how is that different from the first one.

They are connected, they are connected anyway, but the responsiveness is mainly focus on reactive attitude.

OK. And anticipation on preventing

Well, yeah, exactly. You try to kind of do risk assessment, this kind of stuff and try to find solution for it, but it doesn't mean that you are a reactive and have an active attitude.

Yeah, good point.

OK. And reflexivity, you heard about that. No. Uh, yeah. I'm just telling the words. But it I know that a lot of companies don't know that. But if I explain what this is and then say Oh yeah we do it in this way. So it's basically the values and beliefs that someone has during unit innovation and the value and belief that you as a person have but also the technology itself. That so, for example, look at Facebook, they had certain kind of value to connect people, but the but the Facebook self they the value of it, the problem was privacy. Which they came up later. So you see, the technology itself had this certain value, but we people have also certain value. So these two value should meet each other in a in a certain way.

So it's about personal and property values. Well, what do we see important?

Uhm, OK then. Now I want to hear from you. Basically what everything mean for you. So for example inclusion, if you go back to that first one again. Uh, can you give us sort kind of explanation what it means for you? So I explained you something, what's in the literature written? Of course, but maybe for you it means something totally different.

Uh, can you give us sort kind of explanation what it means for you? So I explained you something, what's in the literature written? Of course, but maybe for you it means something totally different.

Uh inclusion, I think, means for us getting all the right parties at the table. Uh, so everybody that has uh, that our solution has an influence on getting them involved. So for example or solution could have a bad influence on policymakers or on maybe the professors, the older academics that could barely influence their career. So it's a good thing to include them. So we also tried to do debt do not do we do that. I think, uh, I think what we chose to do is because we wanted to make our tool for the whole, for all academics, but in the end we decided let's focus on PhD or first because they have the biggest advantage of this solution. Uh, so let's start with them. And they are policy makers

involved, which are also old academics and. But you cannot include everybody. **It's it's uh, it's also a problem of your early adapters.** Uh inclusion is, of course, what you want to have, because then every draagvlak, uh support in the in the broad sense, you can make everybody happy at the start because you're trying to make a change in something. Uh, and some people won't like that because they are scared of their position because they have. Have gathered that position in the old system, and because you're changing system, you cannot make everybody happy at the start. So some people you leave out, you've got, I don't know if you noted the cycle of the early adopter early market that. Uh, yeah. So we start with you like early adopters with the yeah, even the one before that. I have got a name. Yeah. So, so yeah, so you start with those and of course in that case you don't include everybody because the yeah, 99% still leaves them out. Uh. Uh. But of course, our goal is to make a system that the benefits all the parties, the whole, you know, the whole graph. But at the start, you don't stop with that. That you make it really making me think about new things to do the discussion.

Yeah, and but especially in the beginning of our technology or innovation isn't then not important to include different parties in order to arrive at a good technology or good product. Even there is issues with. Of course you don't want to share all the information because you are afraid that someone takes it from you.

Yeah, I can imagine. But The thing is that, uh, yeah, if you do that, yeah, it can be a super long process. Yeah. **So it's stops it also about putting an experiment out there and seeing whether it gets traction and if you have to get all the right parties, all the relevant parties at some point on the table, you got a really slow process in decision making and development, if you put something out there, which is kind of the theory of started putting something out there, see how people respond and then iterate on it. Uh, yeah, that's fair. Philosophes don't align if you get what I mean. So I would love to get everybody involved, but then I get nothing done. Uh, because it's got super slow.**

Yeah, that's two months opinions too much. You send too much stuff in,

And if I get start something and people get adjusted about it and bit by bit people can't deny your solution anymore, so they have to join the conversation.

OK, so if I understand good, you implemented basically inclusion in your business but not fully, maybe partially, yeah.

No, because it's simply impossible in the early stages.

Then the second one, so the responsiveness, which focuses on a reactive attitude than uh, there relates to transparency as ability. It's also certain kind of finding out the risk and then reacting to that. So how does that what does that mean for you?

Yeah, it. It comes back to the start of philosophy. **Again it's iterate,** Yeah, So, If you hear something, you respond to that and of course you hear a lot of stuff. So you all. So they are contradicting stuff and perspectives that don't align but then as a entrepreneur you listen to both perspective or or all perspectives because it could also be multiple perspectives on the same thing and then you pick the one that you think is OK let's let's proceed with this. Because you can also zoom out because you're not personally involved

and you can zoom out and you see, oh, of course that person is that perspective from his position and that person has that perspective on his position, but. From the bigger picture where we want to go. Uh, we need to do this so in that sense, we do, yeah. Does that answer your question or not?

There's no wrong or a good answer to that is just what does it mean for you. So your view on it and there are different views, I have spoken to different start-ups so,

Yeah, so, so the response, yeah, so responsiveness, we do indeed we keep that in mind Uh, and I think I, the way we do it is indeed to get all the perspectives that that are there on the issue that we're solving and then not take once we like, but take the ones that are seems true. Uh. Make a guess on what we think. This is the overall real truth and tackle that one. Because some people speak from personal. Yeah, a disadvantage or advantage It's because of this new solution or because of the old system and you want to kind of door heen kijken. Yeah. See through that.

Just see through it. Yeah. Yeah. OK. And then for an anticipation so. A way of thinking more on the concerns you have and to find the solution and opportunity within that. Uh, what does that mean for you?

Uh, so for example, we, uh and we have the solution now, but we would like to make something that's even bigger because we think about scalability because otherwise, yeah, you become a really small company and that's not what we want. So we want to become a big company. But in that because of that you have to think about scalability and the thing we do now is we doubt whether that it's scalable enough. But you have to get an entry market. So we have to start somewhere so that people stop paying you and you couldn't. Yeah, you can give more time to the company and you can speak to more people, etc. You kind of get into positive spiral and so we do anticipate on potential benefits or changes in our software later on. Uh, so we do anticipate on, yeah, things that we think the future holds. But that haven't been spoken yet, so nobody said like hey. Uh, let's start with this and then go there and then go there. Yeah, but we just think, yeah, probably people think now, hey, let's start with A. But we are in our minds already thinking about B. And so how could we improve or solution further so it it? Offers even more value than just what the customers are currently thinking off and saying.

Yeah. Yeah. It's also a certain kind of the aim is basically also to create a certain understanding in the future, other issues or infection that you have in order to avoid a harmful situation. So can you also see that within your business that you are, so it kind of analysing the technology, doing research on that in order to be sure that in the future you don't make a really big. Mistake or have a you're in a harmful situation or.

Yeah. So you always think about, uh, to make yourself more scalable and so, uh, basic rule that I have that I heard from some time was. Think about 10 times the size that you are now built for 10 times the size that you are now, or think about 10 times size or now. Uh, so we think about that. So OK, we have one university now that's probably implementing your software. I do others knocked on the door basically by the way we don't make we don't make revenue yet just so you know. So we think about, OK, what would it be in that 10 universities sign up? And we we don't, we don't think about what would happen if

university sign up because it's way too much to think about. Just think about hey 10 universities. What does it mean that for our software. And it's hard. It's hard, by the way. It's not always possible, but it's something you keep in the back of your mind.

And you also try to, uh, yeah, basically to apply this in all the phases of your innovation. So basically you have from idea generation to production or to the market? Uh in each phase?

Yeah, so it needs always. Yeah. At first before the 1st customers just this first customer and you think about. And how it could be relevant to it. Because if you make the solution for one party at the question is would also be relevant for party B. So you try to build solution in a way that is also relevant for B,C, D. So you keep that in the back of your mind. And yeah, I think that's what you were asking, right? But it's it's not always ideal.

No. OK. Yeah. You try basically to see where it fits to do that and then.

Exactly.

Yeah, OK, yeah. And reflexivity, can you uh?

It's about your personal values in company values, right?

Yeah, basically you have two kind of orders of reflexivity. The 1st order is just a that you are looking at your yeah, basically the goals and the value of the innovation and how to achieve that in the best way. It's more from your perspective basically. So uh and the 2nd order reflects more on the goals of the value system itself. And and are the values that the value system creates correct or not? So here you see two different levels of the. One is more basically the beliefs and values someone has during the innovation and then and how can we achieve that in the best way that also is positive for the innovation itself. But then on the other side, you have the file system itself which has a goal or and that reflects on the goals that you have again of course and does that meet each other and and then is it also correct within the hour society?

So do the values that you have yourself or how you want to behave as citizen line up with this with the values that you have for your solution is that what you're?

Yeah, because says is, suppose you have a technology. OK, you're a more your fairy is too. I don't know. To make life easy for the people. I don't know. Maybe that's something you want or to collect people. Whatever. Yeah. Uh can be a good value, you know, and you try to achieve that in the best way and then, then and. But the system itself that you created has also a value that comes out which you didn't think offer didn't know. For example, that for Facebook, for with privacy and then you are looking hey, does that is that basically correct or does the value that the system gives us is that correct? And how can we react on that basically yeah.

So it's a translate it in or case it could be we build a competency model so that people know what they're good at and they have an easier time. Speaking that's out loud to their professors, to their supervisor, so it's easier to get. The tasks that they are good at and that's what we aim to accomplish, but the disadvantage of that could be that we haven't really thought about yet would be that people falls. Start fully depending on the on the more software and talk to each other. That could be a OK. And core value is just helping

the customer. We want them to have an authentic career, to do what they're good at. We haven't really defined the values in a sense that. We tried, but we had a lot of difficulty finding them. But if it doesn't feel right, you. Uh, so we haven't made it explicit. But yeah, there are implicit moral values that you keep in mind. That's also what you built a solution around. Yeah. But it doesn't answer it.

Yeah. No, no, it's it's, it's good or it's not bad. It's good that we will go more in depth. And so we will talk about that in the next question. Then to the to the next question. So basically, if I understand correctly, it is not fully implemented. Uh, it's more partially within all the dimensions and trying to implement it in the best way or as much as possible, of course. Uh, within the knowledge you have.

Well, watch out because you're making. You're making a bit of an assumption for my former field. Uh, I I would say we do a lot of that, but not explicit. We do it more implicit because it is about moral. So it's not about to be do with rationally, we do it intuitively because if, if it doesn't align with values or if you don't at this based on market, things won't work. Uh so. But that's why it's always implicitly there. But not explicitly.

Q7: To what extent did you already implemented inclusion in your business? (Apply same question for the other dimensions)

Inclusion: partially

Responsiveness: partially

Anticipation: partially

Reflexivity: partially

If fully implemented go to question 8.

If not fully implemented go to question 9.

Q8: Yeah. OK. And then to the next question is more on the method on the how basically do you implement it within your business. So again, if we look at inclusion, is there a certain kind of method or wait that you guys apply to?

Yeah, we, get the right, yeah, we try to get the right parties at the table at the right time.

And we also, because your solution only works if everybody adopts it, and it's only scalable if everybody adopts it, so. **Yeah, it's in everybody's benefit** to also mention because it's in our case. It's also in the benefit of the people that we work with the policy makers, for example, of the universities that everybody adopts it because everybody is happy with the system. So yeah, **we keep in mind their perspectives as well.**

And and the selection of the parties. Uh, how does that happen?

It's usually this, this decision maker, so the one that has the money and it has the authority to spend the money. Uh, and also to target group, of course that has to use it. And in your case, the professors also need to use it. Uh, but we don't include them in that sense we got. Because we include the PhD, because if the if the young people that really that that our core users are enthusiastic. They will tell their professors so that the we really need the PhD to use it, but we don't need per say the old people to use it yet we

don't care really about that yet because it's not relevant for our solution to be adopted. It will be nice if they start using it and if they're not essential for the success of our business.

OK. And suppose there is someone who want to invest in it or want to participate within it, is there a certain kind of things that you go through to be sure, OK, you can come with us or we don't want you?

Investors like that give money, or. Is there something that that we think about relate to values related to what? What?

Yeah. So basically, if you include some parties in order to generate or two in there, make your in order to make your product better for example. You you got make choices. OK, maybe there are three parties that want to participate and want to be involved in this business, but you're going to select one of the three and not all of them. But how does that go?

Uh, we go for the one that could help make a solution, It makes the world a better place. Uh, yeah, we focus on them. So the one that is.

So you focus on the core values of the a party parties which match the best to your values basically.

Yes, but some old professors might have the same values as well. But the question is whether they need or solution because they are probably already doing what we think they should be doing about tor something they should be doing. Yeah. So they probably don't need or solution because they're already doing it.

So then your product already exist in the market.

Yeah, the problem doesn't exist. So our solution is not needed, but for the supervisors that don't, uh, rate PhD on the way that it's useful like to be rated. And those don't dare. There's a problem. So PhD said have a supervisor that does it in a new system like the new way that they would b judged. Don't experience a problem. Because they already happy with the way they are judged, because the judges are already does it in your system. But the. He's used that don't get judged by the supervisor or going to a new system. Those guys have problem. So there's a need and that's what we tried to tackle.

Uh, and then for the responsiveness. So the reactive attitude that you have and the risk assessment may be that you do. Is there a way how you do that.

Responsiveness. No, I just saw an alarm. So that's why I was a bit. Let's check this, but it was not alone. Add responsiveness away. How we do that? UM.

Yeah. So there are different methods is for example the agile, the lean start. It's just to you try to find a. The weight of how you going to make a decision in your process and. And how to be reactive on that?

Yeah, it's, yeah. Yeah, all those methods are quite similar. In the end it's talk to users and iterate and put it out there and iterate. Uh, yeah. And that's what we do. Yeah, I think, yeah. Yeah, you collect feedback. **You think about the feedback like, hey, what is the**

bigger picture here and then you include the feedback he try again and you have this loop with duration, yeah.

And are you more a proactive or reactive?

I think we try to be proactive but in a sense, you also don't want to fill in a assumptions, because then you have to risk of uh or making assumptions. Yeah, but of course you don't want to put out ridiculous stuff because then you don't gain reliability. And so you want to make a you choose which assumptions you do proactively. You make correctively and you choose which assumptions you validate directly. And sometimes the proactive assumptions that you make, you have to validate them later on, but it's too early yet is usually different datum now.

And then basically the anticipation, uh. So basically that the way of thinking to arrive for critical concern and to link right solution to that. Is there a certain kind of way you do it?

No, no, it's that's intuition. You just think about how would that person probably responded. Just you try to emphasize with their position and. Yeah. What would what would probably happen, It is based on assumptions, but yeah, of course assumptions are. It's also a bowl of sound logical reasoning.

And is there, is there sort of a impact assessment risk benefit assessment that you guys do.

Uh, we don't make a swot or anything in that sense, we just. Uh, yeah, you, lingers or not. It's not linger. It's a you always think about it. It's always in the back of your mind. But. Not that we don't make it formal assessment of it.

Yeah. OK. And then for the reflexivity, yeah, so, which method do you use for that or how do you implement that? Uh, so that their reflection on the values and beliefs of someone during the innovation and the goals or it reflects on the goals of the value system itself. And do we meet what the fires of society or is there a certain kind of way for.

Uh No, not also not a formal way, but it's also it's your personal value. So if you something that doesn't feel good, then yeah, you're more compost guide you here.

And how do you know when a file is good or not good 'because? That's also question in my view some things may be good, but in your view maybe something is wrong.

Yeah, and. And that's the thing with values of course that that they are not good or bad, uh they can differ per person, although I believe that most people have a certain standard that is the same. Yeah, some people might think transparency is more important than some people is. Think that the keeping the harmony of the group is more important Yeah. It's how you rate them yeah. Yeah, there's no good or bad.

And do you have a reflection moment, for example? Because I cannot. Uh, it could be normal that OK, you have a technology and it's established at a certain moment, but then certain values refilled. Uh, which unintended consequences came across. You know we didn't know about that but it came. Is there a reflection moment that you need to go through that and then make the changes again and try to fit the technology again.

Yeah, if something doesn't allow me to values and people respond to that which they will because uh, yeah, obvious. And then then you will hear about it. And then of course, you adapt to it.

So basically feedback, if you get feedback from the uh, PhD students or whatever they asked like we don't, we don't like this or whatever, yeah.

Exactly. Yeah. And or solution is still so fluid at this stage, Facebook has as That's kind of equipment, uh, belangen, yeah. Uh, so, and we don't have that. Equipment kind of belangen. So we are not stuck to anything so or business model doesn't go uh. When the water if uh, we change our our whole company. Because there is no Western model yet, because we're still checking what what works and what will people pay for so.

Yeah, the risk is lower.

Yeah. risk. Yeah, exactly. There is no need to stay in it the current path dependency.

Reflexivity: not a formal way, but if we do something if doesn't feel good, we take it, but values differ but is not a good or wrong, of course there is a standard. Everyone rates a value also different so not a good or bad. "Path dependencies look at that"

Go to question 10

Q9: OK. Yeah, yeah. OK. So basically the factors, can you maybe, uh explain or say what the factors could prevent you to implement this dimension. So basically it's so the inclusion, the responsiveness and anticipation and reflexivity.

Uh, I think for us, not because we are so flexible still because we're super early stage, in the case of Facebook, I can imagine indeed that they have shareholders and All those that want to earn money. So the shareholders have another value or they gain other value then the founder might or the consumer might.

Yeah. So it's bad. For example, someone for inclusion set. Yeah. Private privacy in a sense of. I don't want someone else to take my technology. So that's why I inclusion is not fully implemented. That's a factor, uh? Or someone else?

You can repeat.

Yeah. So someone said for example, OK, we have a certain technology, but if I include a lot of parties that I give them a lot of about the technology, which can be that they start their own company and that's a risk for me.

Yeah. OK. So they like transparency, but they also don't want to lose their technology and that's it.

Exactly. So that's one of the factors that could lead to help prevent you to implement.

Yeah, I can imagine.

Even if you don't make any, yeah, money or whatever it is, you still have a certain.

Yeah, but what prevents us? Maybe is indeed a. Yeah, it's also a bit realism. Uh, you can in our case, uh, joining, letting me all professor that don't like the change of the system in or

development of our solution that will make it very slow. My grades are very, very slow. So it's. The solution? Very slow data that would make the options.

The implementation of the adoption of that technology is slow. Yeah. Can that also be a difference in the ages to say that we are a new age on different kind of thinking way? We want a different way of approach stuff. And then the old yeah, de oude garde, they have a different view and opinion and they are like I know we want to stick to this is that maybe also a factor that prevented.

OK, uh, therefore responsiveness, so focusing on reactive attitude is, is there something that a factor that prevents you to do that. To be proactive, to be proactive and to find react to that accordingly. Linked directly with an anticipation. Yeah, because that's also a risk assessment. Uh, so almost the same. Just these two.

no, because it's basically what we do is only thing we do react to what people say. Add a preventive the anticipation because it's also something you want to know, probably.

Arriving over critical concern of finding a risk, reacting to that finding a solution to that, and finding an opportunity is also another thing.

Yeah, the old people, of course, they probably they uh. If you're not adjusting about the change, then you will not cooperate. Uh, assertively. Then you don't take long. You thinking risks and you think in. So that is a challenge. Of course we would like to have them on board, but. Yeah, it's just doesn't work like that. Yeah, they will. They will not be cooperatively. They will not be open minded to your solution, so. It's really hard to get a grip on them, so they will kind of be destructive and you have your solution instead of constructive and it doesn't really work.

Yeah. And this is maybe also a factor money and time. Can that be a factor? Look. And then can, yeah. Basically for all of the four you can basically you put that for example time. If we look at reflexivity which you reflect on. Yeah, maybe some companies say, well, you know, we don't have time for that. We cannot have it each week, have a feedback session. It's too much for us maybe once or three months, we can have it and that's it. So then you have already factor that prevent. Yeah. So basically like with time and with money and that you say I don't just don't have the time because we are just started we have so much focus on the product itself that we don't have time for this reflection moment.

Yeah, you don't do it. It's also something I said before. It's it's not something you do explicitly or formally. It's something that's always on the back of your mind because. Uh, if you don't take things like values along in your process, then things won't be adopted so. Yeah, but you have to choose which values from who you take in account. Also something I said earlier, you have to think about who is saying what. Yeah. For the bigger picture, for society, for the whole thing. What makes sense

Yeah, because I spoke also with one start-up and he said, you know what, as a start-up you only or main focus is to have techniques that can be adapted as soon as possible into the market, so your whole focus goes to that part. How can we implement or what kind of business plan can we make that everyone adopts the technology and he said then at a

certain point we just didn't focus anymore on the value itself and because you just don't have time for that.

Yeah, but he probably was.

But, but that's maybe profit maybe because they make profit, then it's the focus is more on that that kind of thing?

Yeah, I can imagine. But the question is that he Uh really, Did the guy taking account his own values or, Where they just so self-evident for them that he because if something doesn't feel right, you don't do it because, I think if he if he's doing something now that is not in line with this values. He's probably not enjoying his job and his, his Work etc. So probably the thing that he is not doing it. So he's probably not doing it consciously. But he's doing it, I think, at least.

Yeah, of course. of course, every each company does that anyway, but it's the one. The other one doesn't more than the other. So then it's more at the question like why you, the old one doesn't so much and the other one is like now we yeah a little bit and that's enough for us.

Q10: What are the factors that leads you to implement inclusion within your business?
(Same question for the other dimensions)

Otherwise customers won't accept your solution. So anyway, that things get accepted.

And is that for the inclusion part or?

Of all of them, I think, yeah.

So for example, if we look at inclusion, why would you apply or use different parties?

Yeah. Uh, because you want uh, you want to scale, so you want everybody to adopt your solution. So that that's forces you to include as many relevant perspectives relevant meaning. That uh, every stakeholder that it has an influence on your solution. Yeah, you want to all of them.

Yeah, and for responsiveness. Why? For example, do you want to have a reactive attitude? Why do you want to be proactive?

That speaks so much for itself, but I don't even know how to answer it.

It says maybe because, uh, it will lead to less risk. It can be very.

Yeah, exactly handles risk, but it's also uh, it makes sure that your solution is adopted if you respond to the needs and to the to the things that are being said about your solution, then that makes a solution better because you can you can adopt, you can adjust to it according.

All four leads to adoption because if you look at reflexivity, you want reflection on the values of yourself and the system.

Yeah, every, every all of them leads and lead to adoption. If you don't take it, then my account, your solution will not get adopted. And of course, yeah.

So the main factor? Yeah, OK. The main factor could be adoption. Yeah. OK.

Yeah. And of course you cannot take and every solution in mind or every year perspective in mind from every stakeholder. Sometimes you have to zoom out a bit and like yeah, it's just, I just not personally harmed by the solution and it is. That's why he's scared. But is that really legitimate arguments? But sometimes we don't know and he doesn't, but he's just scared and that's why he's shouting heart.

Q11: Yeah. And then in general question, do you have. Any improvement idea that would have helped you to uh, to implement these dimensions within your company and would make it easier for you to implement it? For example, if you have known it before?

No, no, not really, no. I'm going to give you a lot of people said about this, by the way. No, but for me just now.

Different . Some set like. Yeah, we missed the for example, they they were participating at. YesDelft. They didn't teach us anythi. They didn't tell about this stuff. So we just needed to start the business. And then we came across of it at a certain point. But then it's maybe a little bit late for us, you know.

What? What problems did they counter? Where was relevant to know about these things?

Yeah. So for them, for example, the there are. So there's a part by for example, you do risk assessment or just benefit. And for example if you are just like 18 years old and you start with the start-up, if you're new, you're young, you don't know everything yet in the business, yeah, you don't have the experience. You just start with something without thinking a lot, maybe, or focusing on this kind of stuff. So you really focus on the technology itself and to create that as good as possible, but you forget the whole society maybe.

OK, it's a I can't imagine that people that don't include the don't uh, I'm not familiar enough with the lean start-up and iterating and talking to users etc. Uh, for people that do that is that, for example, technicians then don't always do that. They are in their own bubble. don't think about what their solution, how the solution will impact their customer, the daughter stakeholders. So using that, methodology of talking to users are getting out of the building, etc. It's just essential to take these things into account and I talk to you from a business development perspective and like we, yeah, I know it already. So it's obvious for me it's very start and also where you at. Uh. You look. Yeah. You find the technology, uh, you adopted technology to the problem and not the other way around. You don't find us, you don't find an application for you technology. You know you have a problem and that's what you develop technology for. It's also weird about technology and market pool, which what we're getting into now here. Because mark pools. Of course. What we're what the ideal situation might be, at least I think. Yeah, but of course, you also have cool technology like quantum that has so many benefits for over the current standards but then you have to think about, hey, how will this technology be adopted by the market. So we start you also to start thinking about what is the problem we're solving with this new technology but.

Yeah, no, it's true what you're saying. Yeah, it's, it's it's only that some start-ups, they said like they are inexperienced basically within this area. But that's because, yeah, what's your

background Yeah, I've only studied the technical study. I worked a couple of years in company as the engineer. Yeah. Then as an engineer, you only work on as solving certain stuff.

It's finding the coolest technical solution, yeah.

Exactly. So the whole management side, the whole ethical side, you don't look at that kind of stuff and then you start the start-up, yeah, then it will be maybe difficult in in the beginning and you don't know this kind of stuff, so yeah, OK.

The closing part. Can you give or provide, or you want to clarify any question first

Uh. Uh, no, I think everything made sense said, waving something to add for you.

Uhm, and can you provide any feedback on the interview itself?

Yeah, I think it's, uh, you would make me think a couple of times about things that I never really thought about that off.

Oke, nou dat was het interview eigenlijk. We kunnen terug naar nederland.

Company 6:

Video begint iets later dit heeft geen invloed op interview, dit is alleen kennis making gedeelte. Interview begint vanaf minuut 5:30.

Q1: Could you briefly explain your role within your organization?

I am the Co-founder and CEO of the organization.

Q2: Could you explain how long you have been working in this position?

Yeah, since the beginning and we started the company in the summer of 2019. So almost three almost three years?

Q3: OK. And can you explain me, uh, how you are involved in the decision making process?

And yeah, I'm various level. I'm directly responsible for go to market and the strategies overall strategy. And I'm also involved in product road map decisions together with colleagues.

You know, are you are, are you also the last? The last voice in in your place. So for example if there is something you want, the guys want to change, is it you that needs to? Yeah, they do they need to come to you for approval or is it more like you have two three people and they decided to gather.

Yeah, the letter. So, uh, 2-3 people. Yeah, yeah, yeah. The depends on the subject, but most the most things. Yeah, it's 2-3 people who are making this the final the call. Yeah.

Q4: OK, let's go to the second part. The first question is basically, can you give me an explanation of what responsible inefficient for you mean.

Umm, well, innovation itself can be, uh, radical or incremental. Or that's just so you have a variety of sorts of innovation. responsible could be many different things could be responsible to people, could be responsible to the environment, to the world. And actually it's a combination of all. So there is a radical innovations in our case called incremental. Uh in innovations caused by certain features we develop. We are shooting the company failures where we take care of our people. We don't. A care about race, nationality, gender, religion, all those kind of things. So that's the people side. We search for socialism, Uh, inquisitively, uh accountability. Those kind of personality types. And we should search for diversity in our team. As much as possible, however, it's sometimes. Not easy because IT is quite, uh, male dominated, so to say, especially in the Netherlands. Or sometimes it's hard to. Yeah, to have, like a females applying for the jobs you have available. So yeah. But then you have an environmental site. That's a little bit harder. In our case, we do everything digitally. Currently and it's I know it's the year 2022 but still we make sure they don't need to so they can highlight and search and provide comments in the documents in a digital way so they don't have to print. Umm, but on the other hand we use algorithms which consume energy. I am officially we make algorithms as efficient as possible, but yeah, it's not like that. We do something with sustainability directly for exam. And in my in my definition that that should be part of it, but it's not always applicable. For example, if we were like a fashion brand and we would probably focus more on that, but it's a bit harder when that, yeah, providing software.

Yep, Yep. And from the ethical side.

Yeah, it's uh. Also. Yeah. That's also very important. So we have in our management contracts and contracts with customers and descriptions. Do it in the most ethical way.

So can we basically say that Uh, it kind of means like, starting from the idea till the product bringing into the market and all the processes that is involved, you try to do it in a In an ethical manner. Still have a positive effect on your company of course. Can that be more responsible innovation with all the stuff in it? Of course, like if it's, it should be economical and.

Yeah, but I see other companies who can put a lot of marketing outage in, in being responsible. It's a bit harder for us. We are doing business in the ethical way, we take care of people and all sorts of things, but it's less something we can promote, so to say I see other start-ups like fully promoting their story. And our story is more like we make sure knowledge workers are. I'm not working on uh, dumb and tedious tasks, basically, so we. Yeah, that's more how we're position.

It's basically, it's really it depends on the type of start-up and what the product that they have and provide and that makes it basically in which area you are more involved.

We cannot say like we take care of the environment and we, you know, we obviously you can do that by. For example, donating certain amount of your revenue to planting trees or something. So we decided to join the pledge movement, he pledged 1%. And we donate 1% of our time, 1% of our product and 1% of our revenue back to society. So that's the way we make sure our renovation is sustainable and ethical and that we give back, yeah.

Q5: Yeah, OK. OK. Then we go to the four dimensions. So as I mentioned, the four dimensions are inclusion, responsiveness, anticipation and reflexivity. In this question I just want to know from you if you have ever heard of it or not. So the first one is basically inclusion and if you want to if you want explanation of what it means to understand it more you can just ask.

Yes, inclusion

Yeah, kind of having a that you have a reactive attitude and it's related to transparency, accessibility.

Yeah, those are the. Those other words are literally in our company values.

Yes, anticipation

Yes, reflexivity, Uh, we do that on a biweekly basis.

Q6: But that's nice and now we go to the explanation part of it. So I want the explanation of what you think. For example, inclusion is.

Inclusion is A is a broad term, so we think of a inclusive society, so to say where every single person has its own value to the society. Uh, when it comes down to a company Itold you already, it's uh, we don't care about uh, gender, race, religion backgrounds, so to say age and that's, uh, that's something we actually strive for diversity and it could also be from a cultural or ethical backgrounds point of view, actually, that yeah, that you strive to

include everyone. And that's what you see, like, the political environment is more like opposite. And, you know, that's. Yeah.

Exactly. Yeah. Yeah. So basically you try to. Include all the different parties and in the in the innovation and in your product and from idea to the product and gaining all the different ideas. The fuse, the opinions and then try to Make a good product.

Yeah, but at the end of the day, there, a decision must be made so everyone can say and have like. Shorten the amount of influence and I can speak up. Everybody speak up no matter what's your role within your organization. Umm, but sometimes it's uh, we need to make sure that that we go for one Direction or the other. So yeah. So that's certain point. Yeah we need to make a decision.

Of course. Yeah. And then for responsiveness, what does that mean for you?

I think this is the hardest one for out of the four.

Yeah. So the reactive attitudes, yeah, transparency has ability finding out the risk during the innovation and reacting accordingly.

Yeah. So we, we transparency is very high and that's one of our core values. And basically are very transparent to our customers what we offer and cannot offer yet, example. So that's part of innovation. So we get them on the hook based on proposition and then yeah, you they start finding out what's the product all about and then we are very transparent and OK, we are still working on this, this innovation and that innovation. But this is what we can offer. And we are very open to feedback. Or what should be built or what's needed or what kind of challenges or problems they are facing, and that's taken back to the product road map. And that makes, yeah, our priority basically.

OK. And are you more reactive or proactive?

Actually, both because we also have like a vision what the product should be and and most of the time that's on high level direction and then on the lower level functionality point of view, we get a lot of input from the outside world basically. The market is asking us to develop a product. That's why we came up with products basically, and they're especially the third one is requested, yeah, in conversations we had with potential customers.

And then of course this 4 dimensions are also linked in a way to each other. So you try to be responsiveness, but then on the patient is also into it and then inclusion is into it. So in a kind of way they are connected.

Yeah. So the last one was already contained some anticipation. Yeah. Yeah. So that's right.

Exactly, yeah. And then the next question is what is anticipation for you.

Yeah, listening, listening to people, to your internal people, to external people and users of the software. Uh and then anticipate on it because sometimes you think, OK, it should work like this, but then you find out based on experience that it should be different, so we

adapt, we ask for feedback, we apply ideas from the outside world or my colleagues. So yeah, that's what it means for us.

OK. And then for reflexivity,

Yeah, we. Yeah, we, we apply certain things. So we every two weeks we work in the biweekly or two week sprints and every after each sprinter moment of reflection that we, that's team is reflecting on what went well. What can we improve and what actions should we take, but it happens also on a one on one, on a personal level, OK, what am I? What do I need to learn and like 360 feedback to you and your manager or between peers.

Yeah. And is it, uh, you reflection on the values and beliefs of someone has during a certain phase or during the invasion?

Umm yeah, that happens more like uh, uh once in two months. It's more like a higher level. And that's also on the development. Related to the companies development and personal development and also on the leaves and what you would like to be and like to and then the more. Did like the biweekly ones or more on the process, the outcome teamwork. How should we communicate better or it's more on the daily work activities basically it's more.

And it's, uh, you do it also in collaboration with the different groups or departments within the company, of course.

Yeah,

Yeah. And it's also a reflection on the product itself or more reflection on the people.

It's the retrospective for the people in the process and the way they interact. Reflections on product are most of the time. Little part of it, but we also do it with. You evaluation moments with customers or potential customers and then take it back internally. Uh, so depends on the on the topic basically.

OK. And basically you have two kind of orders of reflexivity, the 1st order and 2nd order, did you heard about that? No. OK, I will give shortly explanation of it. So basically the 1st order reflects this learning about the goals and the view of the innovation, how you can achieve that in the best way. Facebook example, privacy problem, 2nd order.

yeah. Uh, yes, it's similar. So our value to customers is that they don't have to spend much time to repetitive tedious tasks and they can use their knowledge and experience more to excel. And to create value. To rollback. Yeah, we need data. And it's also, yeah, that's sensitive. So we have to make sure that the data stays within the bucket of 1 customer and not goes to another customer for example. I know until so far it all went well, but because we take care of it. But it's yeah that this could, if this is not working anymore then you get this close prediction and. Yeah, that's that's why we also are in the process of obtaining security certificate like ISO 27,001. In a very early stage, because normally you wouldn't do that. So early, so yeah.

Q7: To what extent did you already implemented inclusion in your business? (Apply same question for the other dimensions)

Inclusion

It's applied to me. Yeah, and yeah. And the recruitment and application process, yeah, yeah.

Responsiveness

Yeah, partly.

Anticipation

Fully.

Reflexivity

We try to yeah on different levels, but not on the on the the two levels you described and the Facebook example. We are aware, but it's not something we implemented fully that we speak about it, talk about it, yeah.

If fully implemented go to question 8.

If not fully implemented go to question 9.

Q8: The next question is more on the method and how you did it, so basically can you tell me how do you implement inclusion in your business. Is there certain kind of method you apply, I don't know maybe scrum, agile.

Actually when you start company you have idea and in parallel you think about the company values that's where it already starts. And then you need to act on it.

So for example in inclusion if you want to have a diverse group within your company is there certain method recruitment of your company go through.

Once we had two application, one was Iran, which you need to put effort in it because its outside and one was a girl. Both perfect, skills personality nice and good, so we decided to hire both. So you need to act accordingly.

It is more try to see whether people fit or not

The more diverse you get, then there is place for example, the guy of Iran is a real finisher, who goes to the full end, were we have a lot of fire starters in the team. It is an addition in the mindset, works point of view. So that's also important.

And then for responsiveness, try to be proactive or reactive, related to transparency. How do you implement that.

Proactive talking to customer about new ideas. Doing interviews. Make sure we are innovating and developing to solve real life problems.

Is that the same with anticipation

That comes thereafter so if we find out that things should be differently then anticipate on that, we reflect and ask for feedback, after we launched

And then for reflexivity, the values and beliefs.

Yeah ones a year we have a kick- off and start with company core value and do you want to add something, think we are acting on those values with th whole team and that's actually the only moment we reflect.

And do you also take in account suppose that your company will become really, really big. Maybe 10 times bigger than now. They already think about that. What the effect of that will be.

Yeah, But not too much because we pretty much executing so the ideas and like future plans, it's only like I don't know two, 3% of your time the rest you're executing on the plan basically.

Yeah, but maybe you have a certain kind of goal. I want to reach this amount of, I don't know. I want to be this big in five years. Things like that. You know, you have a certain kind of go to work towards to.

Yeah

Go to question 10

Q9: Yeah. OK. OK. And then basically we go to the factors. At first, the factors that prevent you to implement this dimensions. What could be the factors for you that prevent you to implement inclusion?

Well, that could be uh speeds of development, for example, that you choose another person. Uh. Because she's better on the from a technical point of view, for example or Like uh, if you have two men, if you have two men and one is better than the other, that's that could be the case. But if you have like a woman and a man, and you see that the man is way better than the women, then we probably go for the men. Although we have 90% men already, for example. So that's. That's yeah. How you. Become less inclusive I guess, but it's. Yeah, it's always a trade off because you hire somebody for its added value. Not only to the team, but also on the productivity and the other sites for business, so if you. But yeah, productivity is then. More important than something else, just that could be a case, yeah.

And and and and and. So basically with speed you mean just time. So how fast can someone integrate within the business and?

Yeah, I'm be predictive. Yeah, exactly. Yeah.

And then for responsiveness.

Thinking this, we know it all and. Uh, not asking for ideas of doing pain in suffice. Not calling someone. Just go with the flow and develop her further. Uh. And then would reflection is not asking for feedback, just launching things send an update. We've launched this. Let me know if you need some help, right. Then you just push, push new

things, and **there's no guidance at all around it and that will become harder when. And your company becomes bigger because you cannot ask everyone.**

None, of course. Yeah. This is also something with **experience**. You think that you have a lot of experience and that's why you don't ask.

Yeah, that could be then the. Yeah, that's most of the case. **So they're more junior people are actually better in it than that, more senior.**

And then for anticipation, what prevents you to do that. To implement that.

Time. Yeah. So it's too busy. We need to move on. Let's get over it. Yeah.

Because it's your main focus. Uh, currently. Uh, to make the company bigger or to fit into the market Or which stage are you screening.

What uh in between the both? So we uh we found kind of the product market fit fully. So we're now repeatedly selling it to customers and that's exactly the moment where we can start scaling. So we're in in that phase, yeah.

Yeah, because you hear also a lot from other different start-ups that they say about we are we are really focused on trying to fit into the market that we don't have time for the other things and to look at.

Sure, but then the reflection and stuff should be an anticipation should be very important, I guess. Like that talking to .

But still you see for example the reflection. You missed that even they know that this is important. I say we just don't have the time for that.

Yeah, but that was also my initial, uh, my initial answer. Time kills reflection.

Q10: And then we go to the opposite. So what are the factors that leads you to implement this dimensions? So again, for the first one, the inclusion, why do you want to implement it?

Yeah, the studies have shown that diverse teams perform better. And there is a personal motivation that I just believe in an inclusive society. But, but just from a like a. Company performance in a few diverse teams perform better. And you need you need **different opinions** to uh. Yeah, to make sure you do the right things. If you if you all have to think like your company then then yeah. You won't go get far, I guess.

That's exactly the innovation will not grow even if you have that kind of mindset. And for responsiveness. That will be a factor to implement it.

You have to get it with on the anticipation. You need to make sure it fits your target group. But also internally. That, that, that other. Otherwise she's not doing the right thing should guess.

It said one of the things also factors try to **minimize the damage** that can or the.

Yeah, I'm **minimizing risk**. **Minimizing that, you put a lot of effort in the wrong things.**

Yeah. Yeah, yeah. Yeah. So, yeah, that's that you. Yeah. To fit. Basically, you focus on this, that you do the right things. Yeah.

Yeah. And basically it's responsive and anticipation. You do it kind of together, it's it's in a way together.

Yeah, in my point of view, uh, it comes right after each other. So first, uh, yeah, you be proactive, responsive. And then the feedback. Other ideas? Yeah.

And then reacting to that accordingly, basically, yeah. Yeah. OK.

Yeah. It's kind of a pipeline, yeah.

Responsiveness/anticipation: to make sure your innovation it fits you're target. Minimizing the risk and not putting to much effort in wrong things. Be proactive and then feedback and react to that accordingly.

Yeah, yeah. For reflexivity, what could be a factor?

Yeah, also time pressure time. And that you skipped that meeting to talk about it, because we have so many things to do and we need to go out there and we need to fix this and we need to do that. So it's time again.

And that's right. But then why would you implement it, Is it because it will

Yeah, I know it's contradicting. I know I it's truly contradicting because she talk about it, how to do things better to prevent you from running the wrong way or fixing all kinds of things which. So they are fully agree, but the why you wouldn't do it is, yeah, the then it goes wrong because you should. You should do it in any way. Since you don't take the time for it because you think other things are, uh, short term things for important more important at the moment.

Yeah, because that reflection moment can lead to it can lead to the product that will be damaged. Even if you don't think about it then and then, that important is it, you know, so.

I know, but that's short term versus long term. So if you're, if the pressure is on. Meetings you will, we will postpone will be done this kind of meeting. Do we have to do it now or can we do it in two weeks and then put in two weeks that have to say so. And at this time, I think it's time again all priority basically the short term priority.

Q11: You're OK. Uh. Yeah. Thank you. So we are basically coming to the end of this interview and then in, in, in just a general question, do you are there any improvement idea that would have helped you to implement this dimensions better if you have known it be earlier?

You had a great examples, I think. I think stories will storytelling and examples. Provided to you, that's a certain moment in time will really make you realize that it's important. At least in my case, so there is a lot of studies about it, but they are. Yeah, not everyone is, uh, reading academic papers in the scientific studies show. I think we had knowledge sessions since and stuff will make sure you, uh yeah, you realize that you must.

Maybe some, maybe some kind of presentation provided by a university or yeah, a group that that can help you to see her.

Yeah. We're like a group of entrepreneurs, which you come together or what? Yeah. Whatever setting works for. For someone. Like yeah, the exactly the example of Facebook

made me realize, OK, yes, there. Yeah, we should put more. It's a great example, by the way.

Yeah. OK, let's go to the closing part. Basically, can you provide any feedback regarding this interview?

You had a question is whether you should explain those four areas first before you let me answer it. You I think on purpose you didn't. Because I think that's part of your research. Maybe. Uh, so that's something you shouldn't improve. OK, I cannot think of any anything. Yeah, I think so. I think so. You made it. You made nice rounds with four areas and then yeah, you end up.

Eind interview.

Company 7:

Q1: Could you briefly explain your role within your organization? **I am the founder and director of the company**

Q2: Could you explain how long you have been working in this role/organization? **Three years ago.**

Q3: Could you explain how you are involved in important decision making within your organization? **Two markets where we are involved, infrastructure and process & energy. I make decisions about process & energy. We include all works in making decisions.**

Q4: *What does Responsible innovation means for you?* **It means that you think about impact on society, the environment and keep in mind the sustainability development goes and decide which innovation we what to persuade.**

Q5: *Did you ever heard about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation and reflexivity).*

No, inclusion

Yes,

responsiveness

Yes, anticipation

No, reflexivity

Yes.....partially.....No.

Q6: *Can you give a brief explanation of what inclusion mean for your company? (Same question for the other dimensions)*

Inclusion: **when we innovate, we take in account the needs of the people in the company and possible clients, but also social and emotional need. Needs of all different parties.**

Responsiveness: **I think it means that you quickly react on changes of the environment. I think we are known more reactive, because we don't have the penetration power to decide the market should go this direction, that is for big companies.**

Anticipation: **it means seeing/feeling, get indication and make decision to quickly be ready for what we think is coming**

Reflexivity: **keep track on how clients react on that, and we reflect on that, test it in market and we evaluate our assumptions constantly.**

Q7: *To what extent did you already implemented inclusion in your business? (Apply same question for the other dimensions)*

Inclusion: partially

Responsiveness: fully/quick in response

Anticipation: partially/ forward

mind Reflexivity: not much, could be better.

If fully implemented go to question 8.

If not fully implemented go to question 9.

Q8: Which method and how did you implement inclusion within your business? (Same question for the other dimensions)

Inclusion: we have regular sessions internally and shareholders, and externally our clients/partners, but we can do it more. Ask for feedback. Try to find match between company culture and employees you want hire, after that we try to find out what kind environment they prefer and try to facilitate that as much as possible. There must be emotional kind of connection and we don't care about look, gender.

Responsiveness: Agile innovation principle and we actively use this. Innovation accounting (lean discipline method and lean start-up). Recommended when start company and kept on studying and after few years it started make sense. It includes financial risk- assessments.

Anticipation: we try to get indication, not really method it is organic. Staying in touch.

Reflexivity: We start with our self's, try to be reflective on my values and are the values are morally responsible and try to receive feedback from clients and people working at company about the choice I make and how I threat them.

Go to question 10

Q9: What are the factors that prevent you to implement inclusion within your business? (Same question for the other dimensions)

Inclusion: financial problems can shift the focus, try to survive and sometime this means to spend less attention on the inclusion. It's kind of luxury.

Responsiveness/anticipation: success can make you have pink glasses, you think everything goes well, prevent you from seeing the dangers and anticipate on that.

reflexivity: survive mode, then the focus is not a lot, and reflexivity become less.

Basic things that need to be done and the nice to haves will get less attention, so time. Cultural differences may in general have impact on the implantation of the dimensions, but this is related also to the type of company and the DNA of the company if they are open mined or not.

Q10: What are the factors that leads you to implement inclusion within your business? (Same question for the other dimensions)

Inclusion: when receiving negative feedback form parties, it makes you rethink and evaluate to be more inclusive. It is better for development of product.

Responsiveness/anticipation: this is core competence, it is important and not a luxury it is too important it helps you to survive. Direct financial implication, it is a key value. It actually the oil that keeps the motor on track. For anticipation it is linked to risk, but

for responsiveness it is more linked to emotional getting stuck, it makes the company better in general.

reflexivity: actually, it has something to do with responsiveness, if you don't do that you don't realize actual position and have a biased perception and that can be dangerous. And reflect on product, society and your self.

Q11: Are there any improvements/idea in general that would have helped your company to make the implementation of the dimensions easier?

If we know that you need to implement different kind of needs when launching a product, it is not only technical need, financial, social and emotional need, if we have known this from the beginning it would have saved us a lot of head pain.

Delft University of Technology
ETHICS REVIEW CHECKLIST FOR HUMAN RESEARCH
(Version 15.11.2021)

IMPORTANT NOTES ON PREPARING THIS CHECKLIST

1. An HREC application should be submitted for every research study that involves human participants (as “Research Subjects”) carried out by TU Delft researchers
2. Your HREC application should be submitted and approved **before** potential participants are approached to take part in your study
3. All submissions from Master’s Students for their research thesis need approval from the relevant Responsible Researcher
4. The Responsible Researcher must indicate their approval of the completeness and quality of the submission by signing and dating this form OR by providing approval to the corresponding researcher via email (included as a PDF with the full HREC submission)
5. There are various aspects of human research compliance which fall outside of the remit of the HREC, but which must be in place to obtain HREC approval. These often require input from internal or external experts such as [Faculty Data Stewards](#), [Faculty HSE advisors](#), the [TU Delft Privacy Team](#) or external [Medical research partners](#).
6. You can find more guidance on completing your HREC application (including tips for completing this checklist) [here](#)
7. Please note that incomplete submissions (whether in terms of documentation or the information provided therein) will be returned for completion **prior to any assessment**
8. If you have any feedback on any aspect of the HREC approval tools and/or process you can leave your comments [here](#)

I. Applicant Information

PROJECT TITLE:	
Research period: <i>Over what period of time will this specific part of the research take place</i>	1 november 2021 till 10 may 2022
Faculty:	Techniek, Bestuur en Management
Department:	
Type of the research project: <i>(Bachelor's, Master's, DreamTeam, PhD, PostDoc, Senior Researcher, Organisational etc.)</i>	Master's thesis
Funder of research: <i>(EU, NWO, TUD, other – in which case please elaborate)</i>	TUD
Name of Corresponding Researcher: <i>(If different from the Responsible Researcher)</i>	Mohammed Majied
E-mail Corresponding Researcher: <i>(If different from the Responsible Researcher)</i>	
Position of Corresponding Researcher: <i>(Masters, DreamTeam, PhD, PostDoc, Assistant/ Associate/ Full Professor)</i>	Master
Name of Responsible Researcher: <i>Note: all student work must have a named Responsible Researcher to approve, sign and submit this application</i>	Geerten van de Kaa
E-mail of Responsible Researcher: <i>Please ensure that an institutional email address (no Gmail, Yahoo, etc.) is used for all project documentation/ communications including Informed Consent materials</i>	
Position of Responsible Researcher : <i>(PhD, PostDoc, Associate/ Assistant/ Full Professor)</i>	Associate Professor

II. Research Overview

NOTE: You can find more guidance on completing your HREC application (including tips for completing this checklist) [here](#)

a) Please summarise your research very briefly (100-200 words)

What are you looking into, who is involved, how many participants there will be, how they will be recruited and what are they expected to do?

Add your text here – (please avoid jargon and abbreviations)

This research focusses on responsible innovation in relation with start-up companies, with a detailed look at the framework which consists of the four dimensions. Basically, it is not known what social responsible innovation means in the context of start-ups and which factors influence their ability to innovate responsibly.

The aim of this thesis is to create an understanding into the way how start-ups managed to be more responsible within their innovation. This will be done by studying and understanding the implementation of the four key elements of responsible innovation (inclusion, anticipation, reflexivity and responsiveness).

In order to obtain useful data about the four key elements interviews will be hold. To find start-ups Yes!Delft and UtrechtInc Students will be contacted. The aim is to find 10 start-ups that want to participait in this research. The start-ups are in the field of high-tech industry.

- b) **If your application is an extension, amendment or additional project** related to an existing HREC submission, please provide a brief explanation including the existing relevant HREC submission number/s.

Add your text here – (please avoid jargon and abbreviations)

III. Risk Assessment and Mitigation Plan

NOTE: You can find more guidance on completing your HREC application (including tips for completing this checklist) [here](#)

Please complete the following table in full for all points to which your answer is “yes”. Bear in mind that the vast majority of projects involving human participants as “Research Subjects” also involve the collection of **Personally Identifiable Information (PII)** and/or **Personally Identifiable Research Data (PIRD)** which may pose potential risks to participants as detailed in Section G: Data Processing and Privacy below.

To ensure alignment between your risk assessment, data management and what you agree with your “Research Subjects” you can use the last two columns in the table below to refer to specific points in your Data Management Plan (DMP) and Informed Consent Form (ICF) – **but this is not compulsory**.

	Yes	No	<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE			RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
A: Partners and collaboration						
1. Will the research be carried out in collaboration with additional organisational partners such as: <ul style="list-style-type: none"> • One or more collaborating research and/or commercial organisations • Either a research, or a work experience internship provider¹ <i>¹ If yes, please include the graduation agreement in this application</i>		no				
2. Is this research dependent on a Data Transfer or Processing Agreement with a collaborating partner or third party supplier? <i>If yes please provide a copy of the signed DTA/DPA</i>		no				
3. Has this research been approved by another (external) research ethics committee (e.g.: HREC and/or MREC/METC)? <i>If yes, please provide a copy of the approval (if possible) and summarise any key points in your Risk Management section below</i>		no				
B: Location						

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
4. Will the research take place in a country or countries, other than the Netherlands, within the EU?		no				
5. Will the research take place in a country or countries outside the EU?		no				
6. Will the research take place in a place/region or of higher risk – including known dangerous locations (in any country) or locations with non-democratic regimes?		no				
C: Participants						
7. Will the study involve participants who may be vulnerable and possibly (legally) unable to give informed consent? (e.g., children below the legal age for giving consent, people with learning difficulties, people living in care or nursing homes,).		no				
8. Will the study involve participants who may be vulnerable under specific circumstances and in specific contexts, such as victims and witnesses of violence, including domestic violence; sex workers; members of minority groups, refugees, irregular migrants or dissidents?		no				
9. Are the participants, outside the context of the research, in a dependent or subordinate position to the investigator (such as own children, own students or employees of either TU Delft and/or a collaborating partner organisation)? <i>It is essential that you safeguard against possible adverse consequences of this situation (such as allowing a student's failure to participate to your satisfaction to affect your evaluation of their coursework).</i>		no				
10. Is there a high possibility of re-identification for your participants? (e.g., do they have a very specialist job of which there are only a small number in a given country, are they members of a small community, or employees from a partner company collaborating in the research? Or are they one of only a handful of (expert) participants in the study?		no				
D: Recruiting Participants						

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
11. Will your participants be recruited through your own, professional, channels such as conference attendance lists, or through specific network/s such as self-help groups	yes		In order to find the right candidate for the interviews Yesdelft and other start-up groups at different universities will be contacted. In order to find the right candidate personal information (like, name, age, specific job, number, email etc) will be asked.	Personal data will be deleted and not used in research. It is only applied when selecting candidates for the interviews.		First page/question 5 of informed consent
12. Will the participants be recruited or accessed in the longer term by a (legal or customary) gatekeeper? (e.g., an adult professional working with children; a community leader or family member who has this customary role – within or outside the EU; the data producer of a long-term cohort study)		no				
13. Will you be recruiting your participants through a crowd-sourcing service and/or involve a third party data-gathering service, such as a survey platform?		no				
14. Will you be offering any financial, or other, remuneration to participants, and might this induce or bias participation?		no				
E: Subject Matter <i>Research related to medical questions/health may require special attention. See also the website of the CCMO before contacting the HREC.</i>						
15. Will your research involve any of the following: <ul style="list-style-type: none"> • Medical research and/or clinical trials • Invasive sampling and/or medical imaging • Medical and <i>In Vitro Diagnostic Medical Devices</i> Research 		no				
16. Will drugs, placebos, or other substances (e.g., drinks, foods, food or drink constituents, dietary supplements) be administered to the study participants? <i>If yes see here to determine whether medical ethical approval is required</i>		no				
17. Will blood or tissue samples be obtained from participants? <i>If yes see here to determine whether medical ethical approval is required</i>		no				
18. Does the study risk causing psychological stress or anxiety beyond that normally encountered by the participants in their life outside research?		no				

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
19. Will the study involve discussion of personal sensitive data which could put participants at increased legal, financial, reputational, security or other risk? (e.g., financial data, location data, data relating to children or other vulnerable groups) <i>Definitions of sensitive personal data, and special cases are provided on the TUD Privacy Team website.</i>		no				
20. Will the study involve disclosing commercially or professionally sensitive, or confidential information? (e.g., relating to decision-making processes or business strategies which might, for example, be of interest to competitors)	yes		During the interview sensitive/confidential information could be discussed. The results of this could be that start-up company are not socially responsible or have a totally different opinion/view about that or even that they don't care about it. If this information reaches others, it may damage their reputation.	In order to be able to use sensitive information the participants should approve this by signing the informed consent. By doing that, it is allowed for the research to make use of sensitive information for their research. In the final research report/publication/presentation the company names will be applied anonymously. So this will prevent possible damage of reputation for the company		See informed consent
21. Has your study been identified by the TU Delft Privacy Team as requiring a Data Processing Impact Assessment (DPIA)? <i>If yes please attach the advice/approval from the Privacy Team to this application</i>		no				
22. Does your research investigate causes or areas of conflict? <i>If yes please confirm that your fieldwork has been discussed with the appropriate safety/security advisors and approved by your Department/Faculty.</i>		no				
23. Does your research involve observing illegal activities or data processed or provided by authorities responsible for preventing, investigating, detecting or prosecuting criminal offences <i>If so please confirm that your work has been discussed with the appropriate legal advisors and approved by your Department/Faculty.</i>		no				
F: Research Methods						
24. Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g., covert observation of people in non-public places).		no				

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
25. Will the study involve actively deceiving the participants? (For example, will participants be deliberately falsely informed, will information be withheld from them or will they be misled in such a way that they are likely to object or show unease when debriefed about the study).		no				
26. Is pain or more than mild discomfort likely to result from the study? And/or could your research activity cause an accident involving (non-) participants?		no				
27. Will the experiment involve the use of devices that are not 'CE' certified? <i>Only, if 'yes': continue with the following questions:</i>		no				
• Was the device built in-house?		no				
• Was it inspected by a safety expert at TU Delft? <i>If yes, please provide a signed device report</i>		no				
• If it was not built in-house and not CE-certified, was it inspected by some other, qualified authority in safety and approved? <i>If yes, please provide records of the inspection</i>		no				
28. Will your research involve face-to-face encounters with your participants and if so how will you assess and address Covid considerations?		no				
29. Will your research involve either : a) "big data", combined datasets, new data-gathering or new data-merging techniques which might lead to re-identification of your participants and/or b) artificial intelligence or algorithm training where, for example biased datasets could lead to biased outcomes?		no				
G: Data Processing and Privacy						
30. Will the research involve collecting, processing and/or storing any directly identifiable PII (Personally Identifiable Information) including name or email address that will be used for administrative purposes only? (eg: obtaining Informed Consent or disbursing remuneration)	yes		In order to find the right candidate personal information (like, name,age,specific job, number, email etc) will be asked.	Pesonal data will be deleted and not used in research. It is only applied when selecting candidates for the interviews.		Question 5, see informed consent

			<i>If YES please complete the Risk Assessment and Mitigation Plan columns below.</i>		<i>Please provide the relevant reference #</i>	
ISSUE	Yes	No	RISK ASSESSMENT	MITIGATION PLAN	DMP	ICF
31. Will the research involve collecting, processing and/or storing any directly or indirectly identifiable PIRD (Personally Identifiable Research Data) including videos, pictures, IP address, gender, age etc	yes		This research will include person data like, age, name, position within company, phone number/email etc which will be collected and stored, but will no tbe further used during research.	Pesronal data will be deleted and not used in research. It is only applied when selecting candidates for the interviews.		Question 5, see informed consent
32. Will this research involve collecting data from the internet, social media and/or publicly available datasets which have been originally contributed by human participants		no				
33. Will your research findings be published in one or more forms in the public domain, as e.g., Masters thesis, journal publication, conference presentation or wider public dissemination?	Yes		The research finding will be used for Master thesis, publication and presentation. Of course this step depends also on what the PhD student does with the obtained information after continuation of the research after my Master Thesis	Candidates that agreed to participate in this research, they authorized (applied by signing informed consent) us to use their information and are aware of that it may go to the wider public.		Question 4, see informed consent
34. Will your research data be archived for re-use and/or teaching in an open, private or semi-open archive?		no				

H: More on Informed Consent and Data Management

NOTE: You can find more guidance on completing your HREC application (including tips for preparing your Informed Consent materials) [here](#)

Your research involves human participants as “Research Subjects” if you are recruiting them or actively involving or influencing, manipulating or directing them in any way in your research activities. This means you must seek informed consent and agree/ implement appropriate safeguards regardless of whether you are collecting any PIRD.

Where you are also collecting PIRD, and using Informed Consent as the legal basis for your research, you need to also make sure that your IC materials are clear on any related risks and the mitigating measures you will take – including through responsible data management.

Got a comment on this checklist or the HREC process? You can leave your comments [here](#)

IV. Signature/s

Please note that by signing this checklist list as the sole, or Responsible, researcher you are providing approval of the completeness and quality of the submission, as well as confirming alignment between GDPR, Data Management and Informed Consent requirements.

Name of Corresponding Researcher (if different from the Responsible Researcher) (print)

Mohammed Majied

Signature of Corresponding Researcher:

Date:

Name of Responsible Researcher (print)

Dr.G.V van de Kaa

Signature (or upload consent by mail) Responsible Researcher:

Date:

V. Completing your HREC application

Please use the following list to check that you have provided all relevant documentation

Required:

- **Always:** This completed HREC checklist
- **Always:** A data management plan (reviewed, where necessary, by a data-steward)
- **Usually:** A complete Informed Consent form (including Participant Information) and/or Opening Statement (for online consent)

Please also attach any of the following, if relevant to your research:

Document or approval	Contact/s
Full Research Ethics Application	After the assessment of your initial application HREC will let you know if and when you need to submit additional information
Signed, valid Device Report	Your Faculty HSE advisor
Ethics approval from an external Medical Committee	TU Delft Policy Advisor, Medical (Devices) Research
Ethics approval from an external Research Ethics Committee	Please append, if possible, with your submission
Approved Data Transfer or Data Processing Agreement	Your Faculty Data Steward and/or TU Delft Privacy Team
Approved Graduation Agreement	Your Master's thesis supervisor
Data Processing Impact Assessment (DPIA)	TU Delft Privacy Team
Other specific requirement	Please reference/explain in your checklist and append with your submission

Informed consent form template for research with human participants

Author : HREC, Joost Groot Kormelink (HREC@tudelft.nl) based on examples provided by [UK Data Services](#)

Last edited: 8 May 2018.

This research focusses on responsible innovation in relation with start-up companies, with a detailed look at the framework which consists of the four dimensions. Basically, it is not known what social responsible innovation means in the context of start-ups (this will be Dutch and English start-ups) and which factors influence their social responsible innovation. In order to obtain useful information interviews with start-ups will be hold.

The aim of this thesis is to create an understanding into the way how start-ups managed to be more responsible within their innovation. This will be done by studying and understanding the implementation of the four key elements of responsible innovation (inclusion, anticipation, reflexivity and responsiveness).

By applying this research, the obtained results could help to make start-ups more socially attractive.

By agreeing to this interview, you indicate that you have at least one year of experience in your start-up, have a management position and that you are at the age of 18 years.

The interview will be recorded in order not to lose important information. Afterwards it will be transformed into text, the recorded interview will be deleted.

Personal information will not be published in public. The data and results obtained will all be anonymized. Participants will have access to the final report in order to ensure that data is used properly. All participants will obtain a final report at the end of the research. The period of retention will be 1 month after the project has been finished. The contact details of the attendees will be deleted and not used in the research. Once you agree to this study, 3 days of withdrawal from participation is possible. This is necessary for the research to find other participants and avoid further delays.

Consent Form for Management of Technology

Please tick the appropriate boxes

Yes **No**

Taking part in the study

I have read and understood the study information dated [01/11/2021], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves audio-recorded interview. The recorded audio will be transcribed as text. The recorded audio will be destroyed, to ensure that data is still available in case something happen the transcribed text are saved.

Use of the information in the study

I understand that information I provide will be used for reports, publications.

I understand that personal information collected about me that can identify me, such as gender, age, name, role within company, will not be shared beyond the study team.

If you want to use quotes in research outputs, then add extra question: I agree that my information can be quoted in research outputs

Future use and reuse of the information by others

I give permission for the *audio recording, created transcripts* that I provide to be archived in OneDrive/repository at TU Delft so it can be used for future research and learning.

Signatures

Name of participant [printed]

and legal representative If applicable)

Signature

Date

For participants unable to sign their name, mark the box instead of sign

I have witnessed the accurate reading of the consent form with the potential participant and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness [printed]

Signature

Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

___ Mohammed Majied ___

Researcher name [printed]

Signature

Date

Study contact details for further information: [Mohammed Majied, 06-36159017, M.Majied@student.tudelft.nl]

Responsible innovation in start-up companies

0. Administrative questions

1. Name of data management support staff consulted during the preparation of this plan.

This management plan will be supported by the next persons,

- 1: Mohammed Majied (master thesis student)
- 2: Ing. M.J. Wiarda, (PHD student)
- 3: Supervisor 1: Dr. G.V van de Kaa
- 4: Supervisor 2: Prof.dr.mr.ir.N. Doorn
- 5: Nicolas Dintzner (support for data management plan)

2. Date of consultation with support staff.

2021-11-28

I. Data description and collection or re-use of

existing data J.

3. Provide a general description of the type of data you will be working with, including any re-used data:

Type of data	File format(s)	How will data be collected (for re-used data: source and terms of use)?	Purpose of processing	Storage location	Who will have access to the data
company role of participants (job title)	doc	Interview	To understand whether respondents is suited and fits the criteria to involve in this interview/study	Onedrive	The thesis student and the project team (advisor and supervisors)
age	doc	Interview	Minimum age of participants must be 18 for age.	Onedrive	The thesis student and the project team (advisor and supervisors)
data about implementation of RI in start-ups	doc	Interview	Creating understanding on how start-ups implement RI dimensions within their business	Onedrive	The thesis student and the project team (advisor and supervisors)
					The thesis

Type of industry	doc	Interview	Only start-ups in high tech industry will be selected	Onedrive	student and the project team (advisor and supervisors)
interview record	MS stream portal	MS Teams interview	Creating understanding on how start-ups implement RI dimensions within their business	Onedrive	The thesis student and the project team (advisor and supervisors)
Transcript	doc	Interview	convert record to transcript, needed for analyzing of data.	Onedrive	The thesis student and the project team (advisor and supervisors)

4. How much data storage will you require during the project lifetime?

<250GB

II. Documentation and data quality

5. What documentation will accompany data?

- Other - explain below
- Methodology of data collection

Documentation will be done in MS word.

III. Storage and backup during research process

6. Where will the data (and code, if applicable) be stored and backed-up during the project lifetime?

- OneDrive

III. Legal and ethical requirements, codes of conduct

7. Does your research involve human subjects or 3rd party datasets collected from human participants?

- Yes

8A. Will you work with personal data? (information about an identified or identifiable natural person)

If you are not sure which option to select, ask your [Faculty Data Steward](#) for advice. You can also check with the [privacy website](#) or contact the privacy team: privacy-tud@tudelft.nl

• Yes

**8B. Will you work with any types of confidential or classified data or code as listed below?
(tick all that apply)**

If you are not sure which option to select, ask your [Faculty Data Steward](#) for advice.

- Yes, I work with other types of confidential or classified data (or code) - please explain below

Interviews will provide personal information about company (type of business, business strategy) and participants (age, job title). Personal information will be deleted afterwards.

9. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your [Faculty Contract Manager](#) when answering this question. If this is not the case, you can use the example below.

The datasets underlying the published papers will be publicly released following the TU Delft Research Data Framework Policy. During the active phase of research, the project leader from TU Delft will oversee the access rights to data (and other outputs), as well as any requests for access from external parties. They will be released publicly no later than at the time of publication of corresponding research papers. All the material will be part of the Tu Delft education/repository.

10. Which personal data will you process? Tick all that apply

- Data collected in Informed Consent form (names and email addresses)
- Signed consent forms
- Photographs, video materials, performance appraisals or student results
- Email addresses and/or other addresses for digital communication
- Telephone numbers
- Gender, date of birth and/or age
- Names and addresses

11. Please list the categories of data subjects

Furthermore information will be collected about, employees, entrepreneurs, company owners, 10 interviews, High-tech companies, companies in the Netherlands.

12. Will you be sharing personal data with individuals/organisations outside of the EEA (European Economic Area)?

No

•

15. What is the legal ground for personal data processing?

Informed consent

•

16. Please describe the informed consent procedure you will follow:

Informed consent form template of the human research ethics has been used. This form will be used by all participants who want to take part in this research.

17. Where will you store the signed consent forms?

Same storage solutions as explained in question 6

•

18. Does the processing of the personal data result in a high risk to the data subjects?

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a [Data Protection Impact Assessment \(DPIA\)](#). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data during your research (check all that apply).

If two or more of the options listed below apply, you will have to complete the DPIA. Please get in touch with the privacy team: privacy-tud@tudelft.nl to receive support with DPIA.

If only one of the options listed below applies, your project might need a DPIA. Please get in touch with the privacy team: privacy-tud@tudelft.nl to get advice as to whether DPIA is necessary.

If you have any additional comments, please add them in the box below.

None of the above applies

•

22. What will happen with personal research data after the end of the research project?

- Anonymised or aggregated data will be shared with others Other - please explain below

It will be shared with the PhD student, project participants (supervisors) and next master thesis students. The provided information will be about the main subject, so how do companies implement RI dimensions within their business. This will also be specified in the informed consent. The personal data of participants will be deleted after finishing of the research.

23. How long will (pseudonymised) personal data be stored for?

- Other - please state the duration and explain the rationale below
- 10 years or more, in accordance with the TU Delft Research Data Framework Policy

All material will be stored at TU delft education platform/repository.

24. What is the purpose of sharing personal data?

- Other - please explain below

Personal data will not be shared.

25. Will your study participants be asked for their consent for data sharing?

- Yes, in consent form - please explain below what you will do with data from participants who did not consent to data sharing

Only participant that agree on the consent form will be interviewed and their data will be used during the analyzing phase. All material will be stored at TU delft education platform/repository.

V. Data sharing and long-term preservation

27. Apart from personal data mentioned in question 22, will any other data be publicly shared?

I do not work with any data other than personal data

No other data can be publicly shared - please explain below why data cannot be publicly shared

As it contains personal data of employees/participants within companies. Only that part of data will not be shared. The conclusions/theories developed by using the data can be shared with the public.

29. How will you share research data (and code), including the one mentioned in question 22?

I will upload the data to another data repository (please provide details below)

•

Data about personal information will not be shared. As this will not be important for the research itself. The main conclusions and theories can be shared with the public. In first place the data will be shared only with participants of the project (advisor and supervisors). All material will be stored at TU Delft education platform/repository.

31. When will the data (or code) be shared?

At the end of the research project

•

VI. Data management responsibilities and resources

33. Is TU Delft the lead institution for this project?

•

Yes, the only institution involved

34. If you leave TU Delft (or are unavailable), who is going to be responsible for the data resulting from this project?

The project participants, this include supervisors (professors) and advisor (PhD student)

Name <u>Sort by contributors</u>	Email <u>Sort by contributors</u>
Dr.g.v Van De Kaa	G.vandeKaa@tudelft.nl
Martijn Wiarda	M.J.Wiarda@tudelft.nl
Mohammed Majied	mohammed_majied@hotmail.com
Prof.dr.mr.ir.n.doorn	N.Doorn@tudelft.nl

35. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

The will be decided by the advisor and supervisors after completing the research. Whether it is needed to store it at 4TU.ReearchData/education platform/repository or not.

1. Responsible innovation Definition

The first question asked to the participants was “Explain briefly what responsible innovation means”. The data obtained from this question was mainly to get insight into the understanding and extent to which start-ups deal with RI.

Start-up 1 stated that the meaning of RI for them is, “The product is sustainable, and the technology application makes quick revenue”. It can be observed from the results of the interviews that companies 1, 4, 5 and 7 are aligned regarding the meaning of RI. For company 4, the meaning of RI is “a sustainable mission that we want to contribute to and accelerate energy transition with the result that we create a more ‘leefbaar’ environment. Innovation, making it accessible and available. It is important that it be scalable. Focus on volume and scalability”.

For company 5, the meaning is, “I think making something that is valuable for clients is not harming others. Responsible for people, the environment, and the world. The ethical side will also be taken into account, as will the customers. To ensure Innovation is sustainable and ethical”. In case of company 7, the meaning is, “It means that you think about the impact on society and the environment, keep in mind where sustainability development goes and decide which innovation we want to persuade”. Comparing companies 1, 4, 5 and 7, it can be seen that sustainability, society, and ethics are part of the meaning for all of them.

It can be seen that start-ups 1 and 4 also give attention to making a profit. Start-up 4 also mentioned that the innovation should be available and accessible, indicating that they want to be open to their partners and society. This may create trust due to openness. In case of company 2, RI means “add value to society, alleviate an urgent knowledge problem, we try to topics on which there is a lot of polarization (COVID-19 crisis or sustainable energy projects), potential to depolarize the situation, Bringing citizens and government closer together”. Company 3 mentioned that RI means, “At the minimum, it is important that the innovation that you bring to the world is at least not negatively impacting the world. On the optimum/maximum that you have, innovation can also bring something meaningful to the world”. Lastly, company 6 said that RI is about “Innovation itself can be radical or incremental, so variety sort of innovation. And responsible could be many things: responsible to people, the environment, and the world”. What also attracts attention is that only companies (1 and 4) mentioned the economical side in their meaning of RI by stating that technology should make quick revenue and the focus should also be on volume and scalability. It can be seen that, in general, for most start-ups, Innovation should positively contribute to society, the environment, and the world around us.

1.1. *The four key dimensions definitions*

Before diving into the factors that may influence the implementation of the RI dimensions, the participants were asked whether they had heard about them. This has been asked in order to get an insight into whether the start-ups were aware of the dimensions.

The first question regarding the four key dimensions of RI was

"Did you ever hear about the four dimensions of responsible innovation (inclusion, Responsiveness, anticipation, and reflexivity)"

When asked about inclusion, six of the seven participants already knew the term. One participant knew it partially. In the case of anticipation, it was more spread out; three out of the seven knew what anticipation meant, while the other three did not hear about it. Like inclusion, for anticipation, only one start-up partially heard about it. Two participants partially heard about responsiveness, while one did not hear about it. The rest of the participants knew what responsiveness was. For reflexivity, two participants heard about it, two were partially aware, and three did not know about it. Overall, it can be said that inclusion has the highest awareness, followed by responsiveness, anticipation, and reflexivity, respectively.

It can be stated that anticipation and reflexivity have the highest unknown responses. It should be noted that at this stage, the respondents did not know the dimensions meaning because an explanation was not provided. The numbers obtained are not 100% representative, as many participants did not hear about the term, but the more profound meaning was partially known. The following chapters will give more insight into the meaning of the dimensions and factors.

1.2. *Definition of the RI dimensions*

This section will provide more insight into the definition of the RI dimensions. To make it easier to create a general understanding of the meaning of the dimensions, which has been highlighted in Appendix A, question 6 (yellow mark). Further in-depth analysis of this part can be found in the discussion section.

1.2.1 What does anticipation mean?

As stated earlier, a short explanation of the meaning of the term was provided to the participants in case it was needed, without giving a full explanation (In order not to bias the participants' answers). It was clear from the answers provided by the start-ups that thinking ahead is essential. As stated by start-up 7, "It means seeing/feeling, get an indication and make decision to quickly be ready for what we think is coming". This answer shows us that anticipating what might come in the future is needed to anticipate quickly. Quickly could also refer to finding the right time to adapt the innovation to the market. Start-up 4 stated, "It means to us that we are an innovative company that the biggest pitiful can be that we are developing something where there is no market fit, investigating how charging market will develop and market timing is crucial". Here it can be observed that market timing could be of importance, as could investigating the market and finding the right spot to penetrate the market. An interesting point was also made by start-up 3: "It's about thinking ahead and finding out different scenarios. To me, it is linked to responsiveness; it is about balance; it is good, but you can overdo this easily.". It can be seen that a connection is made between responsiveness and

trying to find the right balance in how much attention one should give to this dimension. Other answers provided by start-up 1 were, "I see it as you are not much stuck on one way of thinking, and you see what is happening and adapt to the different things you see and hear. Include customers and all-important parties and see what effect it has on the business model". For start-up 2, it is about "the knowledge we generate about citizens' values and worries allowed them to anticipate protest". The interesting thing about Start-up 2 is that it also included customer values and worries. Which will also come back in reflexivity, so there could be a link to reflexivity. Start-up 5 stated that anticipation is about "We have a solution now but want to make it bigger, scalability. We do anticipate on potential pivots or changes in software later on, so we do anticipate things that we think the future holds but have not been spoken about yet". Lastly, start-up 6 mentioned, "Listening to internal and external people, end users, and then anticipating it". Ask for feedback, apply ideas from the outside world and adapt to that". Start-ups 2 and 6 mentioned society in their meaning of anticipation by including people from outside, getting ideas from them and anticipating on that.

1.2.2. What does inclusion mean?

Comparing the answers provided by the start-ups, it could be observed that many of them mentioned a team with different backgrounds, ages, males/females, religions, and experiences. Further points included different parties/public to obtain different opinions/views. Start-up 1 stated that inclusion means, "Equal amount of male/female in team, have different nationalities within team. We also include different parties like universities". As stated earlier, it can be observed that start-ups 1, 2, 3, 5 and 7 are on the same line. Start-up 2 stated, "The main aim of our company is to make public involvement in governmental decision-making more inclusive". Interesting to see is that start-up 2 mentioned public involvement in governmental decision-making. It could be since the focus is specifically on what Inclusion means for them and what is needed for their technology, rather than the general meaning of Inclusion. For start-up 3, the meaning was, "It is not to be exclusive and have broad opinions and to not listen to everyone but also not exclude someone from a different background. So, to me, it is making sure not to exclude people or views because of their background, being open to input, and judging them on merit. Staff from different countries, religions genders". Start-up 5 mentioned, "I think means getting all the right parties to the table, so everybody that has influences on us wants to include them". For start-up 7, the meaning of inclusion was, "When we innovate, we take into account the needs of the people in the company and possible clients, as well as social and emotional needs. Needs of all different parties".

Another interesting point that could be observed was that start-ups 4 and 6 mentioned diversity within their meaning, which may indicate that they link inclusion with diversity. For start-up 4, the meaning was, "Inclusion means I am aware of having an inclusive management team. If we have inclusive team, certain type of experience and ability are within this team; try to reach diverse team". Finally, for start-up 6, it was, "Company values: in order to take care of people, we do not look at gender, religion, or country. We search for enthusiasm, accountability, and diversity in our teams. I think inclusion is a broader term. We think of an inclusive society where every person has their own value in society. When it comes to the company, we do not care about age, culture, or gender. We strive for diversity". Especially start-up 6 states clearly "we strive for diversity". In the discussion session, more explanations of this observation will be given.

1.2.3. What does reflexivity mean?

When asked about the meaning of reflexivity, it was surprising that some of the start-ups also mentioned how they implemented reflexivity within their businesses. It may also show the importance of reflexivity within a company. Start-up 1 stated that reflexivity for them means, "I think that one of the things is to look at what people ask and see if technology fits that and fills the gap in what society wants. It is the kind of thing that is reflected in the application and is logical flow, which is not needed to make a lot of changes. It fit the society quite well. Try to understand the message of society, get motivation from that and make technology fit that". It was interesting to see that Start-up 1 mentioned that reflexivity is needed to be sure that the technology fits society's needs.

On the other hand, it is a logical flow, so it is unnecessary to make many changes. It may indicate that applying within the company is an easy process. From my own perspective, it was expected that this might be a problematic dimension to fully apply, as fitting the values of society is not that easy and integrating that into the technology. Of course, it should be noted that this may also depend on the type of technology. Besides that, it can be seen that start-up 1 focuses on technology instead of the general meaning of the dimensions. For start-up 6, the meaning was, "It is reflection on process/product, product as evaluation with parties, customers". For start-up 7 it was, "Keep track on how clients react on that, and we reflect on that, test it in market, and we evaluate our assumptions constantly". It can be seen that the main message was to keep reflecting on the whole process, evaluate it, and make changes based on these observations. Another observation that has been made is that start-up 2 made a connection between anticipation and reflexivity. They mentioned that reflexivity means, "Also, the knowledge we generate about citizens' values and worries allow them to anticipate protest, and it encourages reflexivity towards the goals and principles of their policies". This answer shows that anticipation positively moves reflexivity towards the citizens' goals and principles.

Start-up 3 stated, "I think it is important for people working on innovation that it is part of a bigger perspective. But not the same for everyone (goals, views). The value the technology itself gives can motivate people and be beneficial for the technology to move forward. Technology itself is value-agnostic. Depend on how you use it.". The answer provided by Start-Up 3 was hard to deal with. On one side, it is evident that a start-up needs to deal with different views/opinions and that it may be hard to satisfy everyone's values and views and integrate that into the technology. Nevertheless, stating that it depends on how the technology is used may sound like putting the responsibility on the users.

It should be noted that this is the view of the researchers, and there is no right or wrong. Lastly, start-up 4 stated, "What I see is that I think that people who start a start-up have an idea of what they want to achieve and who, but also kind of internal motivation to make an impact on something. And when I reflect that on our company, the aspect having an impact on the energy transition brings us together as a team and everyone involved. A drive is also to build a company with corporate value, which is very important, the company DNA, in the way we work, are we trustworthy, do we promise what we say, are we transparent and open? Bewustzijn is important to building a start-up. Society is the impact we have on check-in and check-out. We stand here to see how things go, and when you define goals on a more intrinsic level, we work hard, we have fun, we make an impact, and we are happy if we come up with new things. This is the checkout: are we on track?". From the answer to start-up 4, it is not easy to see a clear meaning of reflexivity, as this is focused on their technology. This answer fits more with the implementation of reflexivity than the meaning. However, it can be observed that a company's value and opinion of society are essential in creating awareness within the organization. This may indicate that Start-up 4 already implemented reflexivity by checking the values and views of employees, customers, and broader society and integrating this into their technology.

1.2.4. What does responsiveness mean?

Analyzing the respondent's answers, it can be said that responsiveness is about obtaining helpful information from different parties and trying to react to that. Start-up 1 mentioned, "And try to listen to clients and get signals, and this is what they are looking at to try to change our business based on their input. And fit the needs of the client. And see if the market fits the business model. Try to look at what it means for business, but it should make sense.". Here it can be seen that interaction with the client is essential to fitting the client's needs into the technology. It may also have a link with reflexivity, in which evaluating the values and views and reflecting on them helps adjust the technology. Another important point was trying to find the right balance, as mentioned by start-up 2, "Strike the right balance. Because I think if you are on the scale of hyper-start-up to hyper-corporate, the basic tendency of the start-up is just to go along, and on the hyper-corporate side, you try to analyse every step before hand and react on that. There is no right or wrong, but try to find a balance between these two.". This may indicate that overanalyzing can lead to mistakes, even though it is mentioned that there is no right or wrong. Comparing the answer to start-ups 3 and 7, it seems that responsiveness is a dimension that needs to be implemented entirely within the business to stay alive and not be eaten by big companies like Shell. Start-up 3 mentioned, "We work together with other parties in industry and are innovative and main risk is if we do not bring new concepts we will be eaten by big parties like Shell, who have more market power". For start-up 7, the meaning was, "it means that you quickly react to changes in the environment. I think we are known to be more reactive because we do not have the penetration power to decide whether the market should go this direction, that is, for big companies.". It can be observed that there is awareness of the importance of responsiveness within the business, as this may raise the chance of success. It also seems to go along with what start-up 2 mentioned, that as a start-up, it is needed to go along and be reactive since market power is not achieved yet, and being hyper-reactive may be beneficial. Start-up 4 stated, "We discuss within our founder team. Put all perspectives into discussion in order to create a product that fits the market.". Start-up 5 mentioned, "It is about iterating. If you hear something, you respond to that.". This shows that responsiveness is an iterative process that analyses over and over and reacts accordingly. Finally, start-up 6 mentioned, "Transparency is one of our core values: being transparent to customers about what we can offer and what we have not yet. Open to receiving feedback. Use it in the product road map. We are proactive and reactive. We also have a vision of what the product should be on a high level; on a lower level, we got a lot of input from the outside world. And sometimes the market is asking us for a product and requesting a conversation with potential customers.". Interesting was that start-up 6 stated that a combination of being reactive and proactive is used. As mentioned earlier, the answers provided already indicate how to implement responsiveness. More in-depth information will be provided in the discussion session.