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**Research Paper**

**The Future of News Engagement:  
Integrating AI-powered Deliberative  
Technology and Real-time  
Sentiment Analysis to Advance  
Proactive Public Discourse**

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## **Aljazeera Fellowship Program:**

A program launched by Al Jazeera Media Institute which aims to encourage academic research as well as to provide journalists and researchers with an opportunity to gain practical experiences and learn about applied practices in an in-depth way that contributes to the improvement of the profession of journalism, with the help of many Arab and international institutions.

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# Abstract

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This research investigates the transformative potential of AI-powered deliberative technologies and real-time sentiment analysis in addressing the systemic challenges of traditional audience engagement, such as manual moderation burdens and the proliferation of toxic discourse within digital news environments. By employing a comparative analysis of pioneering AI implementations—including the conversational chatbots of the BBC and The Guardian, The New York Times' "Switchboard" NLP system, and Der SPIEGEL's "Debate" feature—the study identifies a significant shift from passive information consumption to proactive public discourse. Findings indicate that while these technologies offer advanced capabilities for personalization and "viewpoint clustering" to organize polarized public opinion, their efficacy remains constrained by technical limitations in natural language processing and inherent linguistic biases. The study concludes that for AI to successfully foster a more informed and engaged public, news organizations must adopt "editor-in-the-loop" frameworks that prioritize ethical moderation and narrative accuracy, ultimately repositioning news platforms as vital forums for democratic deliberation.

**Keywords:** *Artificial Intelligence (AI), Audience Engagement, Automated Journalism, Deliberative Technology, Digital Media, Natural Language Processing (NLP), Public Discourse, Sentiment Analysis.*

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# 1. Introduction

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AI-powered technologies represent a promising new frontier for journalism and public engagement.<sup>1</sup> While many news outlets focus on leveraging AI for content production, data storytelling, and fact-checking, there is significant potential to use AI to enhance user engagement through more interactive, responsive, and personalised news dissemination and consumption.<sup>2</sup> Traditionally, audience engagement tools like comment boxes, discussion forums, and social media platforms have been employed to boost user engagement and foster community.<sup>3</sup> However, these methods come with significant challenges, particularly in terms of moderation. The overwhelming volume of comments on popular news stories often demands substantial staff resources to monitor and moderate discussions, aiming to prevent spam, harassment, and misinformation. This manual moderation process is not only labour-intensive but also time-consuming, restricting news organisations' ability to effectively manage and promote constructive dialogue within their online communities. Now, some media outlets are exploring the use of AI to support audience deliberation and group discussion on news content. This innovation presents exciting opportunities for personalised audience engagement and dialogue, albeit with new challenges and risks.

## 2. Research Goals and Key Questions

The aim of this research paper is to identify the parameters and potential capabilities of AI-driven chatbots and sentiment analysis in providing nuanced, context-aware news delivery and real-time public opinion monitoring. The study delves into the advantages and hurdles associated with the latest AI features introduced by news platforms. The paper analyses how these innovations enhance user experience and content engagement while addressing the complexities and challenges they present. By examining these pioneering applications of AI in journalism, the research seeks to uncover insights into their operational efficacy, user reception, and broader implications for the news industry's future. The paper explores how to best augment journalistic narratives with data-driven insights, thereby elevating the quality and relevance of news reporting to meet the sophisticated demands of contemporary audiences.

This study seeks to address several critical questions: How can AI-driven chatbots be effectively integrated with sentiment analysis tools to enhance news delivery and audience engagement? What are the implications of real-time public sentiment analysis on the content and strategy of news reporting? And how can feedback and interaction data from chatbots be utilised to continu-

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<sup>1</sup> Broussard et al., "Artificial Intelligence and Journalism."

<sup>2</sup> Saridou, "Mapping the Role of Artificial Intelligence in Managing Audience Participation in Journalism."

<sup>3</sup> For a more comprehensive literature review, see Engelke, "Online Participatory Journalism."

ously refine news content and user experience? The importance of these inquiries lies in their potential to transform the way news is disseminated and consumed, offering a more interactive, responsive, and personalised experience for audiences. By exploring these questions, the research aims to uncover how AI technologies can not only streamline news production but also foster a more engaged and informed public, ultimately advancing the field of journalism in significant ways.

### **3. Why this Research Matters**

In an era characterised by information overload and decreasing attention spans, engaging audiences and understanding their preferences and opinions are paramount for any news organisation. This research is crucial, as it not only proposes a novel method of delivering personalised news content and audience engagement but also aims to explore mechanisms to help audiences form deeper opinions on current affairs. Moreover, it could empower journalists with real-time insights into public opinion and sentiments, enabling more informed and responsive journalism. In the realm of global affairs and reporting on armed conflict, the potential of AI-powered deliberative technology and sentiment analysis takes on an even more critical role. Deliberative technology refers to tools and systems designed to facilitate thoughtful discussion and debate among diverse groups, promoting informed and balanced decision-making. This approach could help transform how news and public opinion are managed in sensitive geopolitical contexts, paving the way for a more informed, engaged, and proactive public discourse.

In today's polarised world, spaces for public dialogue and engagement are shrinking. Social media platforms increasingly serve as echo chambers and arenas for shouting matches, making it harder to bridge divides in even the most functioning democracies, let alone in peace processes. The media has a critical role to play in overcoming these challenges, and technology, particularly deliberative technology, can be a powerful tool in this effort. By fostering structured and meaningful conversations, deliberative technology can help bridge divides and create a more informed public. This research, therefore, stands at the confluence of technological innovation and responsible journalism, aspiring to make a substantial impact on enhancing the public's engagement with news reporting and fortifying the quality of public discourse. Through its efforts, it seeks to elevate the standards of news consumption and dialogue, aligning with the needs of a well-informed and critically engaged society.

## 4. The Evolution of Audience Engagement

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Looking back in media history, letters to the editor (LTEs) have long provided a platform for ordinary people to make their voices heard in public, dating back to the 18th century.<sup>4</sup> These letters have represented a unique form of voluntary political participation, allowing individuals to engage directly with media outlets and, by extension, the broader public.<sup>5</sup> While most commonly found in newspapers and news magazines, LTEs have also been featured on radio and television, where they are sometimes read aloud during news commentary broadcasts or talk radio segments.<sup>6</sup> One of the critical functions of LTEs in a democratic society is for the displeased to voice their concerns and be heard. This channel for public expression allows individuals to share their opinions, grievances, and critiques, enriching the public discourse with a wide range of perspectives. Through these letters, the media becomes a platform for diverse viewpoints, fostering a sense of community and engagement among readers, listeners, and viewers.

In the 1980s and 1990s, some newspapers created special anonymous opinion forums, allowing people to record short verbal opinions via telephone, which were then

transcribed and published.<sup>7</sup> While critics argued that these anonymous call-in forums would be unethical—arguing that individuals could make unfounded claims without facing consequences or needing to support their comments with facts—defenders saw them as upholding the free-press tradition of vigorous, uninhibited debate, akin to earlier newspapers.<sup>8</sup> Newspapers themselves underscore the democratic potential of letters to the editor, as these forums foster participation from ordinary citizens in public discourse and help readers make informed decisions and take action on issues. Eventually, the LTE approach closely relates to the idea of deliberative democracy, where open discussion and debate are central to decision-making processes.<sup>9</sup>

By the early 21st century, the Internet had emerged as a key platform for the submission and dissemination of LTEs, primarily through email and news websites. Among other reasons, the shift towards email-LTE submissions was accelerated by security concerns after several envelopes containing a powder suspected to be anthrax were sent to lawmakers and journalists, prompting news organisations to adopt stricter measures for handling correspondence.<sup>10</sup>

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<sup>4</sup> Landert and Jucker, “Private and Public in Mass Media Communication.”

<sup>5</sup> “What Is the Role of ‘the Letter to the Editor’? | European Archives of Oto-Rhino-Laryngology.”

<sup>6</sup> Hayek, Mayrl, and Russmann, “The Citizen as Contributor—Letters to the Editor in the Austrian Tabloid Paper Kronen Zeitung (2008–2017).”

<sup>7</sup> Dupre, “Letters and Phone-Mails to the Editor.”

<sup>8</sup> Dalton, “Read Their Lips.”

<sup>9</sup> Wahl-Jorgensen, “Letters to the Editor as a Forum for Public Deliberation.”

<sup>10</sup> “E-Mail a Savior amid Anthrax Scare - CNET.”

The internet's expansive reach significantly increased the potential readership for editorials and opinion columns, even for smaller newspapers.<sup>11</sup> This broader audience often meant that controversial editorials or columns could generate a volume of email responses far exceeding what these publications were accustomed to managing. This transition not only underscored the growing influence of online platforms in shaping public discourse but also emphasised the need for robust digital infrastructure to support increased engagement from readers.<sup>12</sup>

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<sup>11</sup> Wahl-Jorgensen, "Letters to the Editor."

<sup>12</sup> Jain, Zaher, and Roy, "Magazines and Social Media Platforms."

## 5. The Rise and Complexities of Online Comment Sections

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As the internet expanded the reach of public discourse, the demand for more immediate and interactive forms of audience engagement grew. This shift paved the way for the development of online comment sections, which allowed readers to instantly share their thoughts and engage in discussions directly beneath news articles. This feature became ubiquitous across news websites and social media platforms, promising a more interactive and democratic form of public discourse.<sup>13</sup> Unlike LTEs or verbal opinion forums, these thread-based comment sections allow readers to immediately share their thoughts and engage in discussions directly beneath news articles.

However, while these comment sections promised a more democratic form of public dialogue, they also introduced new challenges, raising important questions about moderation, accountability, and the quality of discourse in digital public spheres.<sup>14</sup> Another pressing issue has been the inherent complexity of thread-based discussions. As the volume of comments on popular articles increased, maintaining an overview of the conversations became increasingly difficult. The nested structure of threads, while useful for direct responses, often led to fragmented and disjointed discussions, making it chal-

lenging for readers to follow the overall sentiment and flow of arguments.<sup>15</sup> This disorganisation hampered the ability of comment sections to facilitate meaningful dialogue and often left readers feeling overwhelmed rather than informed.

In addition to the structural challenges, the simple rating systems embedded in many comment sections—such as upvotes/downvotes or like/dislike buttons—further complicated the situation. These features, intended to highlight popular opinions, inadvertently reinforced an engagement-driven logic that prioritised sensational or polarizing comments over thoughtful and nuanced contributions. As a result, comment sections often became echo chambers where the most extreme views were amplified, rather than platforms for balanced and constructive discussion.<sup>16</sup>

Moreover, the widespread nature of comment sections exposed them to issues such as spam, trolling, and the spread of misinformation.<sup>17</sup> The anonymity provided by online platforms, while essential for some users, also facilitated the proliferation of hateful speech and disinformation.<sup>18</sup> News organisations were faced with the daunting task of moderating these spaces to prevent

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<sup>13</sup> Weber, “Discussions in the Comments Section.”

<sup>14</sup> Zamith and Lewis, “From Public Spaces to Public Sphere.”

<sup>15</sup> Williams and Sebastian, “Online Comment Sections.”

<sup>16</sup> Han et al., “News Comment Sections and Online Echo Chambers.”

<sup>17</sup> Jakob et al., “Is Constructive Engagement Online a Lost Cause?”

<sup>18</sup> Knustad and Johansson, “Anonymity and Inhibition in Newspaper Comments.”

abuse, yet the sheer volume of comments often made effective moderation nearly impossible. Automated systems for filtering out inappropriate content, though helpful, struggled with the nuances of language and context, sometimes resulting in the unintended censorship of legitimate voices or the failure to remove harmful content.

Despite their initial promise, comment sections remain a widespread feature that accompanies journalistic online content. As the media landscape continues to evolve, there is growing recognition that new approaches are needed to foster more meaningful and productive audience engagement. This has led to the exploration of AI-driven tools, such as chatbots and sentiment analysis, which aim to address some of the inherent flaws of traditional comment sections and create a more informed and engaged public discourse.

## 6. News Platforms as Forums for Public Deliberation

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As the limitations of online comment sections became apparent, it became clear that new approaches were needed to foster more meaningful public discourse. Recognizing this, news platforms began to explore alternative methods to serve as forums for public deliberation, seeking to balance the openness of audience engagement with the need for constructive dialogue. However, various forms of audience engagement have transformed media institutions and news channels into vital forums for public deliberation.<sup>19</sup> News outlets also play a crucial role in enabling public deliberation and participation.<sup>20</sup> Many news entities claim to serve the community by offering a wide-open public forum, a concept central to democratic practice and participatory societies.<sup>21</sup>

Through sections like LTEs and comment functions on articles, news outlets empower ordinary citizens to express their views, engage in discourse with other citizens and political elites, and contribute spontaneously to public debate. This provides a unique opportunity for individuals to have their voices heard, fostering a sense of community and participation in the democratic process. Furthermore, these channels for

audience engagement serve as important outlets for the public to express grievances and disagreements with the prevailing public discourse. By acknowledging and validating these concerns, the media helps to address public dissatisfaction and promote a more inclusive dialogue.

In this way, media institutions do not merely disseminate information but also facilitate active public engagement. This dual role enhances the democratic process by ensuring a more diverse array of voices is heard and considered in public discussions. The ability of the media to act as both informers and enablers of public discourse underscores their fundamental importance in fostering a vibrant, inclusive, and participatory society.

This form of public engagement, while inclusive in principle, is not without its flaws. Critics argue that letter writers and the content of their letters may not accurately represent broader public opinion.<sup>22</sup> Letter writers are often described as an articulate minority: their numbers are relatively small, but they tend to be highly repetitive in their submissions.<sup>23</sup> Studies indicate that letter writers are predominantly men, well-edu-

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<sup>19</sup> Givskov and Trenz, "Civic Engagement through Mainstream Online Newspapers."

<sup>20</sup> Deuze, Bruns, and Neuberger, "Preparing for an Age of Participatory News."

<sup>21</sup> "The Normative-Economic Justification for Public Discourse: Letters to the Editor as a 'Wide Open' Forum - Karin Wahl-Jorgensen, 2002."

<sup>22</sup> "Letters to the Editor: Hazy Reflections of Public Opinion - David L. Grey, Trevor R. Brown, 1970."

<sup>23</sup> Cooper, Knotts, and Haspel, "The Content of Political Participation."

cated, older, and leaning conservative.<sup>24</sup> Additionally, there is evidence suggesting that some interest groups or political parties may supply pre-written messages or complete letters for their supporters to submit to newspapers.<sup>25</sup>

Moreover, editors continue to exercise a gatekeeping role by deciding which letters to the editor are published and which comments are allowed under articles.<sup>26</sup> This editorial discretion can further skew the representation of public opinion, as it involves subjective decisions about what constitutes appropriate or relevant content. Consequently, while public engagement through letters to the editor and article comments provides a valuable platform for citizen expression, it remains subject to biases and limitations that can affect its overall representativeness and impact on public discourse.

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<sup>24</sup> Cooper, Knotts, and Haspel.

<sup>25</sup> Reader, "Turf Wars?"

<sup>26</sup> Boberg et al., "The Moral Gatekeeper?"

# 7. The Role of Chatbots and AI in News Engagement

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To enhance their role as facilitators of public deliberation, media outlets have increasingly turned to advanced technologies. The integration of AI, particularly through chatbots and machine learning, offers new opportunities to overcome the challenges of traditional engagement methods. These technologies are now being leveraged to create more personalised and interactive experiences for audiences, signaling a significant shift in how news is consumed and interacted with. Advances in machine learning and AI have fueled growing experimentation with conversational forms of journalism. Specifically, some media outlets employ chatbots to enable users to ask questions about news events, people, or places and receive relevant content in response. These chatbots not only provide personalised news delivery but also foster a more interactive and engaging user experience, representing a significant evolution in how news is consumed and interacted with in the digital age. However, the use of chatbots also brings certain risks that must be carefully considered, including the potential biases inherent in existing AI models. Many of these models are heavily biased towards English-language content and often underperform when dealing with news in other languages, potentially limiting the accessibility and fairness of these tools for a global audience.

To better understand how chatbots and AI

are being applied in real-world scenarios, it is instructive to examine case studies from prominent news organisations. These examples illustrate both the potential and the challenges of chatbots and AI-driven engagement tools, providing valuable insights into how they are reshaping the landscape of digital journalism.

## Example of the BBC and the Guardian Chatbot Experience

The BBC, as the UK's largest public broadcaster, has experimented with audience-facing bots to create more interactive news formats, adopting a conversational tone and personalised mode of address as part of a strategy to enhance personalisation.<sup>27</sup> The goal is to help less engaged audiences understand major news stories better. For example, BBC research revealed that younger readers often recognise the importance of a story but are unsure where to acquire background information.<sup>28</sup> This can lead to feelings of nervousness and anxiety when they try to engage with current events.

To address this, the BBC designed in-article bots to mimic conversations with BBC experts.<sup>29</sup> Users can select from a list of questions to explore different aspects of a story in more depth, tailored to their interests and current understanding of the topic

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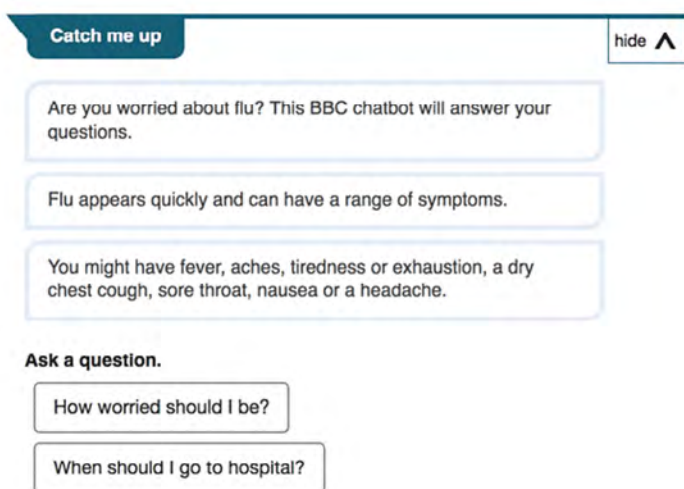
<sup>27</sup> Jones and Jones, "Public Service Chatbots."

<sup>28</sup> "In-Article Chatbots."

<sup>29</sup> Harrison, "User-Generated Content and Gatekeeping at the Bbc Hub."

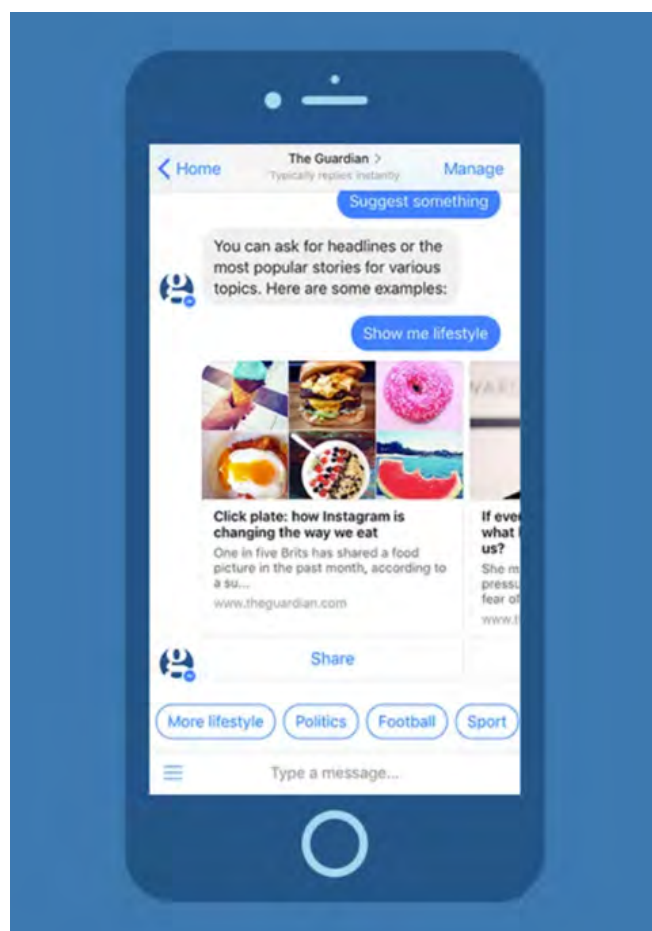
(see Figure 1). This approach helps prevent readers from feeling overwhelmed by large amounts of text, much of which may not be relevant to their interests.<sup>30</sup>

Another example comes from The Guardian, which was one of the first news outlets that introduced a chatbot that communicates with users through Facebook Messenger (see Figure 2).<sup>32</sup> This chatbot sends users a news briefing every morning, featuring the top news stories of the day. The Guardian claimed that this effort demonstrates their commitment to leveraging technology to enhance news delivery, streamline information gathering, and engage with their audience in novel ways.<sup>33</sup>



**Figure 1.** Example of BBC In-Article Bot

These bots are embedded within some BBC News stories and have been used for various topics. For instance, they provided answers to questions about voter registration leading up to the UK general election and explained how Open Banking could affect individuals in 2018, and offered information on the flu outbreak in the UK.<sup>31</sup> By doing so, the BBC’s bots make news consumption more accessible and less daunting, particularly for younger and less engaged audiences.



**Figure 2.** Guardian News Chatbot

<sup>30</sup> “BBC Uses In-Article Chatbots to Give Context in Complex News Stories | International Journalists’ Network.”

<sup>31</sup> “Winter Flu Outbreak Is Peaking, Say Health Experts.”

<sup>32</sup> Good and Wilk, “Introducing the Guardian Chatbot.”

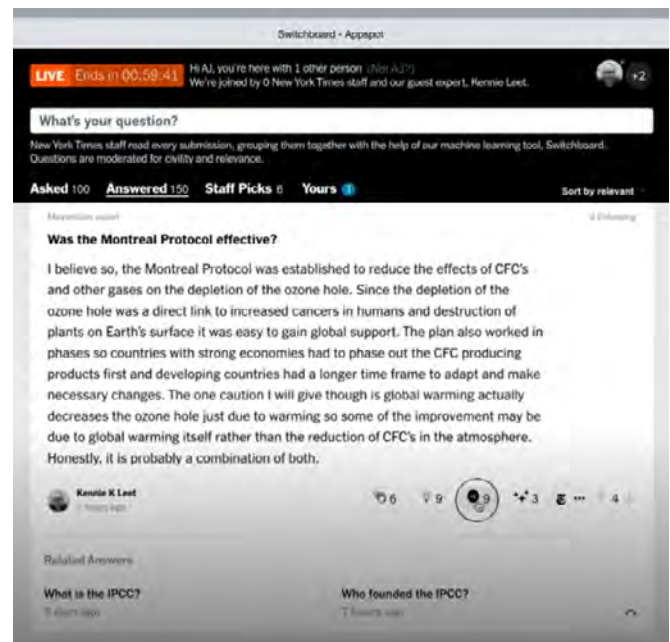
<sup>33</sup> “Meet Our Experimental Guardian Sous-Chef Facebook Messenger Bot.”

News entities initially gravitated towards chatbots as an innovative tool for engaging with audiences, leveraging their potential to provide personalised news delivery and interactive experiences. However, many news outlets have since discontinued their chatbots on platforms like Facebook due to their limited success in driving significant referral traffic.<sup>34</sup> The integration and functionality of chatbots on social media platforms often fell short, with users finding the interactions less intuitive and engaging than expected.<sup>35</sup> Challenges in delivering timely and relevant content due to limitations in AI and natural language processing capabilities further affected the user experience. Additionally, the rapid evolution of digital media consumption habits saw audiences favoring more immediate and direct news access through mobile notifications and social media feeds, reducing the appeal of intermediary chatbot interfaces.<sup>36</sup> However, while chatbots did not meet expectations in driving referral traffic, they offered valuable insights into the complexities of user engagement and underscored the need for continuous innovation in digital journalism.

## The New York Times Switchboard

The New York Times has been leveraging Natural Language Processing (NLP) to create new avenues for reader interaction with their journalism through a system named Switch-

board (see Figure 3).<sup>37</sup> Originally conceived in 2019 to facilitate Q&A sessions during live events, the project was repurposed in 2020 to address the specific challenges posed by the coronavirus pandemic.<sup>38</sup>



**Figure 3.** The New York Times Switchboard Live Event

As a multifaceted and evolving topic, COVID-19 presented unique challenges for existing Q&A systems that typically lack the sophistication to handle such nuance. To tackle this, the R&D Lab of the New York Times developed a dual-model system, including extracting topic-specific information from user-submitted questions, while also focusing on interpreting subtle differences in meaning to ensure accurate responses (see Figure 4).<sup>39</sup> Switchboard then used

<sup>34</sup> Valero-Pastor et al., “Don’t Say Failed Innovation, Say Failed Implementation! The Unsuccessful Implementation of Early Paywalls and Chatbots in the Spanish News Market.”

<sup>35</sup> Maniou and Veglis, “Employing a Chatbot for News Dissemination during Crisis.”

<sup>36</sup> Valero-Pastor et al., “Don’t Say Failed Innovation, Say Failed Implementation! The Unsuccessful Implementation of Early Paywalls and Chatbots in the Spanish News Market.”

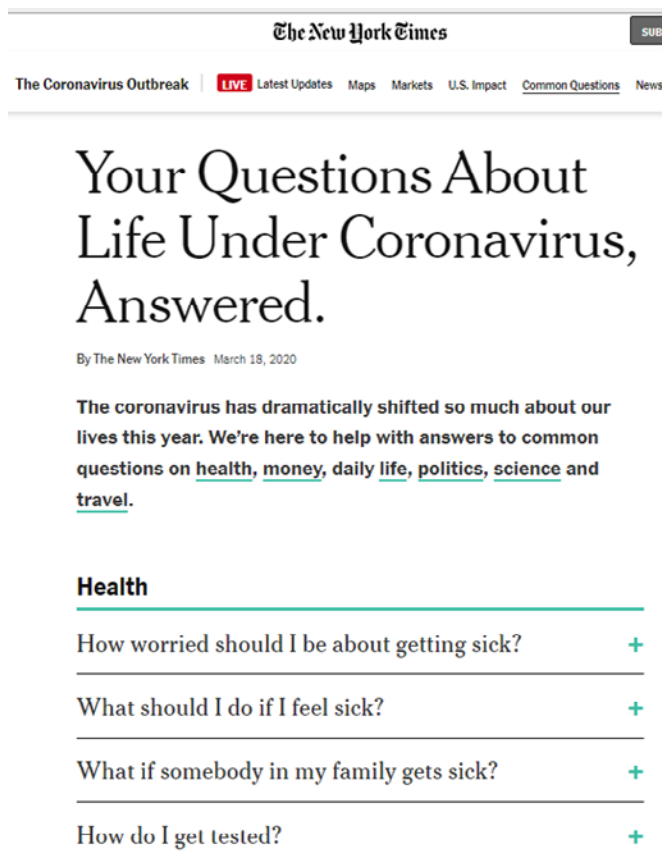
<sup>37</sup> “Prioritizing Human Perspectives in Natural Language Processing.”

<sup>38</sup> Times, “Answers to Your Current Coronavirus Questions.”

<sup>39</sup> “Streamlining Reader Q&A with Zero-Shot Learning.”

these models to assign a confidence score to each potential answer match, indicating the likelihood that the system has identified the correct information.

any bias issues. Additionally, Switchboard monitored incoming questions to alert the newsroom to emerging trends and shifts in reader concerns.<sup>40</sup>



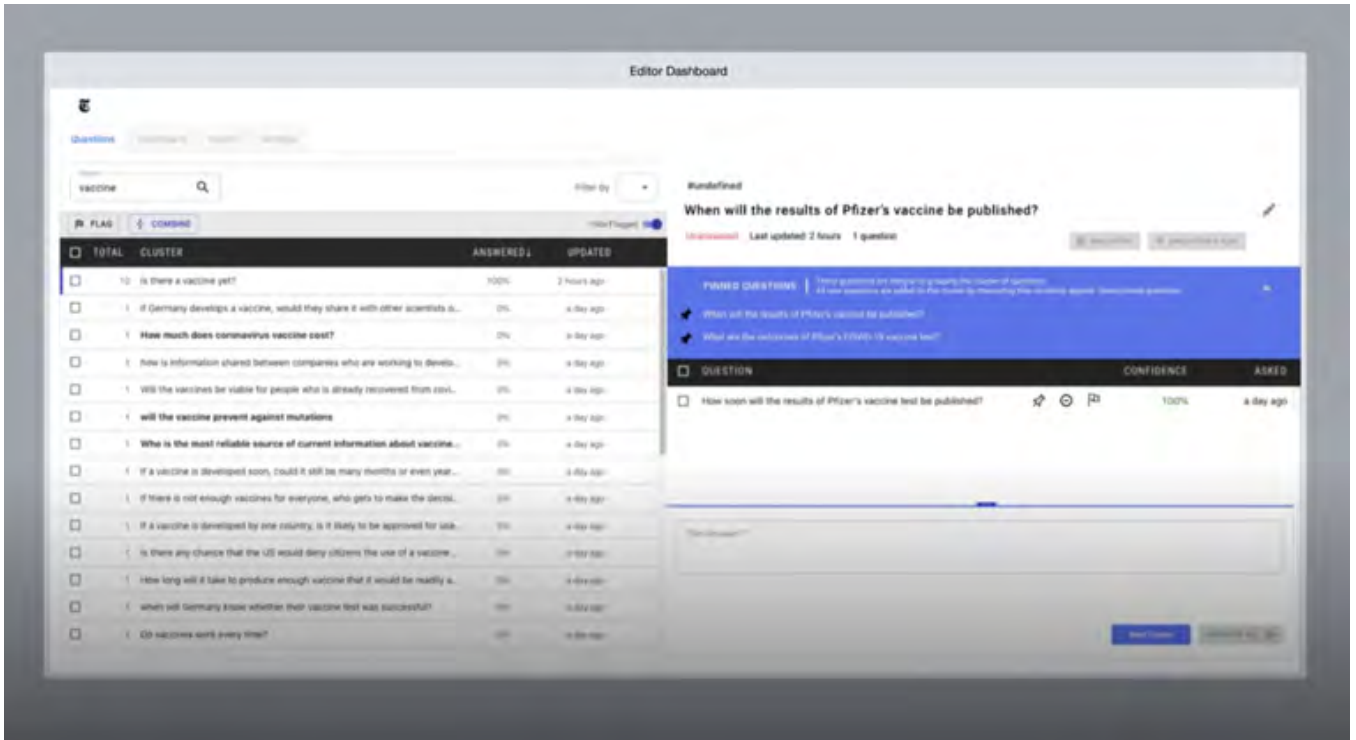
During initial user testing, it was anticipated that readers would use simple keywords or short phrases when interacting with the system. However, once launched, it was discovered that New York Times readers often submitted full questions or even entire paragraphs, which required the system to process and interpret more complex submissions than initially expected (see Figure 5).<sup>41</sup>

**Figure 4.** *The New York Times COVID-19 Q&A Page*

To enhance the accuracy and reliability of Switchboard, The New York Times implemented an “editor-in-the-loop” approach with a human editor overseeing the machine’s suggestions, correcting errors, and adjusting for potential biases inherent in NLP models, such as those documented in systems like Google BERT. This human oversight not only ensured higher quality responses but also enabled the analysis of model performance and identification of

<sup>40</sup> “Streamlining Reader Q&A with Zero-Shot Learning.”

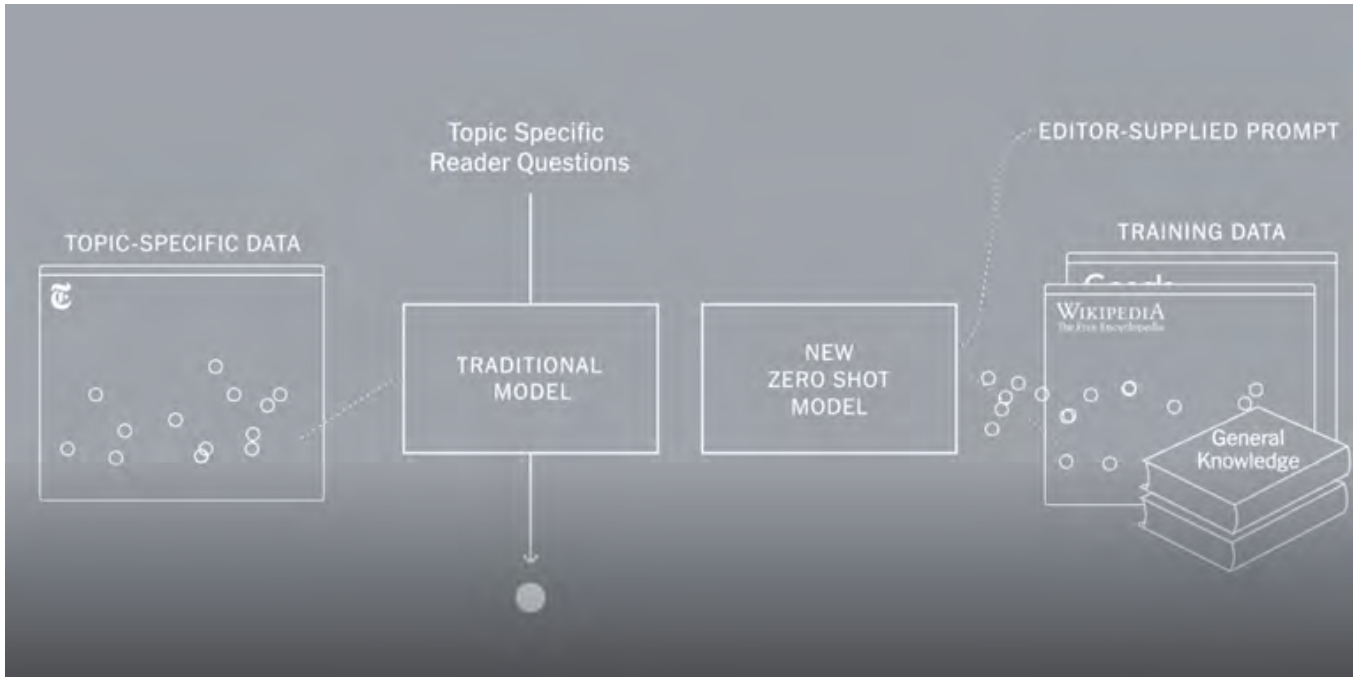
<sup>41</sup> Times, “Answers to Your Current Coronavirus Questions.”



**Figure 5.** The New York Times Switchboard Editor Dashboard

To address these complexities and further improve the tool’s flexibility, the team began experimenting with zero-shot learning, an innovative approach in NLP that allows models to perform tasks without prior training data (see Figure 6). According to the R&D Team, this shift was crucial because the dynamic nature of news makes it difficult to predict and train for future topics. By integrating zero-shot learning, Switchboard could potentially handle questions on any topic across the entire news report, significantly broadening its application. This approach also enhances the system’s ability to understand the semantics of user questions and answers, allowing for greater flexibility in phrasing queries and identifying relevant responses. By moving beyond simple keyword matching, it enables more accurate and context-aware interactions.<sup>42</sup>

<sup>42</sup> The New York Times Demo.



**Figure 6.** *The New York Times Switchboard Workflow*

## 8. Emerging Ways for Audience Engagement

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Building on these case studies, it is clear that the landscape of audience engagement continues to evolve rapidly. The introduction of Generative AI, such as ChatGPT, has opened up new possibilities for creating even more interactive and personalised experiences. These emerging technologies are poised to take audience engagement to the next level, offering novel ways for news organisations to connect with their audiences.

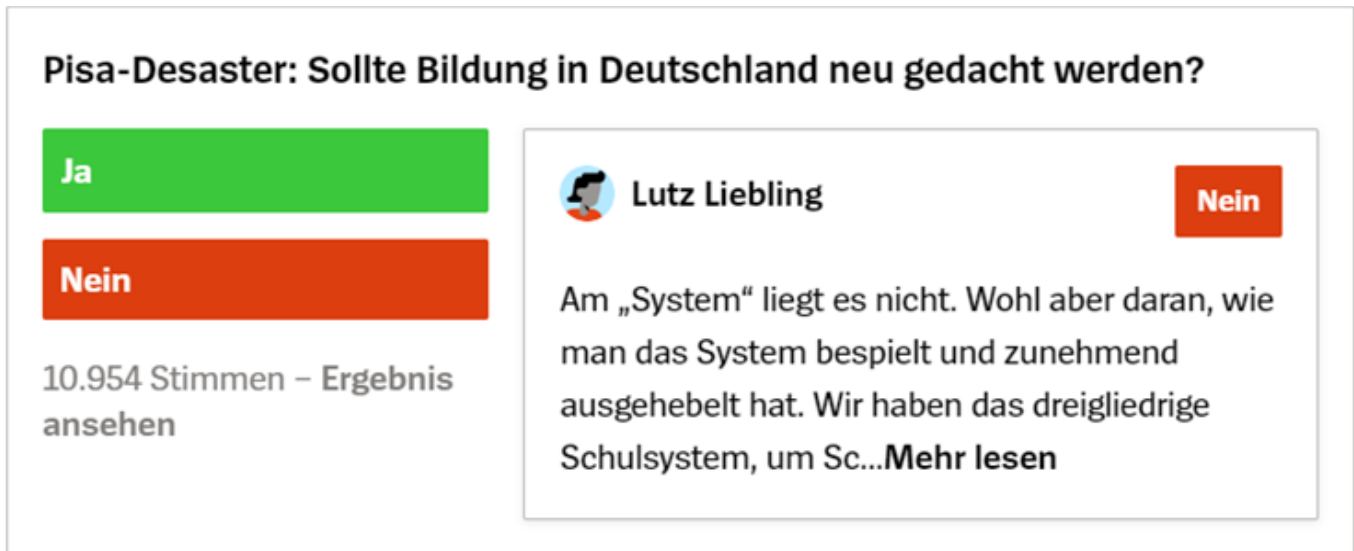
### The SPIEGEL Debate Feature

In December 2023, the German news magazine Der SPIEGEL introduced a new feature on their online platform, aptly named “Debate.”<sup>43</sup> This cutting-edge addition aims to foster a more interactive and engaging user experience by inviting readers to participate actively in discussions around hot-button issues and articles featured on their site (see Figure 7). This initiative reflects the publication’s commitment to embracing digital transformation and its understanding of the importance of community engagement in the modern media landscape. Through “Debate,” Der SPIEGEL seeks to strengthen its connection with its audience, encourage meaningful discourse, and ensure that a variety of voices are heard, thereby enriching the public conversation on pressing topics of the day.<sup>44</sup>

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<sup>43</sup> “Bereich Für Debatten - Spiegel.”

<sup>44</sup> “Community.”



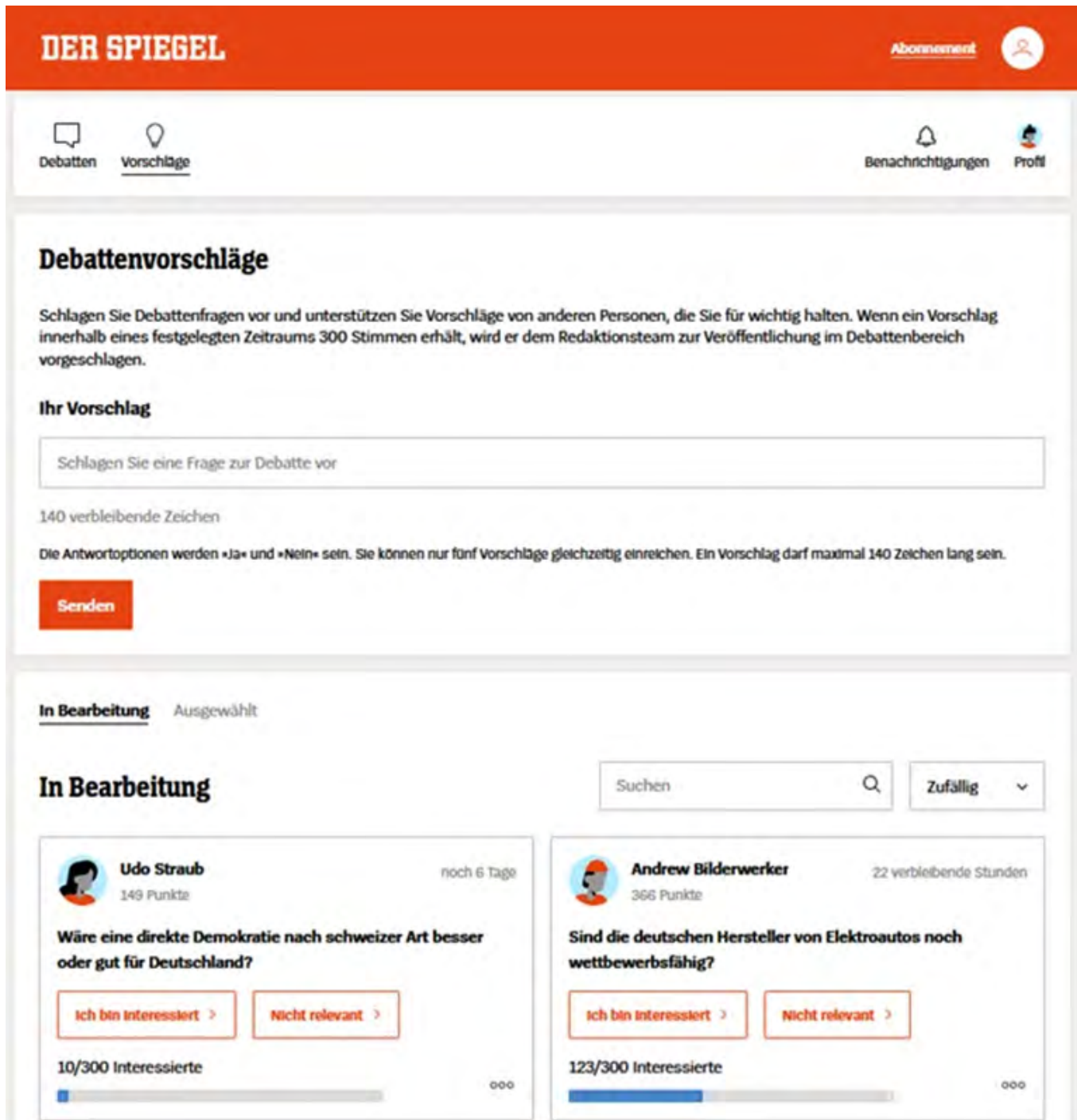
**Figure 7:** Example of Web Polling Feature

SPIEGEL Debatte introduced a new log-in system, requiring users to create a new profile for the community, with a recommendation to use their first and last names. Previous log-ins from the old SPIEGEL community are no longer active. Subscribers can now maintain a profile page with their comment history, offering a personal digital space on SPIEGEL.de and insights into their discussion partners. SPIEGEL hopes the new features enhance the subscription experience. The platform centralises discussions around key debate questions defined by the editorial team, instead of scattering discussions under numerous individual articles. Subscribers can engage with these central questions and selected publications from the Opinion and Debate sections, such as comments, columns, and guest contributions. Comment sections remain open for 24 hours, after which they close but stay visible.

Enhanced interactivity is a significant feature, allowing subscribers to write comments and use a new voting tool that pro-

vides a quick overview of the prevailing opinions within the SPIEGEL community (see Figure 8). The community can also submit their own debate suggestions. To improve organisation, a permanent entry point to SPIEGEL Debatte is placed on the SPIEGEL.de homepage and within relevant articles. A new debate page serves as the central hub, listing all ongoing and concluded reader discussions. Comment threads are better organised with new sorting options, including an editorially curated list of comments. Community guidelines, including rules on avoiding hate speech and inciting language, are in place to support this goal.<sup>45</sup>

<sup>45</sup> “SPIEGEL Debatte.”



**Figure 8.** SPIEGEL Debate Recommendation of Debate Topics

Der SPIEGEL used to evaluate incoming contributions for their comment sections based on formal criteria, typically using our moderation tool, Perspective, and occasionally through manual review.<sup>46</sup> By leveraging the Perspective moderation tool, most contributions were neither approved

or rejected. The Perspective API is a result of collaborative research by Jigsaw and Google’s Counter Abuse Technology team. Launched in 2017, the Perspective API aims to improve online conversations by empowering moderators to identify and address toxic comments.<sup>47</sup> It is utilised by

<sup>46</sup> “Besondere Nutzungsbedingungen für Ihre Beiträge.”

<sup>47</sup> Jigsaw, “Announcing Experimental Bridging Attributes in Perspective API.”

over 1,000 partners, including prominent publications like the New York Times and Wall Street Journal, as well as platforms like Reddit, and supports 18 languages and processes nearly two billion requests daily.<sup>48</sup>

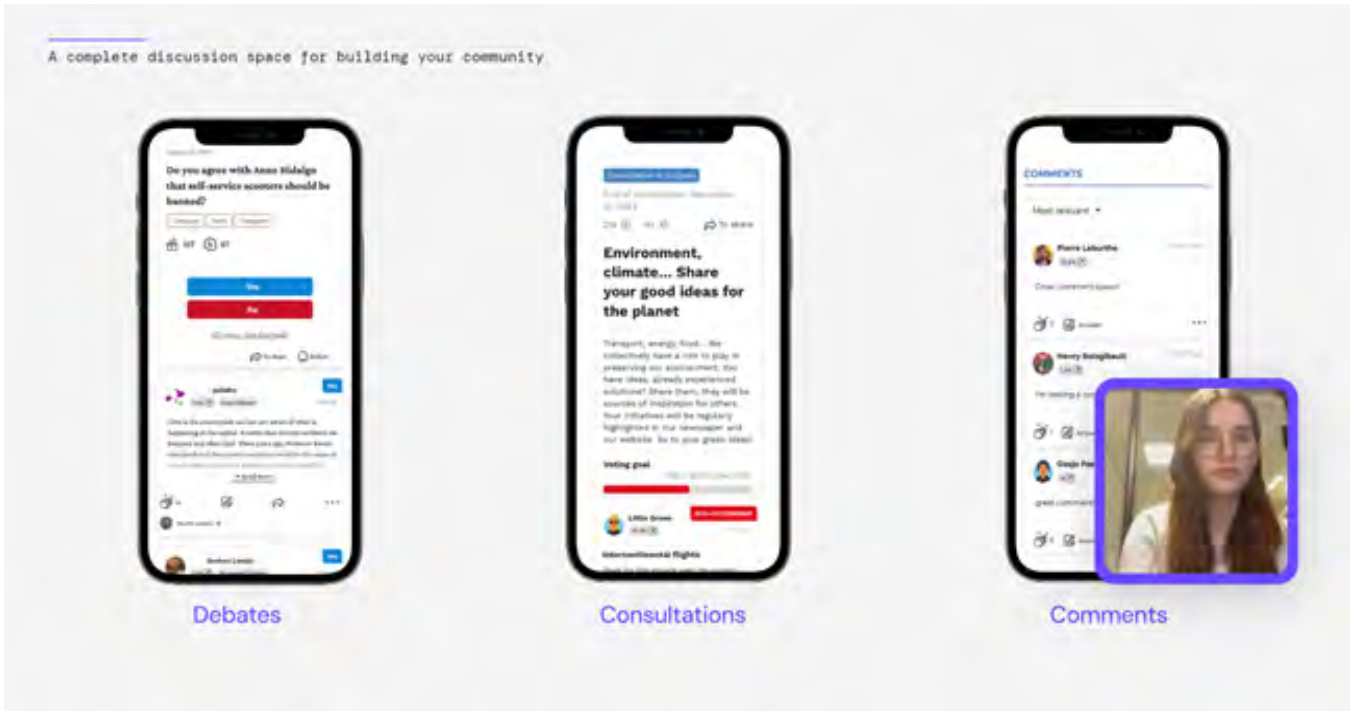
However, the new debate section is now powered by Logora, a software tailored to meet the specific requirements of SPIEGEL Debate (see Figure 9).<sup>49</sup> Logora was founded as a startup in Paris in 2019, with the goal of incorporating a debate-focused social network into company websites to boost engagement, subscribers, and revenue. They promote their development of a moderation algorithm that has tagged over 45,000 contributions, automatically accepting arguments that are readable, well-written, and non-hateful. If the algorithm is unsure about the quality of an argument due to unknown sources, new phrases, or new concepts, it forwards the argument to a team member for manual moderation. Pending posts appear as published to their authors, ensuring a smoother user experience. They claim to have processed over two million arguments for their partners with a 100% success rate in detecting hateful, unreadable, and illegal messages.<sup>50</sup>

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<sup>48</sup> “Perspective API.”

<sup>49</sup> “Logora – More than a Comment System.”

<sup>50</sup> “Moderation | Logora.”



**Figure 9.** Logora Features

## The “Hey\_!” Bild.de AI-Powered Chatbot

Another experiment is the AI-powered Hey\_! bot of the German newspaper BILD.de, published by the Axel-Springer Publishing Company and Germany’s largest and most popular tabloid (see Figure 10).<sup>51</sup> Hey\_ utilises GPT, the most popular AI model developed by OpenAI, to engage in casual conversations, entertain users, and answer their questions. It immediately suggests possible responses or questions and is designed to assist users effectively. Hey\_ has been intensively prepared and instructed through specific prompts to ensure it provides accurate and helpful interactions.

Currently, Hey\_ is in an early testing phase and primarily serves as an entertainment tool.<sup>52</sup> BILD.de emphasises that Hey\_ is not an alternative to BILD’s journalistic offerings. Instead, it is an additional, interactive tool designed to deliver information in an entertaining and personalised manner.<sup>53</sup>

<sup>51</sup> “Axel Springer Launches German ChatGPT Service Hey\_ at BILD.”

<sup>52</sup> “Hey ‘Bild’-KI, warum sind so viele Leute sauer auf ‘Bild’?”

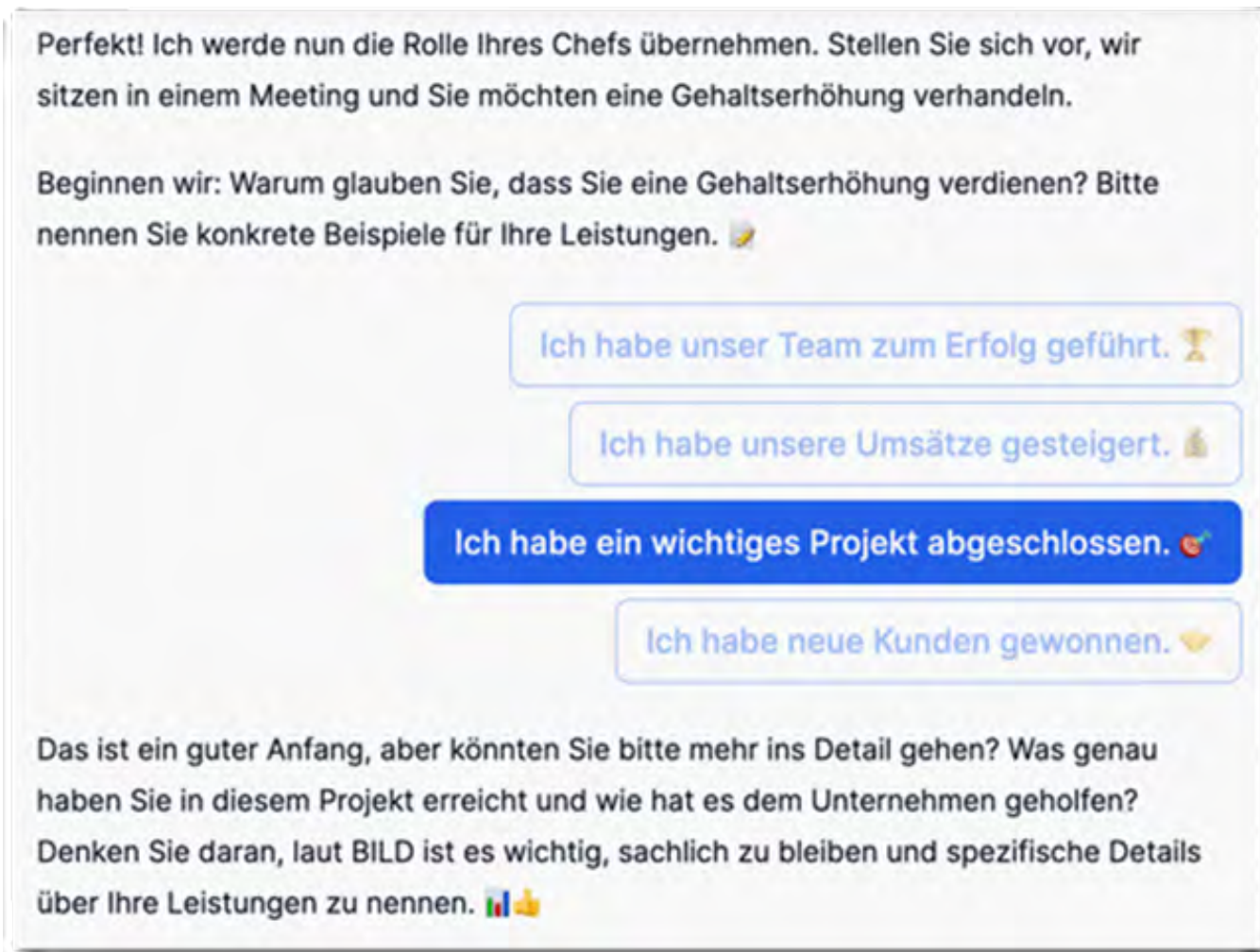
<sup>53</sup> “Hey ‘Bild’-KI, was hältst du eigentlich von ‘Bild’-Methoden?”



*Figure 10. Hey\_! BILD.de Chatbot Advertisement*

Initially, Hey\_ will cover topics like nutrition, finance, and travel, along with entertaining features such as personalised bedtime stories for children and quizzes. Examples include activities like discovering which football club suits you best, a salary negotiation simulator, imagining how Elon Musk would solve your problem, or finding answers to any questions your child might have about the world. Hey\_ actively steers the conversation by asking questions and providing AI-powered suggestions, enabling users to generate personalised responses (see Figure 11).<sup>54</sup>

<sup>54</sup> "Axel Springer Launches German ChatGPT Service Hey\_ at BILD."



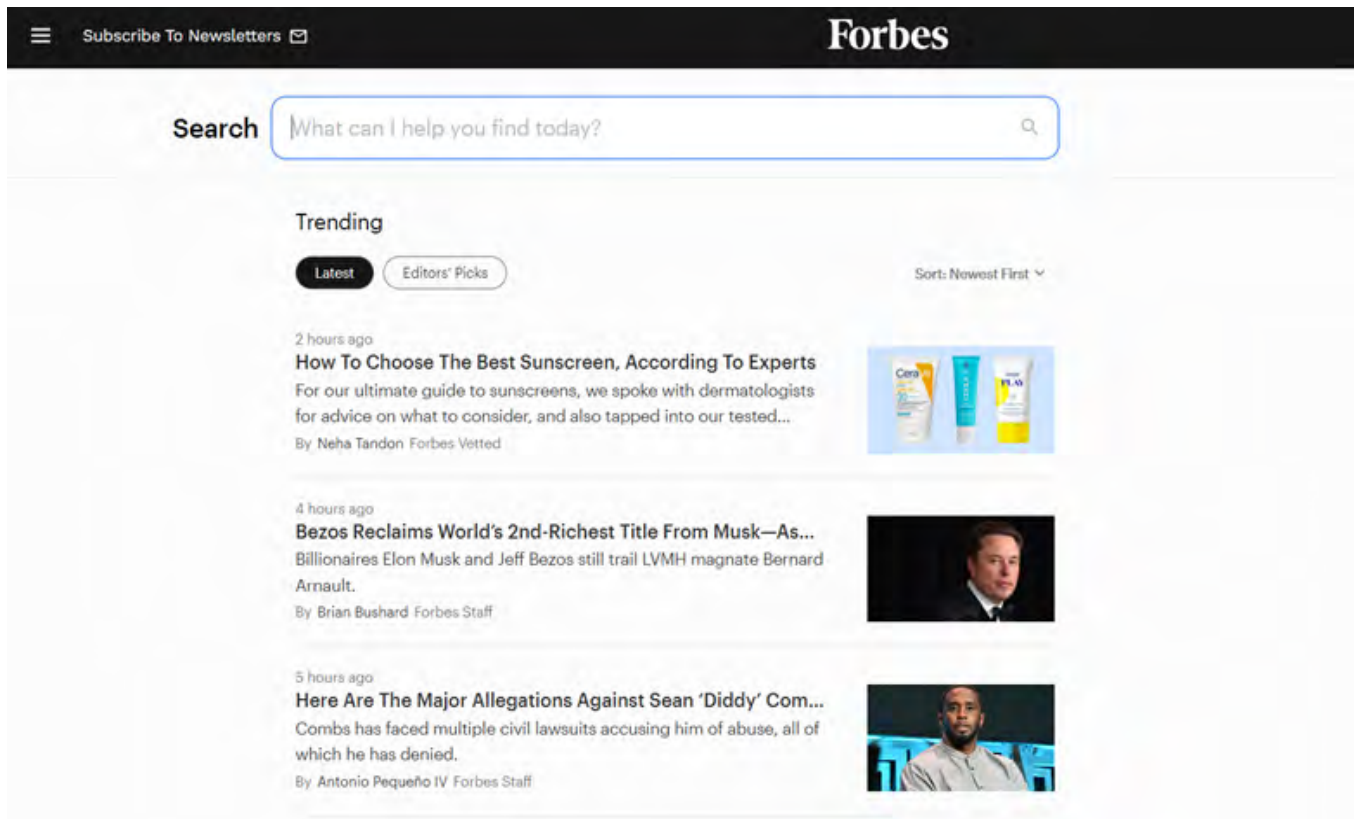
*Figure 11. Hey\_! BILD.de Salary Negotiation Chat Simulation*

## Forbes New Generative AI Search Tool Adelaide

Another example of AI-powered personal search features is the news search tool Adelaide, powered by Google Cloud, that Forbes announced in October 2023.<sup>55</sup> This tool provides AI-driven personalised recommendations and insights from Forbes' journalism. Adelaide, named after the wife of Forbes founder B.C. Forbes, has been crafted in-house by Forbes' dedicated tech and data team, ensuring seamless integration and optimal functionality (see Figure 12). What sets Adelaide apart is its search-and conversation-based approach, making content discovery easier and more intuitive

for Forbes' global audience. The tool generates individualised responses to user queries based exclusively on Forbes articles and is built using Google Cloud Vertex AI Search and Conversation. With this integration, Adelaide will comb through Forbes' trusted content archive from the past twelve months, continuously learning and adapting to individual reader preferences. In its next phase, Forbes is working to improve and enhance Adelaide by enhancing the models to provide more personalised experiences and contextual conversations so that the users have continuity between engagements with Adelaide and get better summarised responses.

<sup>55</sup> Communications, "Forbes Launches New Generative AI Search Tool, Adelaide, Powered By Google Cloud."



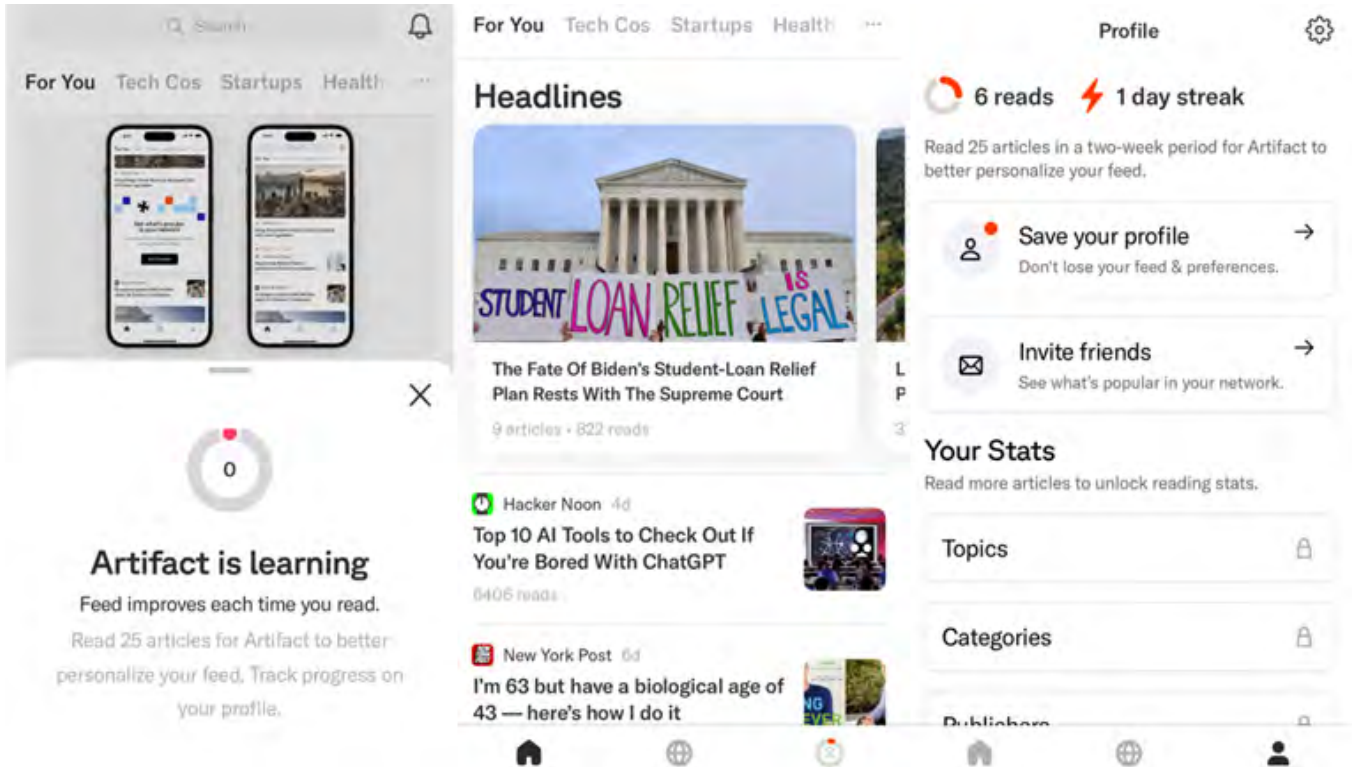
**Figure 12.** Forbes Adelaide Search Engine

## Artefact-Yahoo News Aggregator

Another prominent example is the AI-based application Artifact, designed to create a highly personalised news experience (see Figure 13). Developed by Instagram co-founders Kevin Systrom and Mike Krieger, the app leveraged advanced AI and machine learning algorithms to tailor news content specifically to each user’s preferences and reading habits.<sup>56</sup> By analyzing user interactions—such as the articles they read, share, or skip—Artifact continually refined and personalised the news feed, ensuring that the content becomes more relevant and engaging over time. This experiment aimed not only to enhance the way users consume news but also to

explore how AI can drive more meaningful and personalised media experiences in the digital age.

<sup>56</sup> Perez, “What Happened to Artifact?”



**Figure 13.** Artefact App

In April 2024, Yahoo acquired Artifact, which had ceased operations because the app never attracted enough users, and is now using the service’s technology in an upgraded Yahoo! News app.<sup>57</sup> The new features include personalised feeds, a ‘Key Takeaways’ function, and the ability to identify clickbait headlines (see Figure 14).<sup>58</sup> In addition to its AI-driven capabilities, it also includes features from Artifact, like the ability to share article excerpts with friends and a gamified ‘streak’ feature that rewards frequent readers with badges.

<sup>57</sup> Shakir, “Yahoo Resurrects Artifact inside a New AI-Powered News App.”

<sup>58</sup> <https://mobile.yahoo.com/news>.

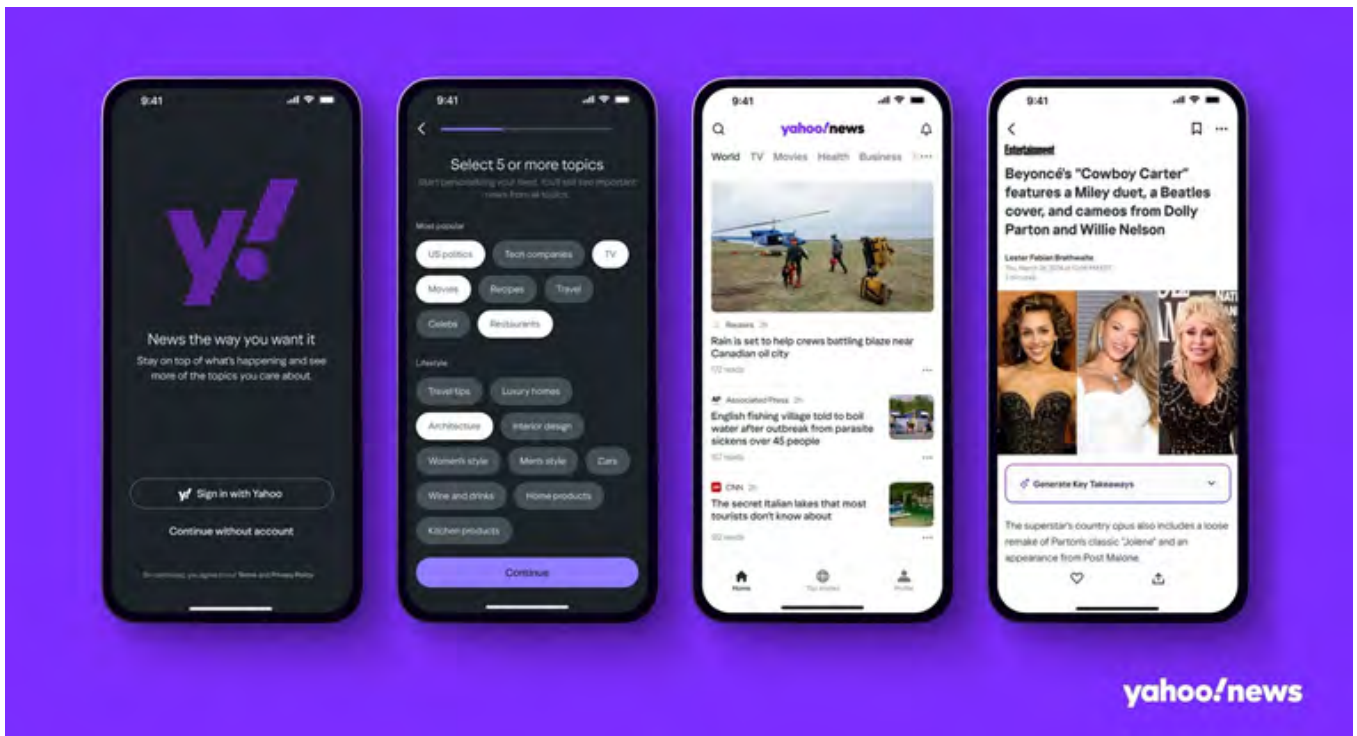


Figure 14. Yahoo News App

## Direct Community Engagement Through Instant Messaging

A recent development in audience engagement is the use of instant messaging platforms like WhatsApp or Telegram by news organisations. Since 2023, news outlets such as Al Jazeera, Der SPIEGEL, CNBC, and others have started using WhatsApp Business to send news directly to subscribers.<sup>59</sup> This shift allows news to reach audiences more personally and immediately, integrating updates into users' everyday conversations. However, these digital bulletin boards on platforms like WhatsApp are largely one-way communication channels. While they offer personalised content delivery, they lack true interactivity or opportunities for meaningful dialogue with the

audience. Users receive information, but there's little room for real-time feedback or sentiment gathering, limiting the potential for deeper engagement.<sup>60</sup>

Instant messaging platforms represent a significant evolution in how news is delivered, offering immediacy and personalisation that traditional media can't match. Yet, the current one-way nature of these channels presents a challenge. To fully realise their potential, news organisations will need to find ways to transform these platforms into more interactive spaces that foster two-way communication and deeper community engagement.

<sup>59</sup> "WhatsApp Is Widely Rolling out Its Telegram-like Channels Feature - The Verge"; "CNBC International Launches WhatsApp and Telegram Channels."

<sup>60</sup> Moreno, "Production and Distribution of Media News on Telegram."

## 9. Future Formats and Technology

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As these new engagement methods take hold, it is important to consider what the future holds for news delivery. The next phase of innovation will likely involve even more advanced AI technologies, integrated with cutting-edge formats that could redefine the way audiences interact with news. Looking ahead, the focus will be on creating immersive, context-aware experiences that align with the needs of a rapidly changing digital landscape.

As AI continues to advance, it will enable news organisations to create more personalised and immersive experiences for readers, tailoring content to individual preferences and behaviours. Future formats might include interactive storytelling, where AI curates multimedia elements like videos, infographics, and real-time data to enhance the narrative. Additionally, AI-driven tools could enable more dynamic engagement through live Q&As, sentiment analysis, and predictive content recommendations, ensuring that readers not only consume information but also actively participate in shaping the conversation.

Another significant advantage AI will bring is the development of Semantic Search capabilities. Similar to the Forbes use case, this would allow users to browse extensive libraries, like those of Apple Podcasts or YouTube, for specific issues or questions they are interested in. Imagine an engine that can pinpoint exactly where in a podcast a specific question is addressed, such as “Podcast XY discusses your question at minute 16:47”—a feat unthinkable with traditional keyword-based search.

Moreover, AI can revolutionise news curation, not only by tailoring content to individual interests but also by organizing information through viewpoint clustering. This approach could classify and structure online content—whether articles, comments, or speeches—along an opinion spectrum, offering a more organised, network-based perspective on different arguments and viewpoints. This contrasts sharply with the current linear bombardment of information, providing a more structured and insightful way for audiences to navigate complex topics.

In addition, the role of social media in news dissemination deserves attention. Initially, social media was seen as a powerful tool for audience engagement and personalisation, allowing users to access news tailored to their interests directly in their feeds. However, this convenience led many people to rely solely on their social media news feeds for news consumption. As a result, news organisations adjusted their headline and marketing strategies, often focusing on crafting attention-grabbing titles and opening paragraphs, knowing that many readers would not click through to the full article. Unfortunately, this trend contributed to the spread of misinformation and disinformation, as sensationalised or misleading headlines were more likely to be shared. Furthermore, the reliance on social media platforms disrupted the traditional news advertising business, as revenue models shifted, often to the detriment of news organisations.

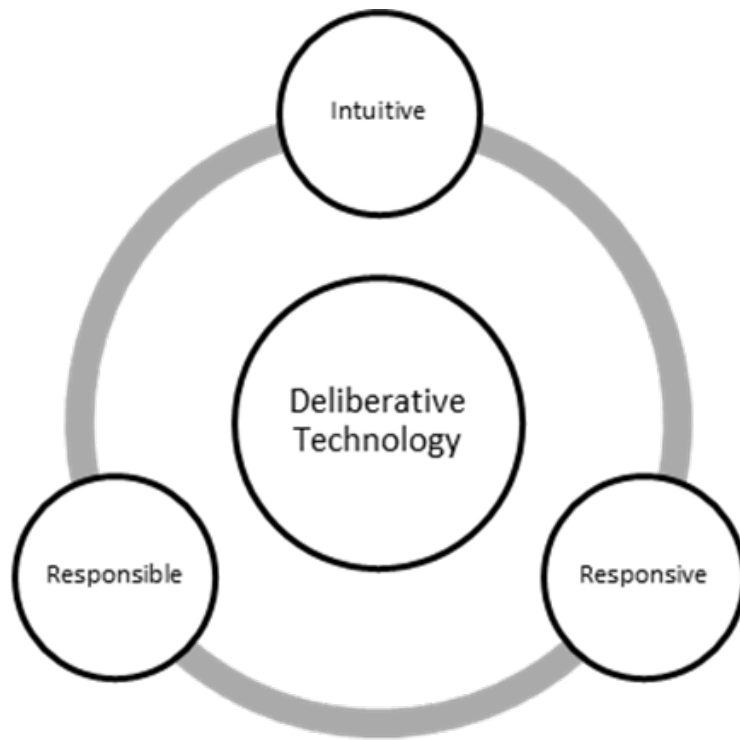
As virtual and augmented reality technologies mature, they could further revolutionise

how news is consumed, offering audiences immersive experiences that bring stories to life in entirely new ways. This evolution presents a unique opportunity to elevate the standards of news consumption and dialogue, aligning with the needs of a well-informed and critically engaged society. News entities have the potential to transform into platforms for dialogue, fostering deeper connections between journalists and the public, and creating spaces where informed discussions can thrive. This is especially critical as the world becomes increasingly complex, requiring people to form informed opinions on intricate political and social matters. However, as these advancements unfold, it will be crucial to balance innovation with ethical considerations, ensuring that these new formats and technologies are used responsibly and inclusively.

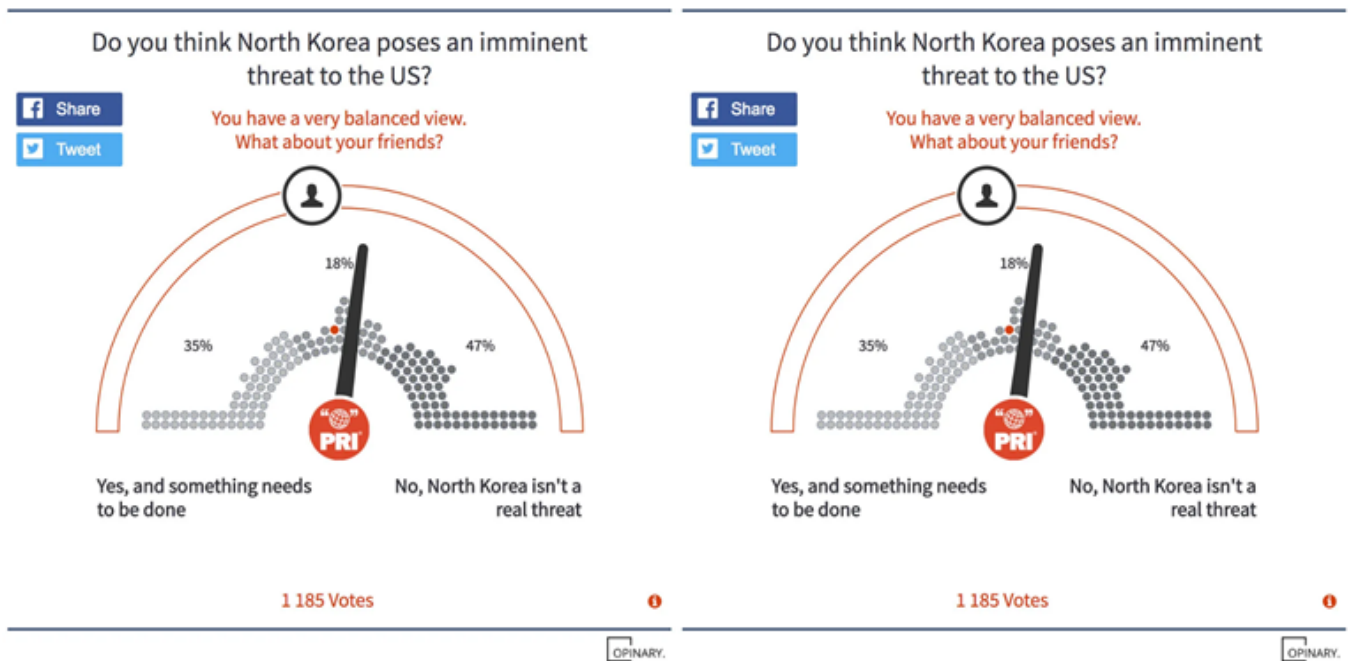
# 10. Parameters for AI-Engagement Technology

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To effectively leverage AI for news audience engagement, I think that it is crucial that technology adheres to three essential principles: being intuitive, responsive, and responsible (see Figure 15). An intuitive AI system should be easy and enjoyable for users to interact with, like quizzes or quick polls that engage users in a simple and fun way (see Figure 16). Responsiveness is equally important, as technology must add value for both audiences and journalists. For readers, this could mean helping them discover more about topics of interest by pointing out personal blind spots, while for journalists, AI can provide valuable insights through sentiment analysis or topic clustering, guiding them on what subjects require more coverage or deeper engagement. Finally, responsibility in AI implementation involves prioritizing user privacy, ensuring that individuals can choose to interact anonymously if they wish, with high data privacy as the default. Additionally, news organisations must remain vigilant about the ethical implications of using AI, including the potential biases and limitations inherent in the models they deploy. Upholding these ethical standards is essential to maintaining trust and integrity in AI-driven journalism.



**Figure 15.** Parameters for AI-Engagement Technology



**Figure 16.** Example of Opinary Quick Polls

# 11. Benefits and Challenges for Audience Engagement and Participatory Journalism

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The integration of chatbots and sentiment analysis into journalism offers a suite of benefits that transform news delivery and reporting. Journalists will gain access to real-time insights, receiving immediate feedback and sentiment analysis on diverse topics, which enables them to tailor content more closely to audience preferences and sentiments. The interactive nature of chatbots promises to enhance audience engagement and loyalty by fostering a more dynamic and participatory news consumption experience. Furthermore, the data-driven insights provided by sentiment analysis equip journalists with a deeper understanding of public opinion, thereby assisting them in crafting stories that are not only more relevant but also have a greater impact on the audience. This confluence of real-time feedback, increased engagement, and informed reporting marks a significant advancement in how news is produced and consumed.

Nonetheless, the implementation of this innovative approach is not without its challenges. Ethical considerations must be at the forefront of AI implementation in journalism. This includes not only ensuring data privacy but also addressing the potential biases inherent in AI models. For instance, AI systems trained primarily on English-language data may struggle with content in other languages, potentially marginalizing

non-English-speaking audiences. Moreover, the risk of AI inadvertently reinforcing harmful stereotypes or suppressing minority voices must be mitigated through careful model training and regular audits.

Additionally, efforts to integrate AI in journalism must navigate the intricacies of sentiment analysis accuracy, given the complex nature of human language and sentiment. Another significant hurdle is driving user adoption and engagement with the chatbot, which is critical for soliciting valuable feedback. Another challenge in fostering public audience participation is content moderation to ensure that discussions remain respectful and constructive.<sup>61</sup> Without effective moderation, public forums risk devolving into hostile or unproductive environments. This is particularly crucial in the digital age, where the sheer volume of user-generated content can be overwhelming.<sup>62</sup>

News organisations must balance the need for open and inclusive discourse with the responsibility to prevent the spread of misinformation, harassment, and other harmful behaviours. Sophisticated moderation tools and strategies, often incorporating AI, are essential to detect and filter inappropriate content in real time. However, AI systems can struggle with nuances in language, context, and cultural differences, sometimes leading to the suppression of

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<sup>61</sup> Saridou, "Mapping the Role of Artificial Intelligence in Managing Audience Participation in Journalism."

<sup>62</sup> "How Online Content Providers Moderate User-Generated Content to Prevent Harmful Online Communication: An Analysis of Policies and Their Implementation - Einwiller - 2020 - Policy & Internet - Wiley Online Library."

legitimate voices or the inadvertent promotion of harmful content. The challenge lies in developing systems that can effectively manage large volumes of content while accurately distinguishing between acceptable and unacceptable contributions. This includes training AI models on diverse data sets to improve their sensitivity to context and cultural variations, as well as maintaining human oversight for more complex cases. By investing in robust moderation frameworks, news organisations can create safer and more engaging spaces for public participation, ultimately fostering a healthier and more productive public discourse.

## 12. Conclusion

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The integration of AI-powered chatbots and real-time sentiment analysis in news media represents a transformative approach to enhancing audience engagement and fostering more interactive and personalised news consumption. This research highlights how these technologies can address the limitations of traditional audience engagement methods, such as comment boxes and discussion forums, which often require extensive moderation and are prone to spam and harassment. By leveraging AI, news organisations can offer users a more dynamic and responsive experience, providing immediate feedback and fostering a sense of community through shared learning and discussion.

However, the implementation of AI technologies in journalism is not without its challenges. Ensuring data privacy and ethical standards in the collection and analysis of user data is crucial. Additionally, the accuracy of sentiment analysis must be refined to effectively interpret the nuances of human language and sentiment. There is also the challenge of driving user adoption and engagement with these tools, which is essential for gathering valuable feedback and insights. Despite these challenges, the potential benefits of AI in enhancing the deliberative quality of news engagement are significant. By addressing these hurdles, news organisations can harness the full potential of AI to create a more engaged, informed, and proactive public, ultimately advancing the field of journalism in meaningful ways.

Looking forward, further research could explore the development of more sophisticated AI models that better understand diverse languages and cultural contexts. Additionally, future innovations might focus on creating AI tools that not only engage audiences but also facilitate more constructive public discourse, addressing the polarisation often seen in digital spaces.

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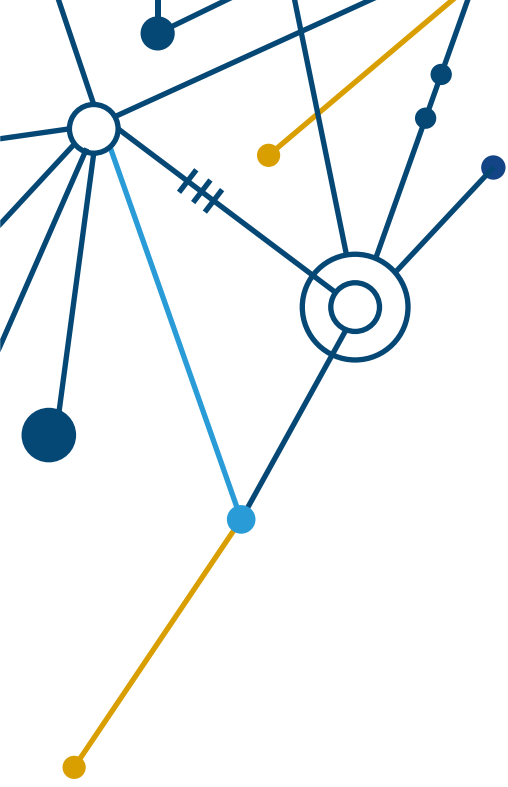
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