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# Ethical Guidelines for the Application of Generative AI in German Journalism

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## Abstract

Generative Artificial Intelligence (genAI) holds immense potential in revolutionizing journalism and media production processes. By harnessing genAI, journalists can streamline various tasks, including content creation, curation, and dissemination. Through genAI, journalists already automate the generation of diverse news articles, ranging from sports updates and financial reports to weather forecasts. However, this raises ethical questions of high relevance for media organizations and societies especially when genAI is used for more sensitive topics and at larger scale. To not jeopardize trustworthiness in journalistic organizations, it is important that the use of genAI in journalism is guided by moral principles. We therefore conducted 18 interviews with researchers and practitioners with expertise in AI-based technologies, journalism, and ethics from a German perspective in order to identify guidelines for the ethical use of genAI in media organizations. We derived requirements for the ethical introduction of genAI and actionable guidelines which explain how decision makers in media organizations should address ethical principles for the use of AI in the news production life cycle, in order to contribute to trustworthiness of journalistic organizations and products.

**Keywords** Artificial intelligence · Ethical guidelines · Trustworthy AI · Media organizations · AI-journalism · Digital transformation

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## 1 Introduction

Increasing financial restraints, the decentralization of news production, and the pressure on editorial offices to report in real-time to be able to keep up with the pace set by social media and other information and communication technologies (ICT) are challenging the journalistic industries (Bruns, 2008, 2018; Fernandes et al., 2023). These circumstances push human journalists to their limits and put leading journalistic principles, such as trustworthiness, beneficence, independence, accountability, and transparency at risk (Slattery, 2016). Among other moral principles, trustworthiness plays a superior role, since its absence determines whether the recipient will decide to consume a journalistic product at all (Simpson, 2012). However, trust in journalism is constantly eroding in the last years, due to external factors like political polarization, disinformation and internal factors such as decreasing accuracy (Jones & Saad, 2019; Newman, 2018; Raman et al., 2024; Wilner et al., 2021).

Currently the news production cycle is mainly human driven and follows the steps of initiation, preparation, and production, which are constantly influenced by the constraints related to the product and the resources of the respective journalist and media organization (Attfield & Dowell, 2003). In order to face the challenges of digitization in journalism, automation and Artificial Intelligence (AI) are increasingly being applied (GPT-3, 2020; Pavlik, 2023). AI can be defined as: “a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan & Haenlein, 2020, p. 17). One of the most recent AI-based technologies is generative AI (genAI) such as ChatGPT (a chatbot using generative pre-trained transformer large language machine learning models (LLM) which bears potential to transform the way how journalistic content is produced (Pavlik, 2023). In 2023, already 85% of people working in media organizations stated that they have experimented with genAI tools such as ChatGPT<sup>1</sup> or DALLE-2 & 3<sup>2</sup>, which turn ChatGPTs prompts into images, to increasingly automate the news production cycle and to produce media products that are publishable almost without human intervention (Kieslich et al., 2023).

While the application of genAI in the newsroom entails major opportunities such as making the work of the journalists more efficient, offering more relevant data driven content to users, and improving business efficacy as a whole, there are also pressing ethical hurdles which arise with its usage (Dwivedi et al., 2023; Kieslich et al., 2023). In the journalistic context, those ethical issues could be related to the spread of misinformation in form of deepfakes (Johnson & Diakopoulos, 2021; Pawelec, 2022), or hallucinations by the LLM (McIntosh et al., 2023) the endorsement of existing filter bubbles (Bozdog & van den Hoven, 2015), or the discrimination of groups and individuals (Beckett, 2019) which can affect journalistic trustworthiness. Although these ethical issues are usually not intended by the programmers, these incidents happen repeatedly (Brendel et al., 2021). genAI often provide false information (Krügel et al., 2023; Zhuo et al., 2023), replicate biases of their training data sets (Sun et al., 2024; Rieskamp et al., 2023), offer little transparency about how responses are gen-

<sup>1</sup><https://openai.com/blog/chatgpt>.

<sup>2</sup><https://openai.com/blog/dall-e-3-is-now-available-in-chatgpt-plus-and-enterprise>.

erated (Krügel et al., 2023) and thus pose the risk of copyright infringements (Lucchi, 2023) or violations of privacy (Wu et al., 2023). The fear of media corporations regarding copyright infringements through genAI is twofold, as exemplified by the court case brought by the New York Times, which accuses OpenAI and Microsoft of copyright infringement by (a) using their content without permission for the training purposes and (b) potential damage of their trustworthiness caused by hallucinations attributed to their brand (Helmore & Paul, 2023).

genAI and journalism are converging, and each field has standards and practices. However, working with AI-based systems often contradicts the self-imposed journalistic ethics code of truthfulness and transparency. Journalists are sticking tenaciously to their values and are confronted with technologists' ideas who understand AI "as an inevitable evolution of the journalistic field" and who share values such as efficiency, scalability and speed. (Helberger & Diakopoulos, 2023; Sirén-Heikel et al., 2023).

Since media landscapes and the role of journalism in society can vary widely between countries and cultures (Zheng et al., 2018), universal ethical standards for the adoption and use of genAI in journalism would not be very precise. Europe is known for high privacy regulations, which also effect journalism (Hafez, 2002) and the development and application of AI. The European Commission developed their own guidelines for trustworthy AI (AI HLEG, 2019) and in March 2024 the EU AI Act was passed by the EU parliament, which aims to bring legal and, to some extent, ethical clarity to the development and use of AI-based technologies in the European Union (Helberger & Diakopoulos, 2023). The EU AI Act is a risk-based approach that places the moral responsibility, in the sense of liability, accountability and blameworthiness, for the development and application of AI in the hands of developers and deployers, leaving the consumer almost out of the equation (Helberger & Diakopoulos, 2023). As a result, it is inevitable that European media organizations must address the ethical use of genAI in their operations. However, previous research is inconclusive on whether a set of abstract moral rules and laws can achieve more trustworthiness (Tamò-Larrieux et al., 2024; Hofeditz et al., 2022). In order not to make the mistake of trying to establish universal moral principles, this paper is focusing on one specific application field: the German media landscape. With 100 million native speakers, German is the most widely spoken native language in the European Union. It is spoken in Germany, Austria, Liechtenstein and Switzerland, but also in minority communities across the continent. The sample of this study focuses primarily on German journalism, to which all interviewees have a connection, but some interviewees have also gained professional experience in other European countries.

Existing guidelines in the converging area of genAI and journalism often focus on journalistic work (e.g., German Press Codex, Society of Professional Journalists) or trustworthy AI usage in general (AI HLEG, 2019; German Press Council, 2017); however, these general guidelines are neither precise nor applicable for mid-level decision makers such as departmental managers or editors using AI to create journalistic content (Ivancsics & Hansen, 2019). Ethical guidelines for the application of genAI in German media organizations can be a first active managerial step towards stopping the erosion of trust in journalistic organizations (Bews & Rossouw, 2002; Wilner et al., 2021). To address this issue, the following question will be answered:

**RQ** What ethical guidelines should decision-makers establish for the use of generative AI in journalism within German media organizations to maintain and enhance trustworthiness?

To answer the research question, we conducted 18 in-depth interviews with AI and journalism experts from research and practice, who have profound knowledge about the German media landscape. We provide an overview of existing ethics principles for AI and journalism that we extracted from an interdisciplinary literature search and compare these with guidelines we base on our interview findings. We derive the most challenging requirements for the introduction of genAI and show how general ethics principles for AI can be substantiated, structured, and applied in German media organizations. Additionally, we explore the interplay between trustworthiness as an overarching value and other ethical principles in the realms of computer and journalism ethics.

## 2 State of the Art

### 2.1 Applications of genAI in Media Organizations

AI-based systems can be described as the most disruptive group of ICT in digital transformation, as it turns journalism from a purely human-driven discipline into a partly automated field (Hansen et al., 2017). The rise of automation and AI technologies is changing journalism and media organizations (Jung et al., 2017; Lewis et al., 2019; Zheng et al., 2018) whereas AI-enabled technologies can improve or threaten ethical behavior (Scantamburlo, 2021). In the context of journalism, the goal and application of AI can influence all steps of the news production in form of e.g. data-mining, commentary moderation, topic selection, publishing, and distributing content, but also news-writing and text-generation via LLM (Blankespoor et al., 2018; Borges-Rey, 2016; Broussard et al., 2019; Jung et al., 2017; Lossau, 2018; Miroshnichenko, 2018). This paper focusses on the impact of genAI on news initiation, preparation, production, and publication. genAI involves tools that use large amounts of training data to create novel texts or visual outputs based on users' prompts (Noy & Zhang, 2023). Based on given (big) data, systems can write journalistic articles by merging information into full sentences, which follow the human conversational structure and linguistic rules. We use the term genAI to describe, on the one hand, the employment of AI-based LLM that can process natural language for producing journalistic texts such as ChatGPT and its underlying models GPT-3 and GPT-4 (Pavlik, 2023; Stokel-Walker & Van Noorden, 2023) or image-generating AI tools such as DALL-E, Stable Diffusion and Midjourney which are able to create content such as images or even magazine covers based on text input (Marcus et al., 2022; Stokel-Walker & Van Noorden, 2023). Besides text and image generation as well the creation of synthetic speakers (e.g. with Microsoft's text to speech AI VALL-E X<sup>3</sup>), such as the generation

<sup>3</sup> Due to the enormous risk for deepfakes VALL-E X is currently not freely accessible. Examples for VALLE-X can be found on: <https://www.microsoft.com/en-us/research/project/vall-e-x/>.

of synthetic video sequences and moderators is possible (e.g. with help of Synthesia<sup>4</sup>, OpenAI's Sora<sup>5</sup> or Metas Make-a-video<sup>6</sup>). In Central European Media organizations (e.g. BR, Zeit, Kronenzeitung, BBC) the Covid-19 pandemic functioned as a booster for the use of AI applications to present the developments about e.g. the intensive care unit occupancy or infection and vaccination rates (Danzon-Chambaud, 2023). In 2021, at the peak of the pandemic, two third of the German publishing houses evaluated the use of AI as high or even essential for their business (Mayer, 2021). However, an application of sophisticated AI applications such as genAI is yet not very common in German journalism practice and is still in an experimental phase. The release of OpenAI's openly accessible interface of ChatGPT in November 2022 functioned as another catalyst for the use of AI in the European and as well German media sector. It led to numerous collaborations, e.g., the German publishing house Axel Springer operates its own ChatGPT service *hey\_* and installed a new taskforce for global genAI (Sommerfeld, 2023). Already OpenAI's GPT-3 showed to be increasingly capable of writing journalistic essays from scratch (GPT-3, 2020). Initial experiments with Open AI's GPT-3-based program DALL-E 2 showed that AI is capable of creating a magazine cover in less than 20 s based on some text-based user input (Liu, 2022).

As genAI is just at the beginning of its application in editorial offices, it is important that its further progress is not only be led by digital transformation, its technological possibilities and economic benefits but by ethical standards and guidelines to not hamper the trustworthiness in media organizations. We argue that media organizations and journalists have the moral responsibility, in the sense of forward-looking responsibility, thus driven by their values and sense of obligation, to anticipate the risks of genAI as an emerging technology, counteract them and instead strengthen their benefits (Aguilera et al., 2022; Stahl & Eke, 2024). It is negligent to only deal with them ethically once they have become widely established and potential damage can no longer be averted.

## 2.2 Ethics Guidelines and Codes of Media Organizations and Their Inclusion of genAI in Journalism

Although codes of conduct do also exist in many other industries, they play an outstanding role in media organizations, as journalists and the media industry influence opinion formation processes and thus have considerable social power over the entire society and not only individuals (Belsey & Chadwick, 2002; Frankel, 1989; Helberger & Diakopoulos, 2023; Meyers, 2010; Ward, 2019). The main topics of ethics in the journalistic context are independence, truth and accuracy, anonymity and confidentiality of sources, impartiality, humanity, and accountability (Slattery, 2016; Ward, 2019). Those journalistic values do form the logics and identity of the journalistic field (Sirén-Heikel et al., 2023). Believing in the adherence to these ethical principles is one of the main reasons why people trust journalists and media orga-

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<sup>4</sup><https://www.synthesia.io/>.

<sup>5</sup><https://openai.com/sora>.

<sup>6</sup><https://makeavideo.studio/>.

nizations (German-Press-Council, 2017; Independent Press Standards Organisation (IPSO), 2016). When AI-based systems are used to generate journalistic content, this can result in a negative effect on trust in the media organization which is publishing this content (Hofeditz et al., 2021).

Professional journalistic ethics are determined by the national and professional contexts of journalists and are often a form of self-regulation as opposed to state regulation (Díaz-Campo & Segado-Boj, 2015; Hanitzsch et al., 2011). However, the introduction of the EU AI Act is leading to an increase in the importance of state regulation of genAI in the editorial and journalistic context, as the EU turned from a soft-law approach with their Assessment List for Trustworthy AI (ALTAI) developed by the High Level Expert Group on AI in 2020, to a binding law, which has been finally passed in March 2024 and is expected to apply from 2026 (Madiaga & Chahri, 2024). Despite its enormous influence on opinion-formation and democracy, the EU has not classified the media landscape as a risk industry for the use of AI from the outset, but it has imposed high transparency requirements on generative AI tools such as ChatGPT (Helberger & Diakopoulos, 2023; Parliament, 2023).

As genAI is still an emerging technology, especially in the context of journalistic usage, it is important that its benefits and threats are thoroughly analyzed to create a future, in which the technologies positive sides are fostered, and its ethical downsides are addressed (Stahl, 2022; Stahl et al., 2016). Not only due to the risk-oriented approach of the EU AI Act, but also due to the public and scientific debate, the possible ethical disadvantages of the technology are often in the foreground. Stahl & Eke, 2024 combined three frameworks for the analysis of the ethical impact of emerging technologies to equally cover benefits and threats of ChatGPT. Nevertheless, they derived only eleven core concepts of ethical benefits e.g. collective human identity and the good life; perceptions of technology, the role of humans, which are highly aggregated concepts, but 30 concepts of ethical threats, which can be divided into the four main categories: threats to social justice and rights (e.g. digital divides), environmental impacts (e.g. pollution), individual needs (e.g. safety) and culture and identity (e.g. discrimination and social sorting). Furthermore, they highlighted the ever-present risk that the monetization of genAI tools may lead companies to play off societal benefits for monetary gain (Stahl & Eke, 2024).

The German media system is defined by its strong public service broadcasting, which is characterized by its independence from state and economy and a high commitment to good journalistic practice (Brüggemann et al., 2014). Since the application of genAI is on the rise in European media organizations, as well the number of different stakeholders, which are working on the ethical boundaries of AI in the newsroom increases. Besides the European and German policy makers this includes, for example, non-governmental actors as Partnership on AI, a non-profit of around 50 organizations committed to the responsible and transparent use of synthetic media. However, their framework is not oriented towards the individual steps of the news production process and stays relatively vague regarding ethical values which go beyond transparency, prevention of harm and accountability (Partnership-on-AI, 2023). In addition, the London School of Economics (LSE) has developed a starter package for the use of AI in the newsroom, which focusses on the most frequently asked questions about AI in journalism and links sources which could be interest-

ing for decision makers, who are considering starting using AI in their organization. However, the package focusses much more on the potential of AI than the ethical pitfalls linked to its introduction (Polis, 2023).

Besides policy makers, non-governmental and scientific players as well media organizations themselves are more and more presenting approaches and guidelines for the ethical introduction of (gen)AI in the newsroom. In a study by Becker et al. (2023), which has so far only been available as a preprint, 52 AI policies from international media organizations were compared with each other and, despite some national and sector-based distinctions, a large isomorphism was found between them, which the authors attribute to the uncertainty factor of emerging technology and the international links between the organizations. However, they also do not want to rule out the possibility that some organizations only want to give themselves an ethical and innovative image through AI guidelines, known as blue washing. The Public Media Alliance, an association of global public service media, offers a list of nine genAI ethics guidelines from global public media organizations, three of which include current statements from the German public service broadcasters ZDF, SWR and BR (Public Media Alliance, 2024). The public service broadcasters BR and BBC (UK) have been pioneers for an active use of AI and genAI in the newsroom and started to reflect its ethical boundaries and ideals. The BR guidelines include ten value-oriented principles with explanations, but they are not oriented towards the journalistic work process. Furthermore, they give the impression that the BR does not understand the AI team and the journalists as a unit, which places cohesive moral action and decision-making regarding AI on the shoulders of the AI team, instead of the entire organization (Bedford-Strohm et al., 2020). The BBC published a self-audit tool, which consists of a catalogue of reflective questions regarding the use of AI and ML in the context of the BBC's organizational and journalistic values (BBC, 2021). Although some large-scale media organizations like BBC already published their own guidelines for using AI-based systems and especially genAI in their journalistic practice (BBC, 2021), they largely function as preconditions that have to be addressed before using. They, on the one hand, do not specifically focus on the impact of actually using genAI tools in the media production process and, on the other hand, lack generalizability for other media organizations and a common scientific basis.

While the list of genAI specific and genAI including ethical guidelines in journalistic organizations is still limited, the number of general ethical guidelines is manifold. The database for accountable journalism by the Ethical Journalism Network and Reynolds Journalism Institute lists more than 400 different codes of conduct from individual outlets, sectors, unions, and press councils, such as supranational and synthetic codes (White, 2021). In general, all different press codes cover a wide range of ethical issues and set a framework to ensure high professional standards that members of the press commit themselves to. The justification of adherence to ethical principles is closely tied to the value of trustworthiness since journalists depend on the trust of their audience, which in turn depends on the perception of ethical principles (German-Press-Council, 2017; Independent Press Standards Organisation (IPSO), 2016).

Ethical questions that improve their trustworthiness influence the moral decisions of journalists throughout the entire journalistic production life cycle. Due to

the application of genAI technologies, the news production process may not only be accelerated but also more and more automated, this development demands a discussion and reevaluation of morality of journalistic work.

### 2.3 Trust and Trustworthiness in the Context of GenAI in Media Organizations

In the literature on ethics in AI-enabled automated technologies, trust and trustworthiness are considered as overarching principles or concepts that need to be achieved to benefit society (AI HLEG, 2019; Floridi, 2019). They underline the complexity of the concepts, which follow different premises depending on the context and discipline in which it is discussed (Simpson, 2012; Rousseau et al. 1998).

Trust is a consciously chosen status, a relationship and cooperation between two actors in which one expects the best possible from the other party, though one is uncertain about it (Dunn, 2000). Thus, trust is linked to the **relationship** of trustee and trustor. Trust gives **discretionary power** and despite **uncertainty** and **vulnerability**, the trusting person (trustor) must assume that the trusted person (trustee) is led by her **benevolence**, or at least not by ill will. The discussion about trust and trust relationships normally arises when trust is violated and betrayed. As Baier puts it: “We inhabit a climate of trust as we inhabit an atmosphere and notice it as we notice air, only when scarce or polluted” (Baier, 1986, p. 234). While trust is a feeling that I have about someone, trustworthiness is a condition that I must create to be trusted. Thus, trustworthiness conditions trust, and trust is sustained by trustworthiness (Simpson, 2013). According to Mayer et al. (1995), interpersonal trustworthiness is defined by three factors: ability, benevolence, and integrity. Thus, **ability** and **integrity** can complement our list of criteria of trust and trustworthiness.

Trust is not only essential for human coexistence, but it is also the basis for functioning relationships between people and organizations. According to Caldwell and Clapham (2003), trust in organizations is based on the information and experiences a person has had with an organization, both through direct interaction with employees and through experiences with the products offered. Bews and Rossouw (2002) underlined that it is worthwhile for companies to actively invest in ethical actions and foster an ethical appearance as this would positively impact its trustworthiness. One way to do this, in their view, is to establish clear ethical principles and guidelines. With the journalistic codes to which journalistic organizations commit, the managers are already taking an important step in terms of cultivating their trustworthiness, by investing in the criterion of (moral) integrity (Mayer et al., 1995).

To be able to fulfil its position as a watchdog and the fourth estate, observing the executive, legislative, and judiciary, and keep society well informed, journalism depends on the trust of its recipients (Gil de Zúñiga & Hinsley, 2013). However, journalistic trust is constantly eroding in the last years, due to external factors like political polarization and internal factors such as decreasing accuracy (Jones & Saad, 2019; Newman, 2018; Wilner et al., 2021). In the light of disinformation and huge financial constraints trustworthiness has even increased in significance for quality journalism.

Media organizations do not only include human employees and physical products and services but may also include digital products such as genAI to support

their work with among others researching content for journalistic articles, generating drafts for texts (Sirén-Heikel et al., 2023) or suggestions for and drawings of pictures (Marcus et al., 2022) or even videos (Kieslich et al., 2023).

As genAI still comes with certain weaknesses, this may also contribute to the trustworthiness of media organizations using them. Some of the risks associated with genAI can have a huge impact on the trustworthiness of media organizations. In particular, hallucinations, the possibility of deepfakes, the reinforcement of existing biases and infringements of violations of copyright and privacy are the most pressing for journalism (Diakopoulos et al., 2019; Lucchi, 2023; McIntosh et al., 2023; Pawelec, 2022; Sun et al., 2024; Susarla et al., 2023). Due to these ethical pitfalls this study elaborates under which conditions genAI may help to build and maintain the trustworthiness of journalistic organizations, instead of putting them at risk. Drawing from the EU AI ethics guidelines (AI HLEG, 2019; Floridi, 2019), we consider trustworthiness as the overarching meta-principle, which should be the objective of all ethical endeavors. As well Hasan et al. (2022) underline that the trust relationship between the different stakeholders, in the context of this study the audience and the media organizations, is an important criterion for assessing the ethical risks of AI. However, Steedman et al. (2020) clarify that trust is a multifactorial and highly context dependent concept. Although the general trust in a media organization has a positive influence on its trustworthiness in relation to their use of data driven systems, factors like general anxiety and skepticism about data driven systems, influenced by e.g. data breaches like Ticketmaster's data theft of 560 million personal data in June 2024 (Burgess, 2024), can undermine the trust in an organization's handling of data driven systems, even though it is generally regarded as trustworthy (Bansal & Warkentin, 2021) (Bansal & Warkentin, 2021).

According to Bendel (2019), the central difference between human and machine ethics lies in the intention of action: while humans are guided by their intuition, consciousness, and empathy, machines can only act based on rules. This results in the necessity of clearly defined rules and ethical guidelines, especially when AI is used in the context of content generation in journalism, because journalism has a social power, can influence public opinion, and the law does not cover each aspect that is important to ensure an ethical application of genAI in journalism (Belsey & Chadwick, 2002; Bendel, 2019; Broussard et al., 2019; Stray, 2019; Ward, 2019). This also shows the EU's assessment in the context of the EU AI Act that the media sector is not generally a risk industry, neither genAI as ChatGPT is a high-risk technology, although scientists from media, legal and computer sciences point to the far-reaching effects of misuse of the technology (Helberger & Diakopoulos, 2023; Parliament, 2023). We fully agree with Helberger and Diakopoulos (2023) that academia is bearing responsibility to identify and analyze the effects which might currently be overlooked by policy makers. Therefore, general theory-driven ethical guidelines need to be established to anticipate and address key problems, such as the question of transparency of genAI in journalism in the media production cycle to ensure journalistic ethics codes and maintain media organizations' trustworthiness (Martin, 2019; Rothenberger et al., 2019).

### 3 Empirical Study

To establish ethical guidelines for using genAI in the media production process of German media organizations to maintain or even foster the trust in these media organizations, we conducted a qualitative empirical study in the form of 18 semi-structured expert interviews in two cohorts. (Myers, 2020).

The interviews are systematically analyzed using qualitative content analysis (Mayring, 2014). In order to gain explicit and implicit knowledge (Döringer, 2020) on ethical standards in journalism and on ethical challenges for genAI in journalism, we recruited researchers and practitioners who are well versed in German journalism, to equally cover expertise in ethics, AI-enabled automated journalism and practical insights into editorial offices. The recruitment was based on existing contacts and an extensive web search. For recruiting, we considered the expert's position and status as well as their relevant operational, contextual, and interpretative knowledge on the topics genAI, journalism, and ethics (Kaiser, 2014). Overall, experts that fulfilled the intersection of AI, journalism, and ethics were rarely found.

Table 5 in the Appendix offers an overview of the characteristics and areas of expertise of the 15 interviewees of the first cohort and the three interviewees of the second cohort. The assigned pseudonyms are composed as follows: R represents researcher, and P represents practitioner or a combination of both. The letters that follow indicate the field of competence: AI, J representing journalism, and E representing ethics or a combination. The number describes the order of our interviews and enables assignment in the overview table. The first 15 interviews have been conducted virtually, in German and once in English language, between May and July 2020, via Skype, Google Hangouts, or phone. The three interviews of the second cohort have been recorded in March 2024 and were conducted in German and took place in person, via Zoom or Microsoft Teams. The interviews lasted between 22 and 50 min. The informed consent to record and analyze the interviews was obtained in advance. The data was analyzed and stored within one research institution compliant to the European General Data Protection Regulations (GDPR). Our international interviewees from the countries Belgium, Switzerland and UK were recruited as they are part of the German speaking journalism as, P/R-AIJE-7 has studied and worked in Switzerland and Germany and P/R-AIJ-8, is a German correspondent in Brussel/Belgium. P-J-17 is a German senior journalist who worked both in Germany and UK for public service broadcasters. Our English-speaking interview partner from the UK, delivered valuable overarching knowledge for this study, as he is one of the leading European researchers on AI in journalism. His research scope is clearly including all European countries, wherefore the insights could be easily applied on the German media market.

For the semi-structured interviews of the first cohort, we developed an interview guideline consisting of eleven key questions. We divided the interview into three thematic blocks: the introduction and overall understanding of automated journalism through AI, preconditions, and constraints for the introduction of (generative) AI in the newsroom and relevant ethical norms in this context. For the latter, we inquired how ethical norms for automated journalism through AI could be tied to the news research and writing process. The scientific foundation of this part of the interviews

forms the slightly adapted phases of journalistic writing and research (Attfield & Dowell, 2003). The original model distinguishes between the steps of initiation, preparation, and production. We expanded the original model to include the publication phase, as this also considers the processes that is directly tied to public accessibility of the journalistic product. We chose the model as the basis for our empirical work because, from our point of view, the division of journalistic work into different steps increases the practical applicability of our results. In addition, Attfield and Dowell describe constraints presented by the product and resources that influence the journalistic process at various points. This perspective offers our research a good starting point for the moral and genAI-related challenges which we identified.

An overview of the leading interview questions can be found in Table 6 in the Appendix. The questions of the topic block “ethical values for AI-Journalism” consisted both of open questions and concrete questions regarding the values of responsibility, independence, transparency, and trustworthiness for genAI, deductively derived from literature regarding AI ethics. The questionnaire was slightly adapted depending on the field of expertise of the interviewee and their own practical experience regarding AI in journalism; an example of this is “Where have you ever experienced AI in your daily journalistic work?” for experts with experience in journalism, and “Where have you ever experienced AI in connection with journalism?” for experts in ethics or AI. We provided the definition of AI by Kaplan and Haenlein to each interview partner to ensure a shared frame of reference: AI can be defined as: “a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan & Haenlein, 2020, p. 17). Furthermore, we provided examples of genAI such as a Guardian’s article written by using GPT-3 which was the current state of the art technology during the time we conducted the interviews (GPT-3, 2020). With these examples we narrowed down the focus to genAI technologies without getting too technical for the interviewees with less technological knowledge. However, most interviewees did not directly use the term ‘genAI’ rather than referring to AI in general. At the end of the interview, the experts were asked for further suggestions regarding which further ethical values could become important for the use of AI in journalism. As the openly accessible form of ChatGPT has not been released when we conducted the first 15 interviews, we contacted our interviewees a second time in March 2024 and to check whether their opinions and statements have changed over time after exploring genAI such as ChatGPT or Midjourney. We also decided to conduct additional interviews. Besides, one check-up interview with P-J-10 in Microsoft Teams, we further enriched the data base with three additional full interviews in person and via Zoom. The guiding questions of the second cohort of interviews focused even more explicitly on the use of genAI and concretely asked how journalists dealt with ethical problems resulting from its usage (e.g. hallucinations, deepfakes, copyright infringements) and took the chance to collect concrete feedback on the first version of the guidelines. The ten key questions can be found as well in Table 6 of the Appendix. We included the findings of the second interview cohort as well in this work (P-J-16, P-17 and P-J-18).

The transcription was conducted using with the qualitative data analysis software MAXQDA. We chose the qualitative content analysis according to Mayring (2014) as the most suitable method for coding and data analysis due to its systematic procedure

and established approach of classifying qualitative content. To include the existing knowledge base regarding genAI without being too restricted regarding the creation of new categories, we enriched the inductive category formation by adding the three deductively derived categories accountability, independence, and transparency, as well as our meta moral concept of trustworthiness. The first version of the codebook contained the deductive categories with explanations and anchor examples. To check the appearance of the predefined categories and to derive further inductive categories, the interview materials were coded by two researchers independently. When a new inductive category was derived from the interviews, both coders adapted the codebook accordingly. After the finalization of the codebook, the material was coded again and the intercoder reliability between the two coders was calculated by using the intercoder agreement function of MAXQDA. This resulted in a Cohen's  $\kappa$  coefficient of 0.83 confirming that the agreement between the coders was almost perfect, according to the interpretation guidelines of Landis and Koch (1977). In the case of deviations, a third coder was involved, and the majority rule was applied. All inductive categories are precisely defined, explained, and represented by anchor examples in the following section together with the results.

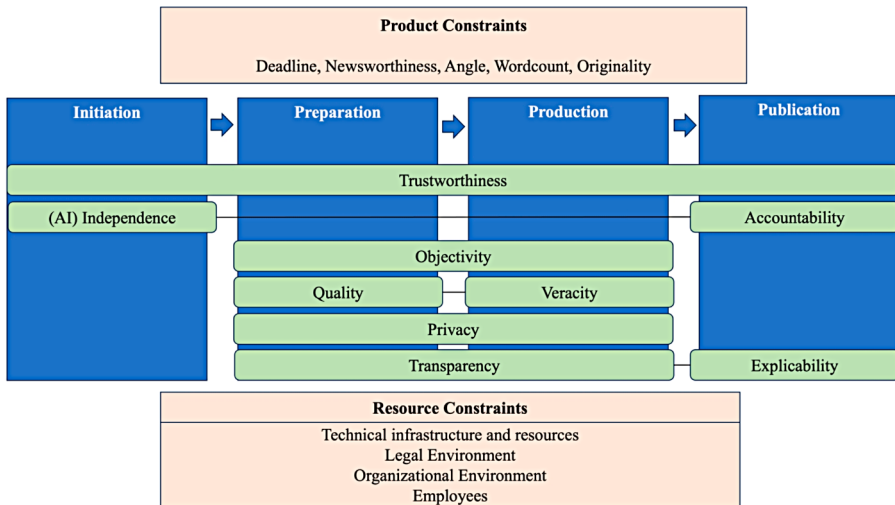
## 4 Results

Principles and values form the foundation of ethical guidelines. It was therefore important for us in the first step to find out which principles are the most relevant for the application of genAI in the various steps of the news production cycle according to our interview partners. We identified nine categories of ethical principles and one category of a meta-principle in our interviews that we consider essential for the use of genAI in the journalistic production process. We coded the interviews along the deductively established categories of accountability, independence, transparency, and trustworthiness. In addition, we identified the categories objectivity, quality, privacy, veracity, and explicability as ethics principles through inductive coding. In the following sections, we interpret the relationship of these principles to each other, to the media production lifecycle and to the codes of ethics of German journalists. The results from our qualitative content analysis are summarized in Fig. 1 and will be explained in the following sections.

### 4.1 Trustworthiness: The Meta Principle

The meta principle of *trustworthiness* represents the overarching goal of all media organizations. Trustworthiness is a very multifaceted principle as it includes different levels: the organization, the product, the employees, and the ICT involved. It is highly interwoven with all other ethical principles and is directly affected if other principles are violated or put at risk.

One important element of the application of genAI in journalism which maintains or even fosters the trust in the media organization and its products, is the trustworthiness of the data used and the data sources as the basis for all further operations. This involves the comprehensibility and traceability, as well as the credibility of the data



**Fig. 1** The ethical principles of a moral implementation of genAI in the journalistic production process and its constraints (own depiction based on Attfield & Dowell, 2003)

sources. In addition, plausibility checks, linguistic sense, visible ethical and general guidelines, which are created by experts from different fields contribute to establishing and maintaining trust (R-AIE-3, P/R-AIJ-9, R-J-5, P/R-AIJ-6, R-AIE-4).

The subcategory *positive* emphasizes positive feelings of trust tied to the advantages of genAI. According to some experts, trustworthiness is fostered by the fact that AI-generated content is based on a lot of data instead of individual opinions and views. Accordingly, the trust in AI-journalism has the potential to be even higher than in human journalism (R-J-5). R-J-5 summarizes the positive aspects of trustworthy AI as followed: “[It is] based on data, automatically produced and therefore not so much subject to human error.” Here it needs to be underlined, that however, the data base itself can be subject to human error and be biased, wherefore it needs to be carefully chosen, to not hamper the AI’s advantage. P-J-16 minimizes the benefit of mere data analysis. Especially in the production of news, e.g. political reporting, reliability and contextuality are so essential that human journalists must always be active to protect the central value of trustworthiness.

The subcategory *negative* highlights which aspects can lead to a loss of trust and the challenges genAI in journalism evokes. According to the experts, loss of trust is caused by a lack of identification under AI articles regarding a responsible human actor, transparency, as well as technical security problems (R-AIE-3, P-J-10, P-J-12, P-J-16). Transparency should always include both transparency of the use of genAI by the media organization and source transparency by the genAI tools (P-J-16), while it was critically noted that complete transparency in genAI processes and their use of data is not possible (P/R-AIJ-6). Besides, several experts highlighted the economically oriented intentions of companies in applying AI as problematic (R-AIE-3, R-AIJE-1, P-J-12, P/R-JAI-11, P-J-17). Another challenge occurs when attempting to transfer the existing trust in journalism to the new technology. R-AIJE-1 summarizes this as follows: “99% of people’s problems with journalism is about its human

*nature, you know. It's not really a fear of technology.*" This underlines the multifactoriality of trust and trustworthiness both regarding AI and media organizations and their products.

## 4.2 Independence

In the context of genAI in journalism, the category *independence* means that an AI researches and produces journalistic content independently and even potentially publishes it by itself without human intervention. This is not the case yet for any of our interviewees. Some participants such as P-J-16 and P-J-17 even doubt that full news pieces will ever be fully written or spoken and published without human checkups in their media organizations and pledge much more for a more targeted use of genAI to support journalistic work during the media production cycle, such as a research tool in the initiation phase, a way to receive meaningful summaries of long pieces of text or a helpful technology to improve your own journalistic piece before publication for example by inserting even more visual language in radio reports, or in the improvement of graphics for visually impaired people. The experts described AI technology as being trained to act independently and that it should be independently able to work efficiently (R-AIE-3, P/R-AIJ-9), but at the same time the experts mentioned that human control is always advisable (P/R-AIJ-8, P-J-12, P-AIJ-14 P-J-16, P-J-17). The idea of the human-in-the loop approach was mostly endorsed. This is primarily related to the ethical value of accountability, which is particularly important in the publication phase. Independence and accountability can be understood as the two sides of the same coin. Expert P-AIJ-14 underlined that it is only possible to benefit from the use of an AI, which declutters workflows and frees up resources for human employees, if a certain degree of independence is given. P-J-17 emphasizes that the trustworthiness of the media company should never be put at risk in order to enforce independence.

The experts stated that the need for control depends on the use case (R-AIE-3, P/R-AIJ-9, R-J-5, R-AIE-4, P-J-12, P-J-16). In the case of sensitive data, or in the case of topics with great human impact such as commentaries and influential analyses, control before publication is needed and the independence of the genAI should be restricted. P-J-12 raised the important point of editorial independence concerning genAI which is another facet of independence in this context and was strongly endorsed by P-J-16 and P-J-17 as well. P-J-12 explained: *"It is not impossible that there are providers of robotic software that writes text, free of charge, but these texts might have programmed a certain promotional value (...) We have to make sure that our robots are independent, incorruptible and it needs to be transparent who programmed them and according to which algorithms and potential hidden agendas."* This statement points at the ethical pitfall of an AI (inhouse) knowledge gap. P-J-16 emphasized that it would be important to be able to restrict the genAI so that only approved sources are used to counteract these problems, e.g. by excluding closed databases or foreign-language sources to ensure traceability for the journalist before publication. Regarding the other ethical categories, there is also a connection between independence transparency and explicability, since only an understanding

of the genAI's independent actions makes it possible to recognize and counteract a potential hidden agenda of an external AI service provider.

### 4.3 Objectivity

The category *objectivity* in the context of journalism is defined as neutral reporting, which obliges journalists to carefully research and write articles independently of their own opinions, attitudes, or biases. The experts agreed that objectivity is a key quality measure and an ethical principle in journalism. P-J-17 emphasized that objectivity as an ideal of absolute neutrality cannot be maintained, but that a fair assessment and classification of all facts and points of view must be carried out without creating a false balance of opinions for reasons of objectivity. This is why P-J-17 advocated the concept of impartiality. Climate change was cited as an example, in the coverage of which the opponents' position does not have to be mentioned every time, as their point of view has long been scientifically refuted and solely leads to an endorsement of disinformation narratives. While human journalists cannot achieve total objectivity as sorting facts always requires a personal assessment, a genAI is guided solely by the data it has been trained with. If the facts on which the data is based are correct and there is no bias in the data, some experts believe that this can also be an advantage of genAI. Therefore, six experts (R-AIJ-2, P-J-10, R-J-5, 7, R-AIE-4,) agreed that genAI provides objective reporting and AI can be superior to human journalists regarding this aspect. An anchor example for this category gives R-AIE-4: *“Journalism, for many years now, has become more one-sided, has become less balanced and there, I think, AI would have a chance to change that a bit.”* However, some experts also underlined that objectivity can only be maintained if biases in the data set and the algorithm are constantly eliminated (P-J-12, P-AIJ-14, P/R-JAI-11, P-J-16). This argument of these experts must be clearly assessed from a computer science perspective: a high level of objectivity when using genAI is ensured by high data quality and not simply increasing the amount of data. The pure increase of data amounts will not directly lead to an elimination of existing biases. For example, the inclusion of foreign language sources that cannot be independently evaluated by the journalist can minimize the bias regarding the region, ethnicity, and language area (e.g. Eurocentrism or Americanism), but the quality of the content can no longer be monitored. It thus poses a risk to the data quality, which directly impacts objectivity. If biases are replicated in reporting, this might even contribute to the spread of mis- and disinformation, which is one of the main pitfalls of the essential value of journalistic trustworthiness.

### 4.4 Privacy

Both AI and human journalists work with information and data as the basis of their journalistic products. A lot of this information and data relates to individual subjects and groups which are legally granted protection of their privacy. The principle *privacy* refers to aspects that are relevant or conspicuous regarding data protection. The experts advised to comply with data protection regulations or to consult a data protection officer if sensitive or personal data is used (P/R-AIJ-9, P/R-AIJ-6). The

transparency of the processes used regarding data was also highlighted by some of the experts (P/R-AIJ-6, P-AIJ-14, P-J-16). An anchor example for this subcategory is the statement from P/R-AIJ-8: *“Data protection always refers only to personal data, but if there is no natural person involved, an automatic financial report or a public event such as a game or a sporting event, then it has no real relevance for data protection.”* Privacy not only represents an ethical value as described here but is directly connected to preconditions for genAI to find moral use in media organizations. P-J-16 and P-J-17 underline, privacy in journalism involves not only data protection in the legal sense, but also the protection of confidential sources, such as whistleblowers and other witnesses, whose personal information should not be released under any circumstances and should likewise not be entered into an AI. To ensure this special protection the organization of P-J-18 implemented their own GPT model for their journalists to be able to ensure privacy of individuals in their articles. P-J-17 is critical of genAI’s ability to meet the media organization’s data protection and copyright standards: *“I am convinced that the major genAI developers have used all the data they could get their hands on for training. To put it bluntly, you will have to say goodbye to the moral ideal of protecting intellectual property and copyright if you use common genAI systems such as ChatGPT.”*

#### 4.5 Quality

The principle *quality* highlights which aspects concerning the quality of the work should be considered when applying genAI in journalism. As the output of genAI is closely linked to the quality of the data it uses, data quality is one essential aspect. The anchor example from P/R-AIJ-6 reflects the demand for data quality: *“All AI algorithms in these areas that I know generate form. They do not generate content. The content is determined by the data I use. This data must be correct.”*

As the experts emphasized, the importance of data quality is linked to other moral principles such as objectivity. The objectivity of the data the genAI works with is crucial for a high-quality output (R-J-5, P/R-AIJE-7, P-J-12, P/R-AIJ-12, P-AIJ-14). Discrimination, false information, and falsification of data are to be avoided (P/R-AIJ-8, P-J-10, R-J-5, P-J-16). P-J-16 underlined how important it is that data transparency is given in order to assess the quality of data sources and exclude potential problematic sources, in order to enhance the general quality of the output. The assessment of the sources might counteract and identify hallucinations. Besides the quality of the data, the quality of the genAI’s LLM itself is of crucial importance. P-J-12 and P/R-AIJ-12 proposed standards, potentially established by the publisher organizations, to ensure the quality of the AI used. As a lack of quality in the journalistic output can not only be traced back to the data source but to the quality of the algorithms and the complexity of the genAI, which are applied. Furthermore P-J-16 pledged for quality checks with additional AI tools, to identify if material which was sent to media organizations from sources outside of the organization on the use of genAI and identify potential deepfakes. P-J-18 explained that their way of ensuring more quality is using their own GTP model which only incorporates data from specific data sources. As this internal genAI solution is not as powerful as the latest version of ChatGPT or MidJourney, they would always decide from case to case whether it

is better to use their internal GPT solution for more objectivity or sensitive data or if they need higher quality and potentially less sensitivity and objectivity.

#### 4.6 Veracity

The subcategory of *veracity* summarizes the need for the genAI to fully adopt the presentation style of journalistic articles. This includes that the articles written by the genAI adapt to the writing style and choice of words which are expected for the implemented journalistic format; while news and analysis require a serious writing style, commentaries and reportages allow a more figurative and sensual language. P-J-17 emphasized that a genAI is particularly attractive if it knows and can imitate the corporate style of the media company by using its own archive. This would save a lot of time in terms of formatting. The category of veracity includes that an AI should never distort facts by presenting it in a certain way. In addition, the spelling and grammar needs to be correct (P/R-AIJ-6). Expert P-J-10 stated in her second interview round that, in contrast, genAI can be used to check the spelling and grammar of a human journalist, to avoid mistakes that mitigate veracity. The idea of using genAI for the improvement of text pieces was as well endorsed by P-J-16 and P-17.

This leads to the second side of veracity beside formal correctness, the factual correctness of the work the genAI produces. The experts agreed that correctness and accuracy in the articles written by AI are of great importance for credibility (R-AIJ-2). An anchor example of this was noted by P/R-AIJ-8: “[*veracity*] is, of course, the in and out of journalism.” Expert P/R-AIJ-12 added: “*We have an obligation to determine the truth, whatever that is. We have a basic mandate for verification. And with ‘we’ I am referring to all journalists and media organizations. It is our obligation to bring relevant and right information to our recipients.*” Expert P-J-12 underlines that veracity in all journalistic forms is essential for the trustworthiness of organizations: “*Especially in the small things you can disappoint readers very quickly. If the text about the soccer C-League already contains incorrect data and figures, names are wrongly spelled, or match results are wrong, that can cause just as much damage to a medium’s reputation and trustworthiness as if a political text calls minister Jens Spahn, Holger Spahn; therefore, ... the robo-journalist needs to be very precise.*” However, correctness has been relativized in the case of opinion articles, as it is no longer the truth that matters, but a specific opinion. Furthermore, some experts (R-AIJE-1, R-AIJ-2) postulate that responsibility for the veracity as correctness in the case of genAI in journalism is transferred to the data provider as it is tied to the correctness of the data.

#### 4.7 Transparency

The transparency category emerged as one of the most multi-faceted and multi-layered value categories. The transparent handling of the use of genAI technologies could be defined as the basis of this category. The experts presented numerous pro and con arguments for this. The opinions ranged from the possibility of concealing the use to the discussion of a labeling obligation. Some experts underlined that who wrote the article should be clearly stated every time, no matter whether it was writ-

ten by a human journalist, a genAI, or with the help of an AI; therefore, it should always be labelled if the article is from a genAI, partly written by genAI or supported by genAI (R-AIE-3, P/R-AIJ-8, P/R-AIJ-9, P-J-10, R-J-5, 7, P/R-AIJ-6, R-AIE-5, R-AIJE-1, P-AIJ-13, P-J-16). An anchor quote for this category came from P/R-AIJ-6: “*I am basically a great friend of making it transparent to readers who has written a text. I am a friend of always being transparent ‘this text is from...’ and if the text is from a machine, then you write ‘this text is from a machine’*”. The experts also saw the providers of genAI technologies as having a responsibility to ensure source transparency for professional journalism. P-J-16 emphasized that source transparency applies to him as a human journalist and must therefore also apply to genAI. In this way, human verification can be guaranteed, and possible plausibility problems and hallucinations and copyright infringements can be counteracted. Furthermore, the transparency of the genAI providers should as well include transparency about the conditions under which their data was collected, or labelled, as exploitation of the global south or marginalized groups, might collide with the own organizational policies (P-J-17). Five experts noted (R-AIE-3, P-J-10, R-AIE-4, R-AIJE-1, PR-AIJ-12, P-J-17) aspects against transparency. They said that transparency or labelling is not always necessary in the context of genAI in journalism, and they found different arguments for that. Some argued that articles are perceived to be better if it seems that they were written by a human journalist and thus recommended leaving out the author information. In addition, those experts had the impression that transparency might not be necessary because readers might not care if an article was written by a human journalist or a genAI, if informative and accurate articles are delivered. However, this opinion was vehemently rejected by other experts. While journalists from the online, print and TV sector saw few problems in the concrete feasibility of transparency by means of disclaimers, authors’ names or captions, P-J-16 as a radio journalist, noted that transparency can hardly be implemented on the radio, as no constant labeling of genAI application can be guaranteed.

Closely interwoven with transparency is the meta-principle of trustworthiness. The fear of a loss of trust on the part of the public due to the transparent use of genAI was seen by some experts as exaggerated (R-AIJE-1). Here it is important to remember that even the cosmos of the newsroom and journalistic creation is not a fully visible space for the audience, even if it is man-made (R-J-5). P-J-17 endorsed the position by R-J-5 and took the point of view that the need for transparency increased with the level of independence of the AI, but rejected the idea that it needed to be clearly identified if genAI was e.g. used for idea generation during the initiation phase or as a tool to enhance the text. Much more P-J-17 pledged for transparently communicated policies of use by the entire media organization. P-J-18 also explained that her media company already demand from their journalists to highlight any use of genAI in their media products by providing a label next to the author’s name. Transparency has shown to be relevant beyond this in terms of the underlying code of the AI application itself. In relation to this, ethical conflicts could be identified between the moral principle and the economic interest of the company, or the external provider of the genAI. Due to the complexity of this conflict, the category *explicability* was added, which is assigned to the process stage of publication and further enhances this aspect of transparency.

## 4.8 Explicability

Closely related to transparency is the category of *explicability*, which takes transparency to a practical level. While being transparent regarding the use of genAI, the functions of the applied algorithms, and the data sources used is important. In addition, a certain level of explicability is required to ensure everyone with a non-technical background, either journalist or recipient, to grasp to a certain extent how the genAI works (R-AIE-3, R-AIE-4, R-J-5; P-AIJ-14). This value is closely linked to the level of AI expertise of the workforce. Expert R-AIE-3 underlined that explicability of genAI used in journalism is applied consumer protection by the media organization; only if the consumer understands what is behind it and how it is created, they can draw their own conclusions. Expert R-AIE-4 is convinced that a form of explainable AI is very beneficial for the user: *“Explicability of AI-generated journalism can be, for example, a question of giving the sources in a certain way, even if they might not appear in the final article, but that the AI then says ‘here and there from the sources I’ve gathered this...’ would highly contribute to the explicability, although it is not such a spectacular thing.”* However, it is important to understand besides the level of individual IT expertise as a limiting factor to explicability, as well the black box effect of certain algorithms such as the economic and copyright interests of the genAI operators are putting a limit to the realization of explicability. In terms of practical implementation P-J-16 suggested that on the websites where the media product can be found subpages are linked on which the technology is well explained, such as a reference list, which can be opened below the piece, in which a genAI was applied. Many experts endorsed that it was important to find a balance between useful information about the genAI and its output and a dissuasive overload of information.

## 4.9 Accountability

In the context of the ethical use of genAI in journalism, *accountability* includes the responsibility for published articles written by genAI and their possible consequences. All experts agreed that the editor, company, or institution itself is accountable for the content and content pieces produced by genAI and this should be stated in the imprint or the product itself. Two experts postulated that the people who decided to use the technology are especially accountable (R-J-5, R-AIE-4). It was pointed out that a machine cannot be held accountable for errors and, for example, publish fake news (R-AIJE-1). As such, the experts saw hardly any difference between genAI and human journalists in this regard. The experts with practical experience emphasized the importance of correcting and identifying errors in published articles, if they happen (P/R-AIJ-9, P-J-10, P/R-AIJE-7, P-J-16). However, if an error could have a major impact, a final controlling authority which could be the chief of duty or an editor would be conceivable (P/R-AIJE-7, R-AIE-4, P-J-12, P/R-AIJ-12, P-AIJ-13, P-J-16, P-J-17). P/R-AIJ-6 defined the locus of responsibility as follows: *“The editor-in-chief is always responsible for the content and mistakes are dealt with in the same way as mistakes in any other text.”* However, P-J-18 stated that her company already nominated a technical head of AI and a legal head of AI which are responsible for results of their internal genAI system which they launched recently. It is

therefore important to differentiate between internal and external genAI services to ensure alignment to ethical codes of conduct. Referring to the category of independence, it must be emphasized that even if genAI is given complete freedom to generate and publish articles, the responsibility for the resulting product and its possible effects always remains in human hands. In order not to endanger quality, veracity and trustworthiness as ethical principles, an algorithm-based author might have to face a supervisory authority, equally to its human colleagues, the more rigid the more sensitive the topic and format are.

## 5 Interpretation and Discussion

Through an inductive coding of the interview material, we realized that before guidelines could be established and derived for the trust maintaining use of genAI in German media organizations, first the ground for its ethical application needs to be set. We identified four main categories of requirements for the ethical use of genAI in German media organizations: technical-, environmental-, employee- and organizational requirements. These can be used to develop a genAI policy for a media company. The interviewees presented what they considered to be the ideal and desirable prerequisites for the ethical introduction of genAI, which in practice, however, encounter limitations that we intend to demonstrate by discussing them in the context of the scientific state of the art and technical limitations and requirements.

### 5.1 Intraorganizational Requirements for an Ethical Introduction of genAI in German Media Organizations

The interviewees highlighted necessary *technical requirements* for the ethical introduction of genAI and defined an advanced technical infrastructure as crucial (R-AIE-3, P/R-AIJ-8, P/R-AIJ-9, R-J-5, P/R-AIJE-7, P/R-AIJ-6, P-AIJ-13, P-J-16), which endorses the findings of Borges-Rey (Borges-Rey, 2016) and Newman (Newman, 2018) who stated that technical infrastructure, data infrastructure, and technical competences are key factors for genAI use in journalism. The level of differentiation in the formulated requirements for a desirable technological infrastructure varied significantly depending on the level of IT and, above all, AI expertise, of the interview partners. While many experts highlighted that they already created infrastructures with which they operate their AI based tools (e.g. for data driven projects, automated translations or AI based recommender systems on their news portals etc.) (P/R-AIJ-6, P/R-AIJ-9, P-J-10, P/R-JAI-11, P-J-12, P-AI-J-14, P-J-16, P-J-17, P-J-18) recent genAI tools like ChatGPT, which are based on LLM with a transformer architecture, bring along further adaptations, if the media house aims at an inhouse solution. An in-depth description of the required technical infrastructure exceeds the scope of this paper; however the most important adaptations and requirements include high computing power in the form of high-performance Graphics Processing Units (GPU) and specialized hardware like Tensor Processing Units (TPU), which as their downside bring along an immense energy consumption (Jiang, 2024). In addition, large working memory (RAM) and fast and large storage capacities e.g. in form of NVMe SSDs

to process the large volumes of data efficiently are needed. ML and DL based AI tools in contrast rely on less powerful hardware and lower memory requirements due to their smaller number of parameters and the lower complexity of the models. Further, a not only fast but also very stable network is required, which however is as well an important condition for prior AI driven tools. To do justice to the scalability of a LLM, cloud-based solutions may be used to scale flexibly. Expert P-AIJ-14 underlined that implementing a universal metadata structure for the different AI technologies in the organization, could be challenging in its implementation. Finally, a robust security network must be created, including efficient encryption and access controls. The more data flows into the models, the tighter the security measures need to be (Huang et al., 2024; Yao et al., 2024). However, these security measures to safeguard data as well as systems are not voluntary but are to a large extent prescribed by legislation in the EU and Germany.

We argue that the introduction of a genAI in form of a customized inhouse LLM solution, e.g. by supervised-fine-tuning of an existing general-purpose model, such as additional reinforcement learning by human feedback, is desirable, but requires huge investments in technological infrastructure, high IT expertise and takes a long time for its implementation, which makes it a costly, long-term and thus risky investment (Cheng, 2024). Despite the immense investment, three of our 18 interviewees emphasized that their companies are currently working on such a company-tailored solution (P-J-17, P-J-18, P-J-12).

The experts identified a smoldering and difficult to resolve conflict between the journalistic, ethical and legal pursuit of data protection e.g. of their sources and the requirement of a suitable knowledge database which are connected to LLMs e.g., via Retrieval Augmented Generation methods or individual prompts (R-AIE-3, P-J-10, P/R-AIJE-7, P/R-AIJ-6). Openly accessible genAI like ChatGPT 3.5 or Claude-3-Opus have been trained on terabyte of text data, such as trillions of tokens, which allows the high performance and usability of the systems. However, for investigative and sensitive topics these systems need a level of precision on the one hand side, and, on the other hand, the highest possible protection of user data. As Ivancsics and Hansen (2019) pointed out, data forms the basis of every piece of journalistic work, whether it is written by a human journalist or by an AI. Regardless of whether the author is a human being or a machine, it is prescribed by law that data protection needs to be ensured as soon as personal data is used. Stray (2019) and Lewis et al. (2019) noted the importance of data for AI-journalism in their paper, where they outlined data availability as being essential for the production of AI generated articles. Our experts however, as well underlined that the genAI is not solely applicable for the generation of articles, but as well to assist journalists in other parts of the news production cycle e.g. by summarizing and analyzing large (text-based) data, by the incorporating of multi-lingual sources, by providing ideas for headlines, by producing graphics and maps, or by proofreading finished articles and suggesting enhancements of grammar, spelling and style (P-J-10, P-J-17, P-J-18), as well all those abilities of the genAI are based on its large amount of training data. For potential inhouse solutions therefore, training data must be requested, negotiated, scraped, or purchased, for example, from social media or public institutes, posing again financial, legal but as well moral challenges. Morally reprehensible aspects in

the development of genAI, such as the exploitation of people for data collection and labelling especially in the global south, should not be ignored by media companies either (Arora et al., 2023).

Data protection forms the core of the legal requirements a media company must fulfil, which is part of the *environmental requirements* for the introduction of genAI in journalism. Germany is bound by existing European law on the use of (generative) AI, which is defined in the GDPR, the Digital Services Act (DSA), the Digital Markets Act (DMA) and the EU AI Act (EU-Commission, 2024; Marsden & Brown, 2023; Söderlund et al., 2024). Data protection and privacy of the individual are taken very seriously in the EU and are especially governed by the GDPR (Voss, 2017). Our interviewees mentioned the GDPR as the key legal aspect that should be addressed. We attribute this to the fact that our participants are already very familiar with the GDPR at all levels of their work for several years and internalized the associated policy narratives, especially regarding the importance of data and privacy protection (Guenduez & Mettler, 2023). However, we argue that the impact of the EU AI Act will be even more significant regarding the introduction of genAI in the media landscape, as it poses the moral responsibility especially in a backward-looking sense, on the shoulders of the AI providers and applicants, which could be both media houses, depending on if they decided to use an existing technology or install an inhouse solution. Inhouse genAI solutions, are thus not only challenging due to the required high investments in technical infrastructure and expertise but do pose as well a great challenge especially for medium-sized and small news rooms due to the legal liabilities and obligations associated with the recent enactment of the EU AI Act. (Helberger & Diakopoulos, 2023; Kieslich et al., 2023). In addition, with the EU AI Act, journalism—a profession driven by forward-looking moral responsibility based on professional ethos and values—faces legislation that aims to standardize norms for which there is not always consensus or clear guidance on implementation and review in practice (Laux et al., 2024). This can prove to be a challenge for the profession.

On an intraorganizational level the experts recommend appointing a data protection officer, who would be involved in the implementation and use of genAI. Some experts explained they already had such a position in their organization (P-J-17, P-J-18), P-AJ-13 underlined that AI specific training would be necessary for data protection officers, who are already on the job. R-AIE-3 and P-J-10 pointed to the legal regulations for journalism, given by the state or federal government, that media organizations must consider when implementing genAI in German journalism. However, as experts P-J-12 and P/R-JAI-11 underlined, journalism is a field which is highly morally self-regulated to maintain governmental distance and to ensure a watchdog position over government and prevent censorship. Thus, according to these experts, a self-commitment to the moral use of genAI by the specific media organization or even the publisher associations and journalist associations would always be necessary and would be as respected on a similar level as the legal requirements for the journalistic organizations.

We identified expertise as one of the major *employee requirements*. Our interviewees (P-J-10, R-J-5, P/R-AIJE-7, P/R-AIJ-6, P/R-JAI-11, P-J-12, P-AIJ-14, P-J-17) pointed out that there should be an understanding within the company of how the AI works, this reinforces as well the necessity for technical understanding formulated by Ivancsics

and Hansen (2019). This acquisition of AI knowledge and literacy can be divided into application skills and developer/creator skills and thus different degrees of IT literacy and empowerment (Long & Magerko, 2020). Those experts, who defined themselves as journalists in the first place (e.g. P-J-16, P-J-17) felt obliged to acquire sound application skills to understand the capabilities, limitations and effects of genAI. Several experts emphasized that employees with developer skills should be hired, who understand genAI in its entire depth and have the skills to introduce, maintain and adapt the technology if it is an inhouse solution, or to act as an intermediary between the media organization and the genAI provider if an external solution is implemented. P-J-12 underlined that it is also necessary that the AI-expert will be trained regarding the journalistic code of conduct. We support this initiative because the common narratives, logics and professional ethics between journalists and AI experts, as technologists, diverge (Sirén-Heikel et al., 2023) and only with a common understanding of ethical values a trustworthiness promoting use of genAI can be ensured. Sound application competence of the journalists would include, for example, a clear understanding of prompt engineering (Cheng, 2024). Just as other disciplines such as medicine are already training employees in the use of LLM and genAI (Meskó, 2023; Tolzin et al., 2024), this will be equally important for journalists. P-J-16 underlined the importance to not only train the next generation of journalists, e.g. during their journalistic traineeship how to use genAI in an ethical manner, but to involve those journalists as well with less technical affinity and even those who are close to their pension. P-J-16 underlined that for a successful implementation at all journalistic stages of the media house, the AI expertise should be incorporated in the whole organization and not only in a separated team. This includes the upper management as well who decides to implement an AI needs to understand the consequences, opportunities, and risks that can occur from the use of AI. In general, a company should decide if they have access to sufficient knowledge to introduce an inhouse solution of genAI or if they would need to cooperate with an external AI developer, taking the risk that external partners are not taking moral standards as serious as the media organization itself. An internal expertise gap on genAI can turn into a great moral pitfall.

To be able to train experts within an organization, a certain willingness to learn is an important employee characteristic (R-AIJ-2, P/R-AIJ-9, R-J-5). The experts stated that the work of journalists and AI should be intertwined. To avoid employees viewing genAI as a threat to their jobs, decision makers would have to provide a basic level of understanding of the relationship between employees and AI, specifically regarding the ways in which the genAI relieves employees from repetitive tasks but does not replace them. Expert P-J-12 underlined that it needs to be clear for the publishing house if the use of genAI has the aim of cost reduction by replacing journalists or whether the company aims to reduce the workload of journalists in sideline activities to then increase resources for essential activities such as investigative research or personal analysis.

This aligns with previous literature, which emphasizes the importance of human journalists learning the characteristics of an AI to use it and to understand that it is not a threat to their workplace (Broussard et al., 2019; Lewis et al., 2019; Schapals & Porlezza, 2020). It should become clear to the human journalists that they will supervise the genAI and that they could assign repetitive tasks to the system, to focus more on investigation or creative writing. This will counter the potential fear of job losses

and decreasing human control in journalism due to the AI (Deutscher Ethikrat, 2023). Technological change and the acquisition of new skills will lead to a change of the journalistic self-understanding. How this is possible and might evolve over the upcoming years can be estimated by looking at the related but not identical establishment of data journalism in Germany (Weinacht & Spiller, 2022). The change of one's own self-image can be painful and must be well supported by management to be able to close the ethically critical (inhouse) knowledge gap regarding AI as quickly as possible, in order to maintain the normative ideals of journalism (Schapals & Porlezza, 2020).

According to our interviewees, one *organizational requirement* is sensitizing the workforce to the fact that the development and application of AI can only work properly under the supervision of human employees. Therefore, the decision makers in media companies should be transparent regarding the introduction process of a genAI and explain its planned use to their employees. To introduce a genAI successfully, the experts proposed a close cooperation and dialogue with the employees and recipients and suggested the involvement of all the important councils and associations, complete top-down approaches have been rejected (P-J-16, P-J-17). P-J-12 and P/R-JAI-11 mentioned the recipient councils of publishing houses, the staff council, and the ethics committees of the organization as important entities that should be involved. To do this, however, a certain goal orientation is important.

The experts (R-AIJ-2, P/R-AIJ-9, R-J-5, P/R-AIJE-7, R-AIE-4) highlighted that the application context and the goals and objectives to be achieved with the genAI must be clearly defined, to work in a targeted and efficient manner. The aspect of goal orientation is not only intertwined with the transparency within the organization, but also with *technical constraints* such as data availability and other *organizational requirements* such as opportunity and risk management. Opportunity and risk management is not only connected with legal aspects such as data protection but should also determine the required level of training and expertise. In addition, opportunity and risk management should determine the financial resources available. While the expertise and willingness of the employees plays a crucial role, the managerial commitment was also mentioned as an important constraint, as without the commitment of the organizations regarding the introduction of genAI, technology acceptance and acceptance for change could not be expected from the employees either (P/R-JAI-11, P-J-12, P-AIJ-14, P-J-16).

Technology acceptance and the willingness to apply genAI within journalistic organizations are also closely linked to the overall managerial commitment in those organizations. If the organizational leaders actively support and use AI, its introduction will be taken more seriously by the journalistic workforce. The positive influence of managerial commitment and a clear goal orientation has already been proven in other fields regarding technology-induced change processes (Ali et al., 2016).

The interviewed experts (P/R-AIJ-8, P/R-AIJE-7) mentioned that financial funds must be determined as a constraint for a media company to enable training and to provide the required advanced technical infrastructure which is mandatory for using genAI efficiently and morally. Of course, a good financial situation is always a clear goal of any profit-oriented organization. However, this financial stability and the ability to make investments is particularly important as a foundation for the introduction of genAI, because the effects of whether, for example, a customized inhouse LLM solution is used or whether a freely accessible tool such as ChatGPT or DALL-E

may be used under clearly defined specifications entail very different moral risks. An ethical risks assessment of a customized or inhouse solution and a freely accessible technology can differ greatly and influence basic journalistic values in very different ways (Cheng, 2024; Hasan et al., 2022). This is also supported by Stray (2019) and Broussard et al. (2019), who mentioned that it is expensive to acquire data for the use of AI to generate articles, and the programming of such AIs that can generate sophisticated journalistic articles is costly, making financial resources necessary. This could lead to the development that smaller and medium-sized newsrooms, due to lower investment possibilities, fall behind regarding the technical advancements of genAI (Helberger & Diakopoulos, 2023). The requirements are visualized in Fig. 2.

### 5.2 Guidelines for Applying genAI in the Media Production Process

Based on our findings and a modified version of Attfield and Dowell’s (2003) journalistic publishing model, we were able to derive guidelines for decision makers in media organizations that assign the ethical principles for applying genAI to support the German media landscape to the different phases of journalistic production.

As the guiding meta principle trustworthiness was chosen, as all other ethical principles of the developed guideline contribute to maintaining or even fostering the trustworthiness of the media organization and the products it offers (Simpson, 2012, 2013). Although previous research was inconclusive on the effect of ethics principles on trustworthiness (Tamó-Larrieux et al., 2024; Hofeditz et al., 2022), the results from our interviews suggest a clear correlation between applying ethics principles to genAI and increased trustworthiness of media content. The absence of trustworthiness of journalistic brands and overall eroding media trust affect media consumption, therefore media companies need to take all possible internal steps, as counter measure, to maintain their business model and social cohesion (Newman, 2018; Wilner et al., 2021). The application of ethical guidelines is one positive step in this direction (Bews & Rossouw, 2002). Whereby the practical implementation and usage of those guidelines in daily practice determines their success.

In order to create and maintain trustworthiness, an interplay between different principles needs to be fulfilled (Bews & Rossouw, 2002) and integrity needs to be

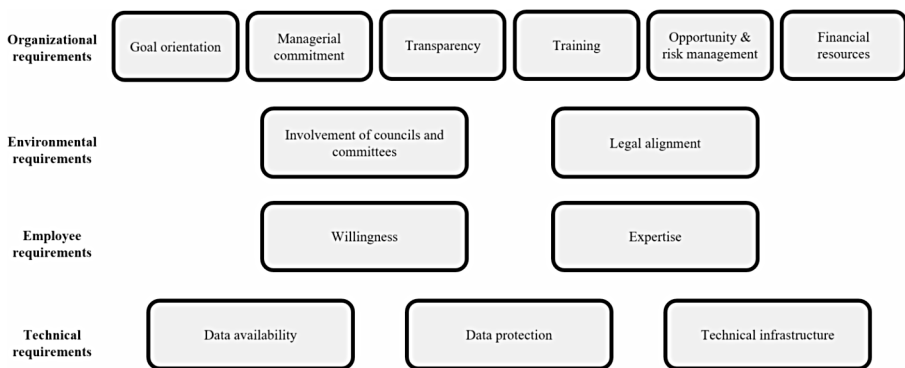


Fig. 2 Requirements for the ethical implementation of genAI in media organizations

maintained. We extracted the principle of independence, which is closely related to the trust criterion of discretionary power, to be highly relevant in the initiation phase. In order to decide whether an article should be written by genAI, decision makers in media companies should first identify the level of sensitivity and human impact of the topic. To identify this, editors can create a list of sensitive and less sensitive topics in advance. By this elaboration, the trust criterion of vulnerability of the recipient, who is trusting the media organization is as well respected. For example, weather reports, financial news, and sports news are considered less sensitive than political or social topics, they are unlikely to harm the recipient in any way (Dörr, 2016). Authorship of an essay by an genAI as by ChatGPT (Stokel-Walker & Van Noorden, 2023) would be a rather sensitive application area. With the emergence of genAI and technologies like ChatGPT, not only entire media content can be autonomously created by the genAI models, but also in collaboration between the journalist and the AI-based model. Putting the genAI into the position of a sparring partner in the news production process. This makes the issue of responsibility for erroneous information even more difficult, as the article is no longer clearly identifiable (Pavlik, 2023).

The independence of journalism is particularly important in Western liberal democracies (Eberwein et al., 2011). In Europe in particular, countries such as Germany and UK follow a model based on public funding to maintain journalistic independence: public service broadcasting (Brüggemann et al., 2014). This instance could be used to enforce ethical guidelines for genAI in Germany. Public service broadcasters such as BBC and BR are already taking important steps into this direction (BBC, 2021; Bedford-Strohman et al., 2020). In order to use genAI in journalism to produce and publish media content, journalists increasingly rely on information provided by an AI-based system when writing articles (Pavlik, 2023). Therefore, a balance should be found between independence and control depending on the subject matter and sensitivity of the data. When initiating an article planning to apply a genAI, we therefore derived the following guidelines (GLs) and reflecting questions (RQs) for decision makers in German media organizations (Table 1).

**Table 1** Guidelines for the initiation phase of media production in journalism

Initiation Phase	
Guidelines (GL)	Reflecting questions (RQ)
<p><b>GL1:</b> Create both a list of content types and sensitive topics e.g. based on their human impact and then decide if it is ethically reasonable that a genAI with an internal or an external data basis supports research on a journalistic piece about that topic.</p> <p><b>GL2:</b> Rate each element of the list and define if and how independently a genAI-based system can be used to do research and summarize basic information on a media content (completely independent, hybrid, completely dependent).</p> <p><b>GL3:</b> Discuss the evaluation of the use of an internal or external genAI for certain topics in the editorial conference and include it into organizational ethics policies.</p>	<p><b>RQ1:</b> How sensitive is the topic (e.g., regarding individual or organizational data)?</p> <p><b>RQ2:</b> Is it ethically reasonable that an internal or external genAI provides the basic research on the topic of a journalistic piece and in the desired format?</p> <p><b>RQ3:</b> How independently should the genAI conduct research on the content for this topic?</p> <p><b>RQ4:</b> How can a genAI be ethically guided by formulating prompts for inclusion and exclusion criteria?</p>

We found that based on answers to these questions, the editor must decide whether a genAI or a human author should produce a journalistic piece or if the genAI can be used as a supportive tool; based on the sensitivity of the topic and format there should be a human in the loop. This is why accountability is closely connected to independence when applying genAI. If an AI application in journalism is highly independent, the moral responsibility does anyways at the end lie in the hands of the editor in chief, who is legally viable for all published journalistic products. The less independent a genAI operates, the more moral responsibility lies as well in the hands of the editor, who has chosen to use it. In addition, this decision should also consider the genAI which is being used. For non-sensitive topics, external GPT models can be used if these are more powerful than internal solutions, especially when it comes to the supportive use of the genAI, e.g. for idea generation and research assistance. For more sensitive topics, internal GPT models need to be used which then also need verification by a human journalistic decision maker. If we relate this to the trust criteria, we conclude that the higher the vulnerability of the recipients, the more discretionary power must lie with the human decision maker (human-in-the-loop approach). Only a human decision maker has the moral integrity and ability to consider all relevant contextual and emotional factors and not only the facts presented in the data. This distinguishes the human decision maker, from a machine (Blender, 2019). Although the philosophical discourse about shared moral responsibility between the automated actor and the human actor (see Floridi & Sanders, 2004) are valuable, this concept, has currently no relevance for the practical application of genAI in media organizations.

As soon as the decision has been taken that a topic is suitable for a certain type of genAI, the preparation phase can be initiated. For the journalistic preparation phase, we identified five ethical principles that have to be addressed: trustworthiness, objectivity, quality, privacy, and transparency. First, it needs to be ensured that the genAI only uses input from trustworthy sources as the output for the journalistic piece will be based on that data. As suggested for sensitive topics, journalists could create a list of the sources that the AI can access and rate their trustworthiness, this will be especially useful for routine reporting, during which always the same sources are used. These sources could then be included as data basis for an internal genAI solution of a media house.

The principle of objectivity should be ensured in the preparation phase. We found that a genAI can assist journalists in achieving a higher level of unbiased and neutral reporting, by cross-checking content produced by humans, by including a higher variety and number of sources exceeding language barriers and producing content based on certain facts. However, genAI might endorse a certain style of writing, often aiming at a more concise formulation, which according to Russo (2023) may lead to a loss of nuances and details. While the use of genAI in journalism might contribute to veracity and from a certain standpoint as well objectivity it might at the same time put epistemic diversity at risk, due to the standardization of writing (Russo, 2023), being a risky bartering that needs to be weighed up. To benefit from the positive effects of the AI usage (Latar, 2015) it is essential that the journalist is aware that the data used may already be subject to manipulation, e.g. in the context of social media analysis, a botnet might amplify the salience of certain opinions and distort the truth (Duan et al., 2022). In addition, it is important that human decision makers reflect on the fact that a genAI itself can contain

biases and certain unintended values that need to be critically assessed and controlled (Zhuo et al., 2023). As an AI can be discriminative itself (Hong et al., 2020) due to its code and the training data used for its development. Furthermore, especially genAI is susceptible to hallucination (Zhuo et al., 2023) and plagiarism (Dwivedi et al., 2023; Thorp, 2023). Therefore, a journalist not only needs to check the sources for potential mistakes but also for possible cases of plagiaristic contents to ensure alignment to ethics principles and their organizational policies.

To be able to decide if sources are trustworthy and to analyze them objectively and professionally is a competence intrinsically linked to the journalistic profession. Thus, it is directly linked to the trust criterion of ability, which can even be fostered using a genAI. However, it can be debated whether the journalistic “two-source principle”, which assumes that the truth can be taken as given when two independent sources report on an issue, can still hold in the digital and especially AI age. An adaptation of journalistic core competencies will be necessary in this area, to be able to guarantee the monitoring of sources and data at a high level, for which the AI knowledge Gap needs to be closed (Schapals & Porlezza, 2020).

Besides the objectivity, as well the intertwined principle of quality plays an important role in the preparation phase. The quality principle is highly related to data quality (Monti, 2018). According to our interviewees, the used data in AI-journalism should be truthful, up-to-date, reliable, objective, and accurate, compliant with data protection guidelines, and should not contain any falsifications or misinformation. However, quality stands as well for the quality of the algorithm, which forms the basis of the genAI. The journalistic output of a genAI can only be as good as the algorithm it is based on. Furthermore, it needs to be ensured that the journalistic pieces produced by an AI respect data protection regulation, such as the GDPR or AI Act of the EU and thus paying tribute to the trust criteria of vulnerability and benevolence. The respect for privacy regarding the application of genAI in journalism should both respect individual such as group privacy, while the moral rights of the right holders, might exceed the legal constitution (Mittelstadt, 2016). In addition to that, transparency regarding the use of an AI already starts on the intraorganizational level, being transparent about the usage among the co-workers.

In accordance with our findings, we provide further guidelines and questions to guide decision makers in media organizations in the preparation phase (Table 2).

Based on the answers to these questions, decision makers must decide whether a further human check of the content created by genAI is required. Once concerns regarding data sources have been addressed, the production phase of the journalistic piece can be initiated (Attfield & Dowell, 2003). Based on our interview findings, decision makers in German media organizations have to address the ethical principle of veracity. It needs to be ensured that AI follows a serious writing style, a plausibility check of the content is built in, and that wrong information will be corrected by a human author before publication. Additionally, genAI can even be used to do this plausibility and correction step itself by asking for certain checks of writing style, possible biases or other issues that might have been overseen by a human journalist. In addition to that the combination of automated fact-checking and genAI might be a future possibility (Althabiti et al., 2023). P-J-10 stated, as an example, that they would do that in their company. We found similar indications of this in previous

**Table 2** Guidelines for the preparation phase of media production in journalism

Preparation Phase	
Guidelines (GL)	Reflecting questions (RQ)
<p><b>GL1:</b> Based on the sensitivity of each topic, make a decision whether a human or a genAI with internal or external knowledge databases should create the first draft of a journalistic piece to achieve a high level of objectivity.</p> <p><b>GL2:</b> Inquire the genAI to use a wide range of sources for each statement to improve objectivity in reporting by adequate prompt engineering and knowledge databases.</p> <p><b>GL3:</b> Make sure you can monitor if the chosen sources and the data they provide contain bias (e.g. gender, age, race), plagiarism, hallucination or are potentially distorted by asking for references and double-checking sources.</p> <p><b>GL4:</b> Check whether the quality of the genAI to be used matches the expected journalistic output and objective.</p> <p><b>GL5:</b> Check whether the privacy of individuals and groups are protected in the data the internal and external genAI bases its output on.</p> <p><b>GL6:</b> Communicate transparently to your colleagues what type of a genAI is involved in your work and how.</p>	<p><b>RQ1:</b> <i>Are the knowledge databases used by the genAI trustworthy and made transparent to you and your audience?</i></p> <p><b>RQ2:</b> <i>Do you perceive any kind of bias related to the output of the genAI regarding a specific opinion or position? If you perceive potential biases, how can that be neutralized or at least made transparent?</i></p> <p><b>RQ3:</b> <i>Is the privacy of individual subjects and groups in the used data set protected (e.g., by only feeding the genAI with pseudonymized information)?</i></p>

research. Veracity is an important quality measure for journalistic work, and genAI can improve this because it sticks to facts from the data (Monti, 2018). However, this may only be beneficial if the data quality is very high. Companies such as the employer of interviewee P-J-18 and P-AIJ-13 already use customized versions of ChatGPT fed by their own databases to increase veracity. To guide decision makers through the production phase of genAI produced journalistic content, we derived three additional guidelines and reflecting questions (Table 3).

**Table 3** Guidelines for the production phase of media production in journalism

Production Phase	
Guidelines (GL)	Reflecting questions (RQ)
<p><b>G1:</b> Ensure that genAI-produced content does not contain wrong or misleading information by building in a plausibility check of journalistic pieces produced by genAI (e.g., by using another AI model or another human journalist).</p> <p><b>G2:</b> Ensure that regardless of the chosen journalistic format, genAI-produced content maintains neutrality, objectivity, and accuracy throughout its production process by implementing strict editorial oversight.</p> <p><b>G3:</b> Implement a robust cross-checking process to verify the accuracy of all content produced, promptly correcting any detected inaccuracies before publication or dissemination.</p> <p><b>GL4:</b> Check whether the privacy of individuals and groups is protected in the genAI-generated content and, if possible, ask the genAI itself for checking a human generated text for privacy issues.</p> <p><b>GL5:</b> Be transparent about the usage of a genAI in the production process to allow the identification by and explanation to the audience.</p>	<p><b>RQ1a:</b> <i>Does the content produced by or assisted by genAI contain potentially wrong or incomplete information?</i> <b>RQ1b:</b> <i>How can I verify the information in a genAI created draft myself and how can other tools or colleague assist me?</i></p> <p><b>RQ2:</b> <i>Is the story created by me or a genAI stylistically and orthographically correct or can we correct each other?</i></p> <p><b>RQ3:</b> <i>How precise and in-depth is information reproduced in the article compared to other articles written by me? Do I keep my personal style?</i></p> <p><b>RQ4:</b> <i>How much identification of individual data subjects is really necessary in the journalistic piece?</i></p>

After those decisions and reflections, the publication phase of the journalistic piece can be initiated. In this phase, decision makers and journalists must ensure that media content produced by genAI are highlighted as those, or at least the general use of genAI in their enterprise is clearly communicated continuously to the recipients. Additionally, transparency also involves the type of AI and the data used. While transparency in the production phase, aimed at the open communication that a genAI has been applied the related principle of explicability aims at showing how the AI has been involved. It would not be enough to provide access to the source code of such an AI, because an average individual consumer of journalistic content would most likely still not understand how the AI works in practice. Therefore, we suggest providing a short explanation of how the genAI usually works (Hamm et al., 2023). Results from research by Awad et al. (2018) have already indicated how important it is that an AI's decisions are made transparent and thus comprehensible. However, they did not provide details on how transparency can be implemented. Paying attention to transparency and explicability would reduce the uncertainty of the recipient, which is one of the leading trust criteria derived in this paper.

For each journalistic piece produced by genAI, an editor or manager should be held accountable; usually this is the chief editor or publisher. In accordance with the literature, we covered this aspect with our principle of accountability, which in some literature is also known as the principle of responsibility (AI HLEG, 2019; Floridi et al., 2018; Shneiderman, 2020). We also recommend providing contact information to allow users to report errors; this goes hand in hand with the legal obligation of German media corporations to always provide an imprint.

Our results extended the findings of Rothenberger et al. (2019) who emphasized the importance of assigning a responsible person to AI in the field of journalism. In general, it is difficult to hold someone responsible, to indicate where the mistake comes from or what is even ethically right (Monti, 2018). In Europe, accountability and liability can be determined through the GDPR and the European ALTAI Guidelines which are created by an expert group of the EU as an actionable checklist (AI HLEG, 2019). In the publication phase of the journalistic process, we provide four additional guidelines and reflecting questions for German media organizations (Table 4).

**Table 4** Guidelines for the publication phase of media production in journalism

Guidelines (GL)	Reflecting questions (RQ)
<b>GL1:</b> Ensure that media content produced by internal or external genAI are always identified as such by adding a label next to the author which explains the involvement of the system.	<b>RQ1:</b> <i>How transparent am I in that genAI was involved in a certain piece of my journalistic work?</i>
<b>GL2:</b> Provide understandable insights in how the genAI was used to create a media content by using approaches from explainable AI.	<b>RQ2:</b> <i>How understandable is it to the public how the AI was used to create the journalistic piece?</i>
<b>GL3:</b> For media content generated by a genAI, highlight an editor or manager who is accountable for the AI's content and provide contact information to make it possible to report errors or concerns.	<b>RQ3:</b> <i>Who will be held responsible in case of harm, concerns and errors and is this information visible to the audience?</i>

## 6 Conclusion

In this study we identified the constraints which need to be established in German media organizations to use genAI in the journalistic production process in an ethical manner. We extracted ethical guidelines from analyzing and discussing decision makers' recommendations and the literature on AI and journalism ethics. While the identified preconditions enable decision makers to set the ground for the moral integration of genAI technologies in their organizations, highlighting the moral pitfalls that need to be anticipated. The guidelines and reflective questions provide journalists with a scientifically sound toolbox for fulfilling their moral responsibility. Trustworthiness was identified and explained as the overarching meta-ethical principle that needs to be achieved by German media organizations as it can be considered the main currency for both economic value and ethical alignment. Further, we identified the principle of independence, which should be addressed in the initiation phase of media production. Objectivity, quality, privacy, and transparency need to be considered in the preparation phase of the process and are complemented by veracity as a highly important ethical principle in the media production phase. For publication, we identified the principles of explicability, and accountability that need to be considered to achieve that the use of genAI in journalism does not hamper the trustworthiness of the media organizations but might even contribute to it.

### 6.1 Contribution to Practice

For journalism, the trust of the recipients is essential to ensure long-term success. Therefore, this work specifically contributes to a trustworthiness maintaining and fostering use of genAI in journalism. The results of this study are highly relevant to two groups of practitioners: First decision makers in media organizations who must make policy decisions about the use of genAI and second journalists who have to decide in their everyday practice whether to use an AI for content production. The identified requirements highlight the necessity of expertise and relate that to an (internal) AI knowledge gap as a central moral pitfall, as it is directly connected to critical external dependencies, high costs, lacking abilities of monitoring, such as the necessity for a change of the journalistic self-image. The ethical guidelines and related reflective questions have a high degree of practical applicability as they guide journalists directly along the journalistic content-creation phases (Attfield & Dowell, 2003). How close values such as objectivity, quality and veracity are related to the quality of the sources and the data, such as the quality of the AI itself, underlines again how important expertise in genAI and data analytics will be for journalism in the future. In addition, our work provides an approach for navigating the problematic decision between data protection and the disclosure of data processes. Some previous literature discussed whether the disclosure of processes and data is more important than data protection (Dörr & Hollnbuchner, 2017; Hansen et al., 2017; Monti, 2018; Rothenberger et al., 2019). However, it remains to be seen to what extent full transparency and explicability

is possible in practice. One hurdle here could be that genAI in journalism is based on large amounts of data, for which complete disclosure is often not feasible and might also hamper code copyrights and economic interests. However, our guidelines provide German media organizations with a framework to maintain and foster the trustworthiness of their products and organizations. Finally, the reflective questions offer decision makers a concrete starting points for an initial, self-centered examination of an often abstract and theoretical debate about moral principles in the converging field of AI and journalism.

## 6.2 Contribution to Research

We contribute to research by providing insights on how Attfield and Dowell's (2003) model of a media production cycle can be used and extended by researchers in the context of the moral implementation of genAI in journalism. Our findings suggest how ethical principles can be implemented within the media production cycle in order to provide not only general principles, but more concrete and actionable principles and reflecting questions such as *'How independently should the genAI conduct research on the content for a topic?'*, *'Are the knowledge databases used by the genAI made transparent to you and your audience?'*, and *'Is it understandable to the public how the AI created the article? How transparent am I in that genAI was involved in a certain piece of my journalistic work?'*

We also shed light on the relationship between different ethical principles in the context of German journalism and the meta principle of trustworthiness. This is achieved by linking the criteria for trust and trustworthiness (discretionary power, uncertainty, vulnerability, ability, benevolence and integrity) resulting from the philosophical meta discussions directly to the morality of journalistic action in practice, when introducing and using a genAI. According to our interviewees, trustworthiness needs to be considered on a different level by research than the other principles as it seems to be the superordinate *"currency of the future"* (R-AIE-4) for German media organizations. This strengthens existing studies which ascribe trustworthiness an outstanding importance, especially in the light of erosion of trust (Jones & Saad, 2019; Wilner et al., 2021).

We suggest that, although there is a wide range of genAI technologies in journalism such as GPT-4 (Stokel-Walker & Van Noorden, 2023), which vary in complexity and sophistication, our ethical guidelines can be applied to different types of genAI tools and can be used for different phases of media production in compliance with trustworthiness. On the one hand, for the employment of AI-based natural language generation methods for producing journalistic content completely using deep learning (GPT-3, 2020) or, on the other hand, to systems that slightly

support in gathering data, preparing, producing, and publishing journalistic content by responses to certain prompts of journalists. Always underlining at which point the human actor needs to step in for a final moral decision.

Lastly, our study does identify requirements, which need to be fulfilled, if a genAI should be introduced in a media organization which contributes to its trustworthiness among the audience. The resulting interdependencies and tensions do clarify, which fields are especially interesting for future research.

## 7 Limitations and Further Research

One of the main limitations of this study is that its results cannot be generalized, as 18 interviews cannot be used to represent the entirety of all German journalists or media companies. This would solely be possible by additional quantitative studies in the future. Another limitation is that the trust criteria we derived represent a selection that could change with the inclusion of other ethical schools e.g. by adopting a strict consequentialist stance, or any form of religious ethics as e.g. by Aquinas or Berkeley. Furthermore, as all studies about emerging technologies, genAI develops that quickly that regular check-ups on the consistency of our results will be needed.

Additionally, it would be interesting for future research to review whether our established ethical guidelines are also applicable in other geographic areas and for similar contexts such as Public Relations (PR). PR is related to journalism, but not identical since different goals are relevant to PR work. Therefore, our ethical guidelines might provide a basic catalogue that can be expanded for different specific application contexts, such as PR. Further research should also be done to test our established ethical guidelines since they deliver a new perspective on this topic and need to be applied in real use cases to determine if they work well or might need to be adapted or expanded, this could e.g., be done in form of an ethnographic study, using the lenses of practice theory. Furthermore, broadening the scope of the research on other AI technologies in other part of the news production process could bring interesting scientific insights.

## Appendix

(See. Table 5 and 6).

**Table 5** Description of interviewees, including the field of expertise, origin, and pseudonyms

Pseudonym	Professional position or expertise	Country	Researcher	Practitioner	Fields of expertise		
					AI	Journalism	Ethics
R-AIJE-1	Professor of media and communication studies	UK	X		X	X	X
R-AIJ-2	Professor of data journalism	Germany	X		X	X	
R-AIE-3	Professor of philosophy and applied ethics of neurotechnology	Germany	X		X		X
R-AIE-4	Professor of business ethics specialized in AI	Germany	X		X		X
R-J-5	Researcher in the field of journalism	Germany	X			X	
P/R-AIJ-6	Journalist and head of innovation department	Germany	X	X	X	X	
P/R-AIJE-7	Digital consultant and researcher in the field of AI-journalism & NLG	Germany and Switzerland	X	X	X	X	X
P/R-AIJ-8	Journalist and researcher on data protection and automated journalism	Germany and Belgium	x	X	X	X	
P/R-AIJ-9	Editor and researcher in the field of data journalism	Germany	x	X	X	X	
P-J-10	Manager of corporate communications department	Germany		X		X	
P/R-JAI-11	Manager in the research and innovation department of a journalistic organization, and Professor of media law	Germany	X	X	X	X	
P-J-12	Editor in Chief of a media corporation	Germany		X		X	
P-AIJ-13	Editor in Chief / Digital of a media corporation	Germany		X	X	X	

**Table 5** (continued)

Pseudonym	Professional position or expertise	Country	Researcher	Practitioner	Fields of expertise		
					AI	Journalism	Ethics
P-AIJ-14	Head of Data Department of journalistic publishing house	Germany		X	X	X	
P-AI-15	Head of Business Development of a media corporation	Germany		X		X	
Second cohort of interviews							
P-J-16	Radio and online journalist at the regional office of a public service broadcaster	Germany		X			X
P-J-17	Senior radio, TV and online journalist, editor and producer who works for a public service broadcaster	UK and Germany		X			X
P-J-18	Journalist and corporate communications manager at a large-scale German media house	Germany		X			X

**Table 6** Interview guidelines for experts with practical experience in journalism**Key questions of the interview guideline of the first interview cohort**

Introduction	<ol style="list-style-type: none"> <li>1. According to which ethical guidelines or principles do you act as a journalist?</li> <li>2. Where have you experienced AI in your daily journalistic work?</li> <li>3. How do you imagine the optimal use of AI in your company/in journalism? Which tasks would you assign to an AI? Which subject areas would you assign to an AI? Where would you prefer AI to a human journalist?</li> </ol>
Preconditions	What conditions have to be created in the company / in journalism in order to use AI for writing articles?
AI Journalism and Ethics	<ol style="list-style-type: none"> <li>1. What rules or values would an artificial intelligence have to follow when writing journalistic content? Which rules would have to be established?</li> <li>2. What is the role of accountability for AI-created articles? Who is responsible for the content of AI-created articles? What about faulty articles?</li> <li>3. What is the role of AI independence? How would you determine moral responsible in this context? In which areas/when is control more necessary?</li> <li>4. What is the importance of transparency of AI-written articles for you? (Marking of articles) In which areas is the labelling possibly more relevant?</li> <li>5. How do you think it can be ensured that an article written by an AI is perceived as trustworthy?</li> <li>6. What other rules or values or important aspects can you think of that might be important for the use of AI in journalism, now or in the future?</li> </ol>
Comments	Is there anything else you would like to add?

**Key questions of the interview guideline of the second interview cohort**

1. Please describe shortly your position and expertise with generative AI.
2. What are the key journalistic values which guide your work?
3. Can you describe concrete examples how you used generative AI during the
  - a. Initiation phase?
  - b. Preparation phase?
  - c. Production phase?
  - d. Publication phase? of the news production cycle.
4. Which preconditions need to be taken by your organization to ethically use generative AI in your work?
5. Which measures do you take to be prepared against hallucinations of the generative AI they apply?
6. How do you check the plausibility of outputs of a generative AI?
7. How do you evaluate the possibility of deepfakes by a generative AI?
8. How do you make sure that copyright infringements and privacy violations do not take place using a generative AI?
9. What need the developers of a generative AI change about their products to make them more applicable in the journalistic day to day work?
10. Can we have a look as the first version of our guidelines and discuss your feedback?

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**Data Availability** A pseudonymized form of the transcripts can be made available to interested parties upon request. Since even after pseudonymization it cannot be guaranteed that the interview partners cannot be identified on the basis of their statements and their job title, we refrain from making the transcripts openly accessible. All other materials, such as the interview guide, are freely accessible in the appendix.

## Declarations

**Ethical Approval** The study was approved by the ethics committee of the University of Duisburg-Essen. The interview partners received both an informative handout and an oral briefing as well as a consent form informing them about the procedure in the study and the pseudonymized data use of the recordings and transcripts according to the GDPR.

**Competing Interests** There are no competing financial or other interests to declare as we did not receive any funding for this work.

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