econsense

econsense Blueprint for Implementing Digital Responsibility in Companies

econsense

econsense is a network of internationally operating companies which share a common goal: They want to actively shape the change to a more sustainable economy and society. We support our members in anchoring sustainability in operational practice, in strategy, and along the supply chain. We track and analyze all relevant issues from environmental protection to human rights – always with a focus on the business case for sustainability. In exchange with business, politics, and civil society, we proactively address sustainability challenges and advocate frameworks and policies that enable innovation and competitiveness. This makes econsense a valued thought leader, advisor, and partner in matters of sustainability.

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Vodafone, Volkswagen, Zalando

Executive Summary

Digitalization is changing society, politics, and business, and its dynamics are giving rise to hopes as well as fears. During the COVID-19 pandemic, the impact of digitalization on people's lives has become even more immediate. Digital infrastructure, e-learning, e-health, and digital business models are being developed ever more quickly. In this time of digital change, companies are becoming increasingly aware of the need to address their corporate responsibility with regard to digitalization.

Corporate Digital Responsibility (CDR) describes the part of corporate responsibility that concerns the impact of digital transformation on the environment, society, and the economy. Digital responsibility must be integrated into business processes, products, and services and promoted along the value chain. Fairness, participation, trust, autonomy, transparency, and sustainability must all be taken into account as they are important aspects of digital responsibility.

With this blueprint, the members of econsense aim to facilitate the move from the existing, fairly abstract guidelines on digital responsibility to the concrete steps required for implementing them. This paper assists companies in the step-by-step process of integrating digital change into their own context in a responsible way. Its recommendations have been developed by companies for companies. They are presented here in three steps aimed at identifying the central players involved in the topic, determining essential aspects of digitalization in the context of sustainability, and drawing up measures for concrete implementation.

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1. Background

Digitalization is fundamentally changing all areas of life, from education to health and from mobility to energy supply. With the COVID-19 pandemic, the impact of digitalization on different aspects of life will increase even more. Digitalization is changing society, politics, and business.

In the technical sense, digitalization means conveying information through storage, processing, provision, and networking. Beyond this, digitalization is understood to be the socio-economic change process that is associated with the introduction of digital technologies.[1]

This change process offers opportunities and challenges to all participants, which are under discussion not only at the political and societal level but also at the corporate level. Since digitalization is changing the lifestyles of customers and consumers and therefore their needs, companies are affected in the design of their products and services. In addition, production processes are being redesigned, which requires new and different skills on the part of employees. At the same time, digitalization is fundamentally changing conditions in areas such as infrastructure, investments, and regulatory systems.[2][3]

To address digital transformation, companies are developing digitalization strategies and drawing up business cases for digital technologies and digital business models. The starting point for a successful digitalization strategy is a holistic approach with an overarching vision, a concrete mission, and specific business objectives.[4] The business case for digitalization is evidenced by a more efficient use of resources, greater flexibility in workflows, and the development of digital business models. Digitalization can contribute to improved transparency along the entire value chain and open up new possibilities for meeting individual needs for products and services.

The Link Between Sustainability and Digitalization

The consequences of digitalization and how best to shape this development are increasingly being discussed with a view to the environment and society.[5] As the sustainability network of the German business sector, econsense has been focusing on the potential of digitalization to have a positive impact on sustainability since 2016. Together with accenture, econsense published the compendium „How Companies can Improve their Impact on the Sustainability Development Goals (SDGs) and Harness the Power of Digitalization" (https://econsense.de/app/up loads/2018/06/econsense_Companies-for-Change_Handbook_2017_3MB.pdf) to show how companies can use digitalization to have more of a positive impact on the 17 Sustainable Development Goals (SDGs) set by the United Nations.[6]

The fact that digitalization can make a contribution to sustainability has now also become part of the political agenda. At EU level, the European Commission proposed the European Green Deal to push the transformation of the European economy. Digital technologies can be employed very profitably in the energy and environmental service sectors, for example, to create the conditions for a sustainable future. The European Green Deal contains a roadmap with measures to reduce net emissions of greenhouse gases to zero by 2050 and transform Europe into a carbon-neutral continent. In the context of digitalization, the Commission is examining measures "to ensure that digital technologies such as artificial intelligence, 5G, cloud and edge computing, and the internet of things can accelerate and maximize the impact of policies to deal with climate change and protect the environment."[7]

1 (Hirsch-Kreinsen et al., 2018)
2 (Thieß et al., 2019)
3 (WBGU, 2019)
4 (The Conference Board, 2019)
5 (BMBF, 2019)
6 (econsense, 2017)
7 (European Commission, 2019)
8 (Federal Government, 2018)

The German government's sustainability strategy confirms that digitalization has "great potential for promoting sustainable development" at the national level, too.[8] Big Data, the Internet of Things, robotics, and Industry 4.0 can help companies to operate more efficiently and save resources.[9] Digitalization also opens up new opportunities for education, health, and social innovations.[10]

Digitalization can therefore help to achieve sustainability goals more effectively and efficiently.[11] But this is not an automatic process. Digitalization can also have non-sustainable effects. For example, digitally driven, resource-intensive, and emissions-intensive growth patterns can exceed the limits our planet can sustain. There may be infringements on people's autonomy and privacy, or labor markets may develop unfavorably.

To achieve a positive correlation between digitalization and sustainability, it is essential that policymakers and companies take both developments into account at the same time and are consistent about addressing possible conflicts of objectives.[12]

Shaping Digital Change Responsibly

Given the challenges and opportunities associated with the digital transformation, the debate on the future of our society needs to include different elements: technology, business, and economic policy, but also ethical considerations and the legal framework.[13][14] To ensure that digital transformation can succeed and be accepted, the business sector is committed to taking on digital responsibility, building trust, and ensuring transparency.[15]

Companies increasingly recognize the need to address their Corporate Digital Responsibility (CDR) with regard to both the positive and the negative consequences of their use of digital technologies, business processes, and models.[16][17] This part of corporate responsibility deals with the environmental, social, and economic impacts of digital transformation. Important aspects include social justice, participation, trust, autonomy, transparency, and sustainability. The ethical awareness of the challenges and opportunities of digital transformation goes beyond compliance requirements and must be integrated into a company's corporate culture.[18]

Key issues for companies which aim to take a responsible approach to digitalization are: possible infringements on people's privacy in a data-driven economy; a potential increase in discrimination; the loss of jobs through the use of artificial intelligence; and the spread of precarious employment relationships in platform-based business models.[19] At the same time, there is also a controversial discussion of the environmental cost of digitalization in comparison to its potential to help reduce emissions.[20] One example here are the increasing energy needs due to streaming and other Internet services.

Using the Blueprint to Implement CDR

Discussions on digital responsibility are taking place in a variety of initiatives and multi-stakeholder forums at international and national level. As forums for debate, these initiatives develop guiding principles and review governance structures. They also discuss implementation concepts for companies. Pages 17-20 provide a comprehensive overview of the existing initiatives.

However, if companies want to take concrete steps to address their digital responsibility, they face a challenge: So far, there is little help available in terms of implementing guidelines and principles

9 (Federal Government, 2018)
10 (Federal Ministry of Education and Research, 2019)
11 (Thorun et al., 2018)

12 (Federal Ministry of Education and Research, 2019)
13 (Federal Ministry of Justice and Consumer Protection, 2019)
14 (Thorun et al., 2018)

15 (Federal Ministry of Justice and Consumer Protection, 2019)
16 (Thorun et al., 2018)
17 (Federal Ministry of Justice and Consumer Protection, 2019)

18 (Bannister, 2020)
19 (Thorun et al., 2018)
20 (Bitkom, 2020)

in day-to-day business operations.[21] This is where the econsense blueprint for implementing digital responsibility in companies comes in. It was developed by the econsense members based on their own experience, and it outlines concrete steps that can help companies to implement digital responsibility in their own context.

To that end, the econsense blueprint presents:

1. A brief and concise overview of the state of the debate and developments on CDR
2. A guideline for making the case for CDR in the company
3. Recommendations for taking action: How a company can tackle CDR in three steps

The econsense blueprint is aimed at companies that want to address their digital responsibility and implement concrete measures, regardless of the size of the company, the level of knowledge, and the level of ambition involved. Within each company, the blueprint is designed for people who have a formative/coordinating role for topics such as digitalization/sustainability and who play a key role in the strategic implementation and embedding of CDR.

In the following sections, the econsense blueprint for implementing digital responsibility in companies outlines a model of how CDR can be made effective. It presents recommendations to help embed CDR in the relevant corporate divisions in three separate steps. The first step is to identify the key players who should be involved. In the second stage, the main aspects of digitalization in the company should be defined in the context of sustainability. The final step is to draw up measures for concrete implementation on this basis.

Implementation of CDR in Companies

Recommendations for action outlined in chapter 3 (pp. 9 -16)

Step 1:
How Companies Can Initiate CDR

Step 2:
How Companies Can Capture the Essential Aspects of CDR

Step 3:
How Companies Can Develop Concrete Measures

21 (Thorun et al., 2018)

2. Why CDR Is Important for Companies and Organizations

Concerns and Hopes Associated with Digitalization

Large parts of the population are ambivalent about using the new technologies. On the one hand, digital services have become part of many aspects of everyday life. Users benefit from the advantages that digital innovations bring. They enable more choice, more freedom, more performance, more convenience – all of this combined with faster processes and permanent accessibility, be it via search engines, streaming providers, or other online services. On the other hand, a vague feeling of being under threat is spreading, which concerns new technologies such as the Internet of Things (IoT) with its interconnected sensors, artificial intelligence (AI), autonomous systems, big data and analytical procedures, block chain, new platform and cloud solutions, and the possibilities of virtual realities.

The use of digital technologies has given rise to a public debate on topics such as the intelligence and creativity of human versus machine, the use and analysis of data, and the potential for discrimination through algorithmic systems. Insecurity about dealing with new technologies fuels this discussion, as does the media coverage of failures and mistakes, for instance data leaks or the use of immature versions of applications.[22] [23] Periods of economic uncertainty and the threat of an impending recession amplify any concerns about the consequences of technological progress.

The concerns and hopes linked to digitalization show how important it is for companies to address their digital responsibility vis-à-vis stakeholders such as employees and customers. After all, digital responsibility means recognizing potential conflicts of values and ethics and taking the effects of technology on the individual, society, and the environment into account. Aggregate stakeholder concerns and hopes can help to better understand which societal concerns need to be addressed when using certain digital technologies; this can lessen the ambivalence of attitudes towards the new technologies. By becoming aware of their digital responsibility for their products and services, companies can avoid potential conflicts.

Initiatives and Regulatory Developments Concerning CDR

Concrete activities and discussions concerning the ethical consequences of digitalization are taking place at European and national level.

The European Commission aims to lead Europe into the digital age. The European Data Strategy (draft of February 2020) discusses, among other things, which regulations will be appropriate for companies in the future. Algorithmic systems, for instance, should be designed so that users can trust them for their dealings with employees and customers.[24] [25] The European Commission's Green Deal addresses the impact of digitalization on fostering a circular economy and the efficient use of energy.[26] The European Data Protection Regulation (GDPR) has been in force since May 2018. From the user's perspective, it is a milestone in consumer protection.

Efforts are also being made at the national level to advance digital transformation. The German government has published an implementation strategy for shaping digital change (November 2018) in five fields of action: digital competence, infrastructure and equipment, innovation and digital transformation, society in digital transformation, and modern government.[27] Additional national policy measures and concepts are based on the German government's Artificial Intelligence Strategy (November 2018) and its outline of a new Data Strategy (October 2019). Based on these concepts, companies can
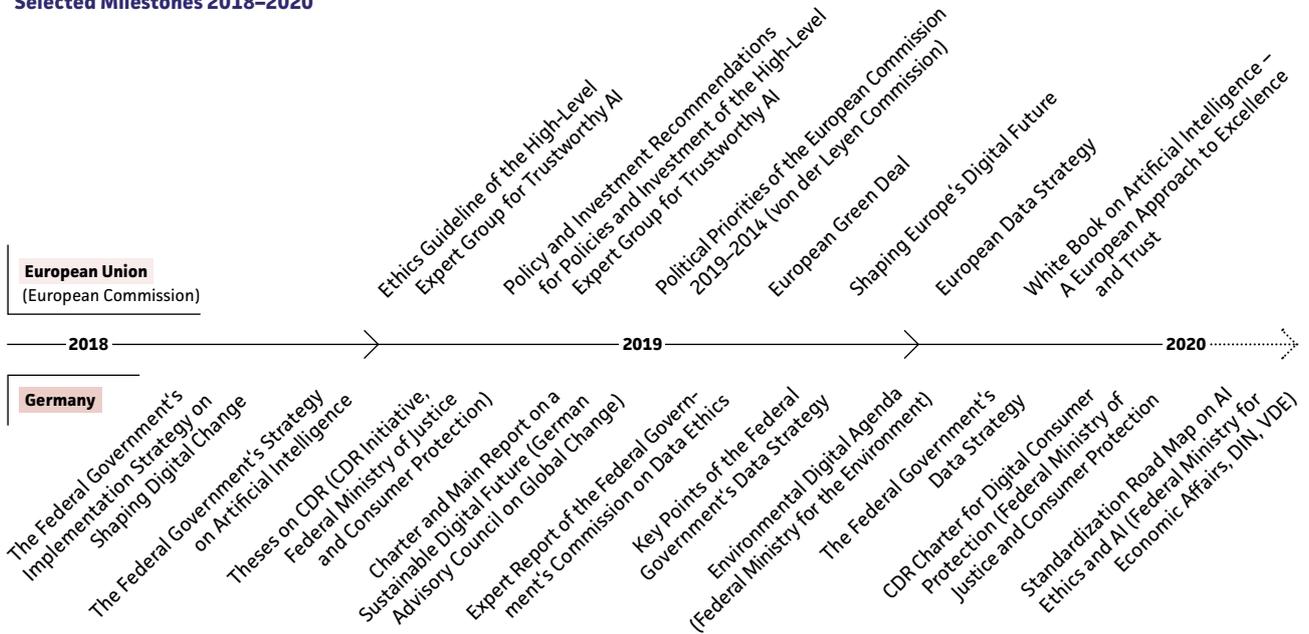
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22 (AI Now Institut, 2019)
23 (AI Now Institut, 2018)
24 (European Commission, 2019)
25 (European Commission, 2020)
26 (European Commission, 2019)
27 (German Federal Government, 2019)

Selected Milestones 2018–2020

European Union
(European Commission)

Ethics Guideline of the High-Level Expert Group for Trustworthy AI

Policy and Investment Recommendations for Policies and Investment of the High-Level Expert Group for Trustworthy AI

Political Priorities of the European Commission 2019–2014 (von der Leyen Commission)

European Green Deal

Shaping Europe's Digital Future

European Data Strategy

White Book on Artificial Intelligence – A European Approach to Excellence and Trust

2018 — 2019 — 2020

Germany

The Federal Government's Implementation Strategy on Shaping Digital Change

The Federal Government's Strategy on Artificial Intelligence

Theses on CDR (CDR Initiative, Federal Ministry of Justice and Consumer Protection)

Charter and Main Report on a Sustainable Digital Future (German Advisory Council on Global Change)

Expert Report of the Federal Government's Commission on Data Ethics

Key Points of the Federal Government's Data Strategy

Environmental Digital Agenda (Federal Ministry for the Environment)

The Federal Government's Data Strategy

CDR Charter for Digital Consumer Protection (Federal Ministry of Justice and Consumer Protection

Standardization Road Map on AI Ethics and AI (Federal Ministry for Economic Affairs, DIN, VDE)

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identify extensive fields of action in the following areas: continuing education and training, the future of work, issues of data infrastructure and telecommunications regulations, IT security, digital participation, and the potential of digitalization for climate protection.

In the context of the political discussions and developments, a multitude of initiatives has emerged which address ecological, social, and economic issues related to digitalization and the digital responsibility of companies. As forums for debate, these initiatives develop guiding principles, review governance structures, and discuss implementation concepts at a societal level. Concrete recommendations for action are provided by the econsense blueprint for implementing digital responsibility in companies. A comprehensive overview of existing initiatives can be found on pages 17-20.

A Definition of Corporate Digital Responsibility

In the context of digitalization, the expression Corporate Digital Responsibility (CDR) is becoming an established term of corporate responsibility. With CDR, the debate on corporate responsibility (CR) and corporate social responsibility (CSR) is broadening to include the importance of shaping digital transformation responsibly. Based on their experience, econsense members have formulated the following definition as the basis for their blueprint:

Digital Responsibility (CDR) is the part of corporate responsibility that addresses the impact of digital transformation on the environment, society, and the economy. Digital responsibility must be integrated into business processes, products, and services, and promoted along the value chain. The consideration of social justice, participation, trust, autonomy, transparency, and sustainability offers a deliberately broad framework for using the blueprint.
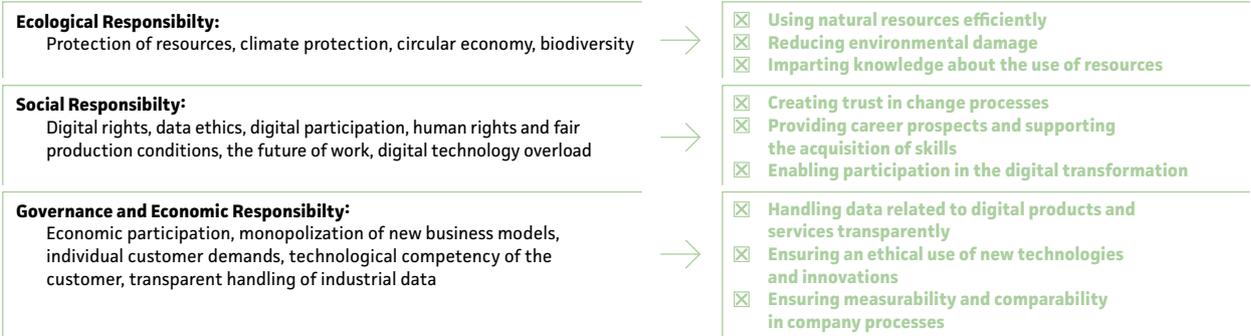
3. How Companies Can Implement CDR

Relevance of CDR for companies

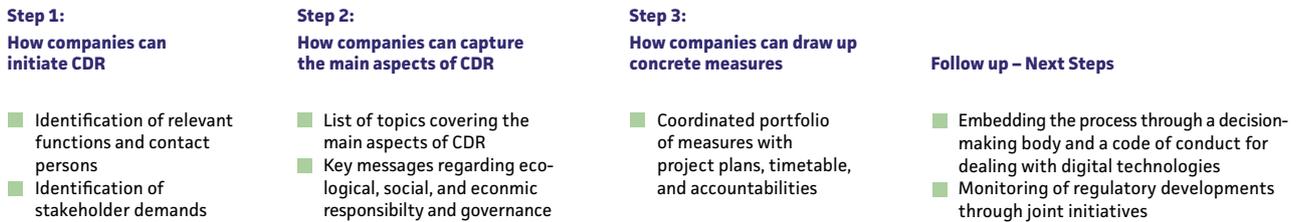| Fulfilling **customer expectations** | Guidance for **employees** | Active contribution to the **market** and the safeguarding of **competitive advantages** | Monitoring of **political debates** and **regulatory developments** |

Digital Responsibilty (CDR)
is a part of corporate responsibilty that addresses the impact of digital transformation on the environment, society, and the economy.
Digital responsibilty must be integrated into business processes, products, and services, and promoted along the value chain

Raw Materials Production ⟶ Production ⟶ Distribution ⟶ Consumption ⟶ Disposal / Recycling

CDR along the value chain means:

Ecological Responsibilty:
Protection of resources, climate protection, circular economy, biodiversity

⟶
- ☒ **Using natural resources efficiently**
- ☒ **Reducing environmental damage**
- ☒ **Imparting knowledge about the use of resources**

Social Responsibilty:
Digital rights, data ethics, digital participation, human rights and fair production conditions, the future of work, digital technology overload

⟶
- ☒ **Creating trust in change processes**
- ☒ **Providing career prospects and supporting the acquisition of skills**
- ☒ **Enabling participation in the digital transformation**

Governance and Economic Responsibilty:
Economic participation, monopolization of new business models, individual customer demands, technological competency of the customer, transparent handling of industrial data

⟶
- ☒ **Handling data related to digital products and services transparently**
- ☒ **Ensuring an ethical use of new technologies and innovations**
- ☒ **Ensuring measurability and comparability in company processes**

Recommendations for action for implementing CDR in companies

Step 1:
How companies can initiate CDR

- Identification of relevant functions and contact persons
- Identification of stakeholder demands

Step 2:
How companies can capture the main aspects of CDR

- List of topics covering the main aspects of CDR
- Key messages regarding ecological, social, and econmic responsibilty and governance

Step 3:
How companies can draw up concrete measures

- Coordinated portfolio of measures with project plans, timetable, and accountabilities

Follow up – Next Steps

- Embedding the process through a decision-making body and a code of conduct for dealing with digital technologies
- Monitoring of regulatory developments through joint initiatives

The implementation of CDR in the company starts with the impulse that drives the company to deal with its digital responsibility. This impulse can originate with different sources: with external stakeholders, customers, top management, or with corresponding functions within the company itself. The econsense blueprint for the implementation of digital responsibility describes ways to implement CDR from the perspective of the company. The blueprint divides the project into three steps which serve as recommendations to the companies. In order to be applied meaningfully, these steps can be adapted to the respective company context.

Step 1:
How Companies Can Initiate CDR

Who ultimately takes responsibility for, develops,

and implements CDR can differ from company to company. Where the initial impulse for dealing with the topic comes from – be it from management or from inside the organization – also depends on the individual company. According to observations, it is often the sustainability departments which are entrusted with planning the first steps towards CDR, as they are already involved with corporate responsibility.

Formulating a Line of Argumentation for the Relevance of CDR

To start addressing the issue, it is helpful to develop a line of argumentation to explain why the company should engage in CDR. This argumentation can help to underline the relevance of the topic to management. As a basis for this argumentation, it is useful to research the expectations of different stakeholders such as customers, employees, and politicians, and to aggregate their demands on the company regarding CDR. The requirements can then be fleshed out and formulated in a manner suitable to the specific company in coordination with units specializing on digital issues such as digital strategy, data protection, and IT strategy as well as more general departments such as sales, marketing, human resources, or public affairs.
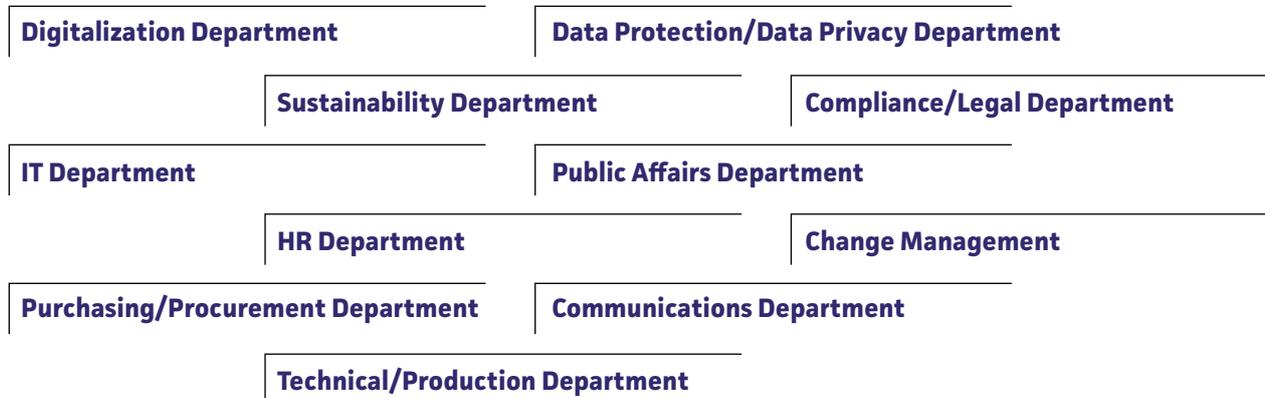
Identifying the Relevant Units and Contact Persons Within the Company

Irrespective of which department is ultimately in charge of the CDR project management, it is advisable to establish an internal network of relevant contact persons which can integrate the areas

Overview of Selected Stakeholder Demands

Meeting customer expectations	Information about data security and protection, about personal rights, and the transparency of the company with regard to processes is of growing importance to customers when making a purchasing decision.
Providing orientation for employees	For many employees, the digital transformation creates feelings of insecurity. A clear value orientation, guiding principles, and the consistent involvement in the impending changes through an accompanying change management constitute an essential part of the responsibility and attractiveness of an employer. In companies going through a process of digitalization, it is important to give employees orientation by explaining their future perspectives and supporting them in the necessary acquisition of competencies.
Monitoring the political debate and regulatory developments	Given the dynamics of technological progress, there are still no clear legal guidelines for CDR.
Helping shape market movements and securing competitive advantages	Companies whose core business is based on digitalization are positioning themselves as active and responsible organizers of digitalization.

Digitalization Department

Data Protection/Data Privacy Department

Sustainability Department

Compliance/Legal Department

IT Department

Public Affairs Department

HR Department

Change Management

Purchasing/Procurement Department

Communications Department

Technical/Production Department

needed for implementation in the best possible way. The interaction between the project management and the strategic department for digitalization/technology is particularly important. This includes identifying the relevant actors, gaining an initial interdisciplinary perspective, and facilitating the acceptance and implementation of the subsequent recommendations for action. It is immediately obvious that in terms of content or responsibility for systems or products, there are many units in the company involved in the implementation of digital responsibility. The first step is to identify these units and contact the relevant people in the company to put together a multifunctional team. Interdisciplinary functions with an interface to digitalization issues can serve as the starting point for a suitable team.

Step 2:
How Companies Can Capture the Essential Aspects of CDR

The company should identify those aspects of CDR that are essential to its business and determine specific thematic priorities. This helps to reduce the complexity of CDR and paves the way to implementation. Therefore, this should be the first task for which the expertise of the multifunctional team should be used. To identify essential aspects, the team can employ the list of topics presented in the blueprint as a basis for discussion.

Identifying Essential Aspects with Respect to the Corporate Context

The effects and consequences of digital applications should not only be discussed in the context of data protection. It is important to also consider sustainability aspects and thus take a holistic view of the topic. The blueprint's list of topics of essential CDR aspects is based on the three pillars of sustainability – ecological, social, and economic responsibility – and relates to the context of the sustainability debate (see following pages).

When identifying the essential aspects, the three pillars of sustainability should be given equal consideration. Company-specific aspects can be added at any time during the discussion in the multifunctional team.

Ecological Responsibility – Thematic Area: Environment and Climate

Main Aspects	Explanation
Protection of Resources	Resource protection in the context of digitalization refers to the effects of digital business models and applications on the use and consumption of resources.[28] This topic of reflection can include analyzing the consumption of primary and secondary raw materials, energy efficiency, water use, etc.
Climate Protection	Digitalization can have positive or negative effects on climate protection. This topic can include looking at carbon emissions from energy consumption, greenhouse gas emissions, energy efficiency potentials, and rebound effects.
Circular Economy	The term of circular economy denotes the concept of returning products and product components at the end of their useful life to the economic and material cycles, requiring little financial or energy input due to an appropriate product design.[29] In the context of the circular economy, considerations of this topic can include digital obsolescence, electronic waste, and digital applications in production. Digital obsolescence describes the ageing of software or hardware due to the limited shelf-life of technical components.

The handling of e-waste requires analyzing the recycling systems and developing environmentally sound techniques for the recovery of metals and rare earths. Digital applications (big data, blockchain, IoT) can link production and the circular economy and provide (environmentally relevant) information over the entire life cycle of a product. |
| **Biodiversity** | By using information systems and intelligent methods of data collection, digital applications can transmit information about land use and biodiversity.[30] The topic of reflection here can be the effects of digital business models and applications on safeguarding biodiversity. |

Social Responsibility – Thematic Area: Society and Employees

Main Aspects	Explanation
Digital Rights, data Ethics	The use of digital applications, artificial intelligence, and the handling of data all have an influence on the ethical framework which go beyond the debate on standardization and regulation (e.g. General Data Protection Regulation).[31] This topic deals with ethical questions about the use of data and its compatibility with the fundamental values of society.

28 (WBGU, 2019)
29 (Wilts, 2017)
30 (WBGU, 2019)
31 (Federal Ministry of Justice and Consumer Protection, 2019)

Digital Participation	Digital participation is understood to refer to both society's access to digital applications and infrastructures and its participation in shaping the digital transformation.[32] Depending on the business model or product, a company can provide knowledge and education fostering digital participation to customers and employees in order to create trust and transparency. Digital inclusion and self-determination as well as digital accessibility are also part of this topic of reflection.
Human Rights and Fair Conditions of Productions	Digital applications can help to reduce the risk of human rights violations and create more transparency in human rights due diligence.
The Future of Work	Digitalization has a significant impact on the world of work. Work processes, organizational structures, and occupational profiles are changing. Apart from the increasing automation of routine work, the focus is on further education and training for employees and management.[33] Automation of routine tasks: The use of digital applications can make routine work redundant and change job profiles. Here, discussions can focus on ways to provide professional perspectives and support the acquisition of competences. Continuing education and training (digital skills): Concepts of lifelong learning as well as digital and non-digital key qualifications will be shaping future education and training offers.
Digital Technology Overload	This topic encompasses the consequences of digital technologies for people and society as well as related questions about the effects of digital technologies on human well-being (concerns and hopes).

Governance and Economic Responsibility – Thematic Area: Governance

Main Aspects	Explanation
Economic Participation	By generating data, actors and companies will gain access to new markets. Here, the focus is on issues related to data protection, data rights and obligations, remuneration, and the taxation of the added value.[34]
Monopolization of New Business Models	The increasing importance of data for new business models, digital platforms, products, and services can lead to an increase in the market power of individual players and ultimately to monopolization. As a consequence, issues of distribution and inequality between countries and within societies can arise.[35]

32 (Federal Ministry of Justice and Consumer Protection, 2019)
33 (OECD, 2019)
34 (Federal Ministry of Justice and Consumer Protection, 2019)
35 (WBGU, 2019)

Individual Customer Requirements, Technological Competence of the Customer	Individual customer requirements for products and services of technical systems are becoming increasingly important. Companies must take their customers' technological competencies into account. But the focus should also be on technology designs that conform to data and consumer protection requirements.[36][37]
Transparent Handling of Industrial Data	The development of a digital infrastructure will enable data traffic between companies and across sectors. As a consequence, companies will have to take several issues into account: product safety with regard to digital infrastructures; protection of personal and industrial data; competition law issues relating to the access to data; and the possible re-use of such data by other companies. For this topic, consideration should be given to digital rights issues relating to data protection, data sovereignty, and cyber security.[38]

Conducting a Workshop to Identify Key Aspects for the Company

• A workshop with a multifunctional team can be an efficient way to identify the relevant aspects for the company. Working together in such a team helps to identify cross-sectoral issues arising from the digital transformation which are relevant for the entire corporate context. The list of topics covering the main aspects of CDR can serve as a basis for the discussions. A suitable approach is to analyze the three pillars of sustainability – ecological, social, and economic responsibility – systematically and to examine each aspect in terms of its relevance to the company. Company-specific aspects can be added. The essential aspects are then prioritized. To this end, it is helpful to consider their influence on the company and the stakeholders. The evaluation of the essential aspects can be rated on a scale of 1 (very low relevance) to 5 (very high relevance). The result is a company-specific priority list. For the next step, the focus should be put on a limited number of key aspects that can be dealt with in a meaningful way – concentrating on a manageable selection reduces complexity. To identify the greatest need for action, the most important aspects are then rated according

to possible risks and opportunities. This results in a company-specific list of topics with a distribution of risks and opportunities.

• Finally, to ensure that all essential aspects have been taken into account, it is advisable to take a final look at the priority list. The aim here is to check the aspects once again with regard to their relevance and to make any necessary changes to the priority list.

• Once the areas for action have been identified on the basis of risks and opportunities for the most important aspects, it is advisable to narrow down the scope of action for further processing. This is done by formulating core messages with concrete ambitions for the implementation of CDR in terms of ecological, social, and economic goals.

Step 3: How Companies Can Develop Concrete Measures

The essential aspects of CDR in the company have now been identified and prioritized, and key messages for the further scope of action have been formulated. The next step is to define concrete measures to achieve the formulated ambitions.

36 (WBGU, 2019)
37 (Federal Ministry of Justice and Consumer Protection, 2019)
38 (European Commission, 2020)

Key Message in Terms of Ecological Responsibility	CDR in relation to climate and environment means: • using natural resources efficiently • reducing environmental damage • imparting knowledge about the use of resources
Key Message in Terms of Social Responsibility	CDR in relation to society and employees means: • creating trust in change processes • providing career prospects and supporting the acquisition of skills • enabling participation in the digital transformation
Key Message in Terms of Governance and Economic Responsibility	CDR in relation to governance means: • handling data related to digital products and services transparently • ensuring an ethical use of new technologies and innovations • ensuring measurability and comparability in company processes

Drawing up a List of Ideas for Goals and Measures

The experts in the multifunctional team should draw up a list of ideas about possible goals and measures. They can base their list both on existing measures and activities in the company (projects, initiatives, plans) and on new suggestions. The multifunctional team should then prepare for a workshop to create a portfolio of measures. To that end, it is advisable to have the participants create descriptions of the measures based on an identical matrix. Guiding questions can be: What is the measure? What are the costs involved? And in which time frame can the measure be implemented?

Conducting a Follow-Up Workshop to Create a Portfolio of Measures

• The multifunctional team should set up another workshop to determine which measures should be implemented in which order to achieve the formulated ambitions. At the beginning, it is advisable to reexamine the essential aspects and formulated ambitions that were identified earlier. This ensures that all participants have the same level of knowledge.

• The next step is for each specialist unit to present the measures it proposes. The ideas are examined by the team, and new findings or further proposals are recorded.

• In order to determine which measures should be implemented – and in which order – the group can jointly assign priorities. Decision parameters such as required resources (budget, personnel support), the time needed, the risk and opportunity profile, and the respective significance of the measure for central stakeholder groups can be used to prioritize the measures. The measures can then be listed according to their planned implementation. This results in an agreed portfolio of measures.

• To proceed with the portfolio of measures, the responsibilities, roles, necessary steps for decision-making, and the time frame are defined. On this base, the project plans can be drawn up.

• To manage the portfolio of measures, an agreement should be reached on cooperation, schedule, and information flow between the respective experts and the multifunctional team.

Follow-Up – Next Steps

Further steps can be taken to ensure that CDR is successfully implemented in the company. These measures are aimed, among other things, at embedding the process in the company, at communicating both internally and externally, and at monitoring the political framework conditions. Other supplementary or additional measures are possible.

Now that the essential elements for CDR have been identified, a portfolio of measures has been defined, and steps for implementation have been determined, it is time to consider future processes. The company should use its existing and proven processes for long-term decision-making and implementation of CDR. The establishment of a decision-making body on relevant topics can contribute to the integration of CDR into the company processes. So can the development of a code of conduct or a policy for the use of digital technologies.

The change process that digital transformation brings about should be closely monitored and aligned with employees and external stakeholders. To give the topic high visibility within the company, communication opportunities can also be used such as dialogue formats on the effects of digital transformation or on building digital skills.

Finally, it should be noted that the implementation of CDR in companies is a relatively new field which is developing both thematically and in terms of regulations. A number of initiatives have been set up at the national and international level to follow developments and provide companies with a platform for exchanging information among themselves and with politicians, academics, or civil society. An overview of the various initiatives is given below.

Further Outlines and Recommendations for Action to Support the Implementation of CDR (in German)

Bertelsmann Stiftung: Regeln für die Gestaltung algorithmischer Systeme.
Praxisleitfaden zu den Algo.Rules Orientierungshilfen für Entwickler:innen und ihre Führungskräfte
https://www.bertelsmann-stiftung.de/fileadmin/files/alg/Algo.Rules_Praxisleitfaden.pdf

BMJV: Szenariotechnik der CDR-Initiative
https://www.bmjv.de/DE/Themen/FokusThemen/CDR_Initiative/_downloads/cdr_szenarientechnik.pdf?__blob=publicationFile&v=1

Initiative D21, Deloitte: Denkimpuls Digitale Ethik: Warum wir uns mit Digitaler Ethik beschäftigen sollten
https://initiatived21.de/app/uploads/2017/08/01-2_denkimpulse_ag-ethik_digitale-ethik-ein-denkmuster_final.pdf

4. Overview of External Initiatives on CDR

The Digitalization Landscape: Mapping of Initiatives

	Germany			Europe	International
Initiatives at State Level	**Enquete Commission on Artificial Intelligence** Bundestag	**Implementation Strategy Digitalization** Federal Government	**Strategy on Artificial Intelligence** Federal Ministries for Economic Affairs, Research, and Labor	**High-Level Expert Group** EU Commission	
	CDR Initiative Federal Ministry of Justice and Consumer Protection	**Data Ethics Commission** Federal Ministries of the Interior and of Justice and Consumer Protection	**Work 4.0** Federal Ministry of Labor and Social Affairs		
	Industry 4.0 Platform Federal Ministries for Economic Affairs and for Education and Research				
Stakeholder Initiatives	**German Ethics Council**	**Working Group on Ethics** Initiative D21	**Charter on Digital Networking**	**Business Platform on the Future of Work** CSR-Europe	**Ethics of Autonomous and Intelligent Systems** IEEE
	Ethics of Algorithms Bertelsmann Stiftung	**Nachhaltig Digital** Working Group for Environmentally Conscious Management, German Federal Environment Foundation			**AI Governance: A holistic Approach to Implement Ethics into AI** World Economic Forum
Associations	**Bitkom e.V.**	**Verband der Chemischen Industrie (VCI) e.V.**	**BDI e.V. The Voice of German Industry**		

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Initiatives at State Level

Initiative	Stakeholders	Main topics	Discussions Forum	Guiding Principle	Governance	Implementation Concepts
Enquete Commission on Artificial Intelligence Bundestag	Politics Science	The Enquete Commission identifies and describes recommendations for action with regard to AI at the national, European, and international level. The goal is to make use of opportunities and minimize risks. https://www.bundestag.de/ausschuesse/weitere_gremien/enquete_ki	■	■	□	□
Implementation Strategy Digitalization Federal Government	Politics	The German government's implementation strategy for shaping digital change focuses on the following fields of action: digital competence, infrastructure, and equipment; innovation and digital transformation; the digital transformation of society; and modern government. https://www.bundesregierung.de/breg-de/themen/digital-made-in-de	□	■	■	□
Strategy on Artificial Intelligence Federal Ministries for Economic Affairs, Research, and Labor	Politics	The Strategy on Artificial Intelligence aims to make Germany and Europe a leading location for AI and to facilitate the responsible and public-interest oriented development and use of artificial intelligence. https://www.ki-strategie-deutschland.de/home.html	□	■	■	□
Work 4.0 Federal Ministry of Labor and Social Affairs	Business Politics Trade Unions Academia	In accordance with the model of "good work", the initiative Work 4.0 addresses and influences social conditions and framework conditions of tomorrow's work-oriented society. http://www.arbeitenviernull.de/	■	■	□	□
CDR Initiative Federal Ministry of Justice and Consumer Protection	Business Politics	Together with companies, the Federal Ministry of Justice and Consumer Protection has initiated a process to develop principles and guidelines for CDR. https://www.bmjv.de/DE/Themen/FokusThemen/CDR_Initiative/CDR_Initiative_node.html	■	■	□	■
Data Ethics Commission Federal Ministries of the Interior and of Justice and Consumer Protection	Business Politics Academia	The Commission's task was to provide the federal government with recommendations for action and propose regulatory options to exploit the potential of AI and to answer ethical and legal questions. In October 2019, the Data Ethics Commission presented its final report. https://www.bmi.bund.de/DE/themen/it-und-digitalpolitik/datenethikkommission/datenethikkommission-node.html	□	■	■	■
Industry 4.0 Platform Federal Ministries for Economic Affairs and for Education and Research	Business Politics Trade Union Academia	The German government launched the Industry 4.0 platform to develop concepts and recommendations for action for an interconnected industry together with companies and other stakeholders. https://www.plattform-i40.de/PI40/Navigation/EN/ThePlatform/Background/background.html	■	■	□	■
High-Level Expert Group EU Commission	Business Politics Academia Civil Society	A high-level group of experts supports the EU in implementing the European Strategy on Artificial Intelligence. This includes developing recommendations on ethical, legal, and social issues related to artificial intelligence. https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence	□	□	■	□

Stakeholder Initiatives

Initiative	Stakeholders	Main topics	Discussions Forum	Guiding Principle	Governance	Implementation Concepts
German Ethics Council	Academia	The Ethics Council deals with research and development in particular in the field of life sciences and their application to humans. The focus is on ethical, social, scientific, medical, and legal issues and the likely consequences for the individual and society. https://www.ethikrat.org/en/	☐	☐	☐	■
Working Group on Ethics Initiative D21	Business Politics Academia Civil Society	The Working Group on Ethics aims to translate basic ethical concepts into the digitalized world. It offers objective and constructive evaluation in order to contribute to orientation and to stimulate interdisciplinary discourse. https://initiatived21.de/arbeitsgruppen/ag-ethik/	■	☐	☐	☐
Charter on Digital Networking	Business Initiatives	The Charter represents a positive attitude towards the issues of digital networking. It rewards good examples of digital networking and, with the help of experts from companies, identifies areas where action is needed. https://charta-digitale-vernetzung.de/	■	☐	☐	☐
Ethics of Algorithms Bertelsmann Stiftung	Companies Politics Civil Society	The goal of this project is to contribute to a design of algorithmic systems which will enable greater participation for all. The guiding principle is not what is technically possible but what is socially useful. https://www.bertelsmann-stiftung.de/en/our-projects/ethics-of-algorithms	■	☐	☐	■
Nachhaltig Digital Working Group for Environmentally Conscious Management, German Federal Environment Foundation	Business	The initiative aims to be a competence platform for sustainability and digitalization in medium-sized businesses. It seeks ways to make digitalization an instrument which helps to create a future worth living in. https://nachhaltig.digital/	■	☐	☐	☐
Ethics of Autonomous and Intelligent Systems IEEE	Business Politics Civil Society	The US initiative is committed to educating stakeholders who design and develop autonomous and intelligent systems in such a way that they give priority to ethical considerations. https://standards.ieee.org/industry-connections/ec/autonomous-systems.html	■	■	☐	■
Business Platform on the Future of Work CSR-Europe	Business	This project deals with the impact of digitalization, automation, and AI on the world of work. In addition to sharing examples of best practice from companies and exchanging information, the project focuses on dialogue with political decision-makers. https://www.csreurope.org/future-work-0	■	☐	☐	■
AI Governance: A holistic Approach to Implement Ethics into AI World Economic Forum	Business Politics Civil Society	The focus is on the verification of advantages and relevant risks arising from the use of artificial intelligence and autonomous systems. https://www.weforum.org/whitepapers/ai-governance-a-holistic-approach-to-implement-ethics-into-ai	☐	☐	■	■

Initiatives at Association Level

Initiative	Stakeholders	Main topics	Discussions Forum	Guiding Principle	Governance	Implementation Concepts
Bitkom e. V.	Business	With regard to digital transformation, Bitkom e.V. analyzes the use of IT in traditional sectors and leading industries. Working groups focus on topics of digital transformation. https://www.bitkom.org/Themen/Digitale-Transformation-Branchen/index.jsp	■	☐	■	■
Verband der Chemischen Industrie (VCI) e.V.	Business	With a focus on companies in the chemical-pharmaceutical industry, the VCI considers digitalization projects and new digital business models to be important keys to creating additional value. Under the motto of „Chemistry 4.0", it deals with developments in the areas of digitalization, circular economy, and sustainability. https://www.vci.de/themen/digitalisierung/uebersicht.jsp	■	☐	■	■
BDI e.V. The Voice of German Industry	Business Associations	The BDI e.V. deals with all cross-sectoral digitalization issues which affect industry. These include the Internet of Things, Industry 4.0, cyber security, cyber landscapes, digital infrastructure, and AI. The focus is on political support and the development of recommendations for action on digitalization from the industry's perspective. https://bdi.eu/themenfelder/digitalisierung/	■	☐	■	■

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