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Research Report

Communications Trend Radar 2024. Information inflation, AI literacy, workforce shift, content integrity & decoding humans

Communication Insights, No. 20

Provided in Cooperation with:

Academic Society for Corporate Management & Communication – An initiative of the Günter Thiele Foundation, Leipzig

Suggested Citation: Stieglitz, Stefan; Zerfaß, Ansgar; Wloka, Michelle; Clausen, Sünje (2024) : Communications Trend Radar 2024. Information inflation, AI literacy, workforce shift, content integrity & decoding humans, Communication Insights, No. 20, Academic Society for Management & Communication, Leipzig

This Version is available at:

<https://hdl.handle.net/10419/284410>

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COMMUNICATIONS TREND RADAR 2024



Information
Inflation



AI
Literacy



Workforce
Shift



Content
Integrity



Decoding
Humans



ACADEMIC SOCIETY
FOR MANAGEMENT & COMMUNICATION
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Authors and citation of this publication (APA7 style):

Stieglitz, S., Zerfass, A., Wloka, M., & Clausen, S. (2024). Communications Trend Radar 2024. Information inflation, AI literacy, workforce shift, content integrity & decoding humans. (Communication Insights, Issue 20). Academic Society for Management & Communication. Available online at www.academic-society.net

Published by Academic Society for Management & Communications – An initiative of the Günter Thiele Foundation c/o Leipzig University, Nikolaistrasse 27–29, 04109 Leipzig, Germany

Email: info@akademische-gesellschaft.com

Website: www.academic-society.net

Proofreading by Chris Abbey

Photos and illustrations by Tobias Tanzyna (p.3); Adobe Stock: vectorstory (p.9), Yunuy (p.15), Hurca! (p.21), Samby (p.28), rudall30 (p.35); Swiss Re (J.D. Müller, p.13); Continental (B.Hiller, p.25); Dussmann Group (M.Talanow, p.33)

Layout and graphics by THORN Werbeagentur, Leipzig

ISSN 2749-893X

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EDITORIAL

The past year has shown how swiftly trends can evolve. In our previous Communications Trend Radar, we highlighted the significant role of augmented workflows, envisioning close collaboration between humans and artificial intelligence (AI). Since then, we witnessed a whirlwind of change: ChatGPT became the internet application with the fastest-growing user base of all time, attracting around 100 million monthly users in just the first two months. The pace of breakthroughs and advancements in AI technology since then appears relentless. What impact will these developments have on our work processes? What competencies will be needed? What professions might become obsolete in the coming years due to these advancements?

Yet, beyond the realm of AI, the world also continues to evolve rapidly, as evidenced by geopolitical tensions, tight labor markets, investments driving the green transition of businesses, and societal shifts like population aging. This dynamic environment exerts immense pressure on companies to keep abreast of these advances. However, identifying and evaluating trends as well as how they might impact communication departments also pose a challenge. Hence, we are particularly thrilled to present the Communications Trend Radar for the fourth time in this report.

The Communications Trend Radar serves as a beacon for communication leaders, shedding light on trends that often transcend the traditional confines of communication sectors. Four years ago, we embarked on this journey with the Academic Society for Management & Communication, pooling resources from renowned universities and leading companies to conduct this insightful research. For this year's report, our team of researchers at the University of Potsdam and Leipzig University again reviewed hundreds of recent academic and business publications, selected the most relevant issues, and evaluated their impact on corporate communications.



The Communications Trend Radar research team (left to right): Michelle Wloka, Ansgar Zerfass, Sünje Clausen and Stefan Stieglitz

As a result, we've identified five trends for the Communications Trend Radar 2024, each poised to either significantly alter communication management or offer new opportunities for communicators to establish themselves as thought leaders: Information inflation, AI literacy, workforce shift, content integrity, and decoding humans.

We extend our gratitude to our corporate partners for their valuable insights into these trends, and Karen Berger and Meike Schröder from the Academic Society for their invaluable input and project support.

Prof Stefan Stieglitz

Prof Ansgar Zerfass

Dr Michelle Wloka

Sünje Clausen, MSc

KEY FINDINGS

THE MOST RELEVANT TRENDS FOR CORPORATE COMMUNICATIONS IN 2024



INFORMATION INFLATION: DEALING WITH THE DECLINING VALUE OF INFORMATION

The value of information is diminishing due to the continuous surge in the volume and accessibility of data and content. Driving this societal trend are two factors: Falling production costs for content, for example through generative artificial intelligence (AI), and technological advancements in data retrieval, storage, and processing. This leads to increased efforts in offering, gathering, and using relevant information in communication processes. Consequently, challenges such as utilizing pertinent information for decision-making, creating unique content, and effectively communicating content to stakeholders amid this overwhelming influx are intensifying for communicators within organizations.

The information flood requires a fresh approach to the inbound perspective of corporate communications. Utilizing a stack of sophisticated listening and monitoring tools is becoming crucial for generating relevant insights needed to advise top management and manage communication activities. At the

same time, corporate messaging strategies need to be re-evaluated to ensure that outbound services meet the needs of recipients in a complex world, for instance through hyperpersonalization to tailor messages at scale. Competitive advantage in both areas can be achieved if communication departments invest in digital technologies and routines that set them apart in the industry.



AI LITERACY: FOSTERING COMPETENCIES TO IMPROVE TASK ACCOMPLISHMENT WITH ARTIFICIAL INTELLIGENCE

This management trend addresses the cognitive, affective, and socio-cultural skills necessary for dealing with artificial intelligence in everyday life, including communications work. Rapid advancements in AI-based technologies are revolutionizing communication practices within societies, organizations, and among individuals. New competencies are required at all levels and for all roles involved in communication processes within organizations and with their stakeholders. AI-based technologies can differ from other technologies in their greater autonomy, their adaptability, and their ability to continue

learning during use. Difficulties in understanding the operation and output of such applications, coupled with skepticism and reluctance to engage with AI, pose additional barriers.

In addition to familiarizing themselves with AI, communication leaders must actively engage with the questions, needs, and concerns of internal and external stakeholders about AI-driven communication practices. They need to assess the current and evolving AI literacy of those representing an organization (e.g., professional communicators, top management, employee ambassadors) and their potential audiences. Communication departments can boost the AI literacy of organizational leaders and employees through training initiatives. Similarly, they can support external stakeholders in adopting AI-enabled communication practices by raising awareness, promoting transparency, and offering examples to mitigate feelings of overwhelm and resistance. Through these efforts, professionals can effectively elevate AI literacy both internally and externally.



WORKFORCE SHIFT: PREPARING FOR THE INEVITABLE TRANSFORMATION IN LABOR SUPPLY

Significant social, technological, and economic changes are reshaping the workforce available to organizations. This second management trend, driven in part by demographic shifts, labor shortages, migration, and automation, poses challenges for knowledge management and communication within organizations. Many businesses are under pressure due to the growing bargaining power of skilled workers and the increasing demands on the working environment, including considerations like work-life balance, diversity and inclusion, and purpose-driven work.

Consequently, communication leaders need to future-proof the people dimension of the current business models applied by their departments. They must

analyze how workforce changes are transforming job roles, existing practices, team culture, workflows, competencies, and knowledge management. This also involves assessing the impact of the changing workforce on the company's communication ecosystem, including the mass media and other multipliers, supporting agencies and service providers, and recipients of corporate communications. As the global economy grows increasingly competitive, pioneering new approaches are needed to cultivate and effectively utilize the labor force as a critical element for business success.



CONTENT INTEGRITY: DEALING WITH THE FLOOD OF FABRICATED CONTENT

The escalating risks associated with technology-enabled content generation and modification increase the necessity to ensure the integrity of texts, numbers, images, videos, animations, and other material interpreted, used, and produced by communication departments and professionals. This technological trend is reinforced by the rise of artificially generated content in terms of both volume and realism. This makes it increasingly difficult, if not impossible, to verify the source and authenticity of content. However, technology can also be a part of the solution.

Given that reliable information and content are vital for successful corporate communications, safeguarding content integrity is paramount for every business. Implementing technologies and protocols to verify the sources of information used by communication professionals is essential. Additionally, innovative approaches to develop verified corporate content are needed to counter the widespread creation of fabricated content, especially in social media. More specifically, establishing safeguards for validating the authenticity of content and materials produced by communication departments for stakeholder communications and advising internal decision-

makers is vital. This is imperative as malicious actors may manipulate such outputs, potentially damaging trusted relationships both internally and externally.



DECODING HUMANS: LEVERAGING TECHNOLOGY TO HARNESS PHYSIOLOGICAL AND BEHAVIORAL DATA

Advanced hardware for capturing physiological and behavioral data, coupled with AI-based software solutions for interpreting this data, are increasingly opening up new ways for human–technology interaction. These technologies link the body and mind of humans with digital applications, not just for operating devices but also for automated listening and messaging. Communication leaders should closely monitor this technological trend, already a topic of discussion in strategic management and marketing. This development is rooted in neuroscience research, including brain–computer interfaces, and affective

computing. Originating in medical domains (e.g., enabling patients with locked-in syndrome to communicate), the decreasing costs and improved accuracy of commercial neurotech solutions are fueling rapid growth in consumer and leisure applications.

The past has shown that similar technological breakthroughs can quickly impact communication behavior in general, thereby fundamentally transforming communication within, by, and about businesses. Communication leaders should try to identify and evaluate potential use cases for corporate communications, such as measuring the effectiveness and success of messaging activities, using unobtrusive recipient feedback to create and deliver context-specific content in real time, or providing real-time feedback in communication training sessions. At the same time, it is necessary to mindfully consider the reputational, legal, and ethical implications of these technologies.

METHODOLOGY

The Communications Trend Radar is an applied research project focusing on trends that impact corporate communications. It was initiated by the Academic Society for Management & Communication, a non-profit think tank for corporate communications comprising four universities, six university professors, and 50 leading international companies in the German-speaking countries. Research is carried out by a team from Leipzig University and the University of Potsdam. Since 2020, an edition of the study has been developed and published annually. The overarching goal of this series is to help communication leaders prepare for trends poised to influence their work.

A **trend** describes developments which are predicted to unfold over several years and have a more enduring impact than fleeting fashions and hypes. Such trends

may originate from practices in disciplines adjacent to corporate communications or from scientific research evolving into practice. Therefore, the Communications Trend Radar specifically concentrates on current professional and academic discourse in management, technology, and society, monitoring and evaluating their potential relevance to communication professionals. For each of the three focus areas, trends were understood as follows:

- ▶ **Society:** Trends emerging in various domains of public communication, opinion formation, and values that might change people’s attitudes and behavior, and affect expectations regarding businesses, their activities, and their communication.

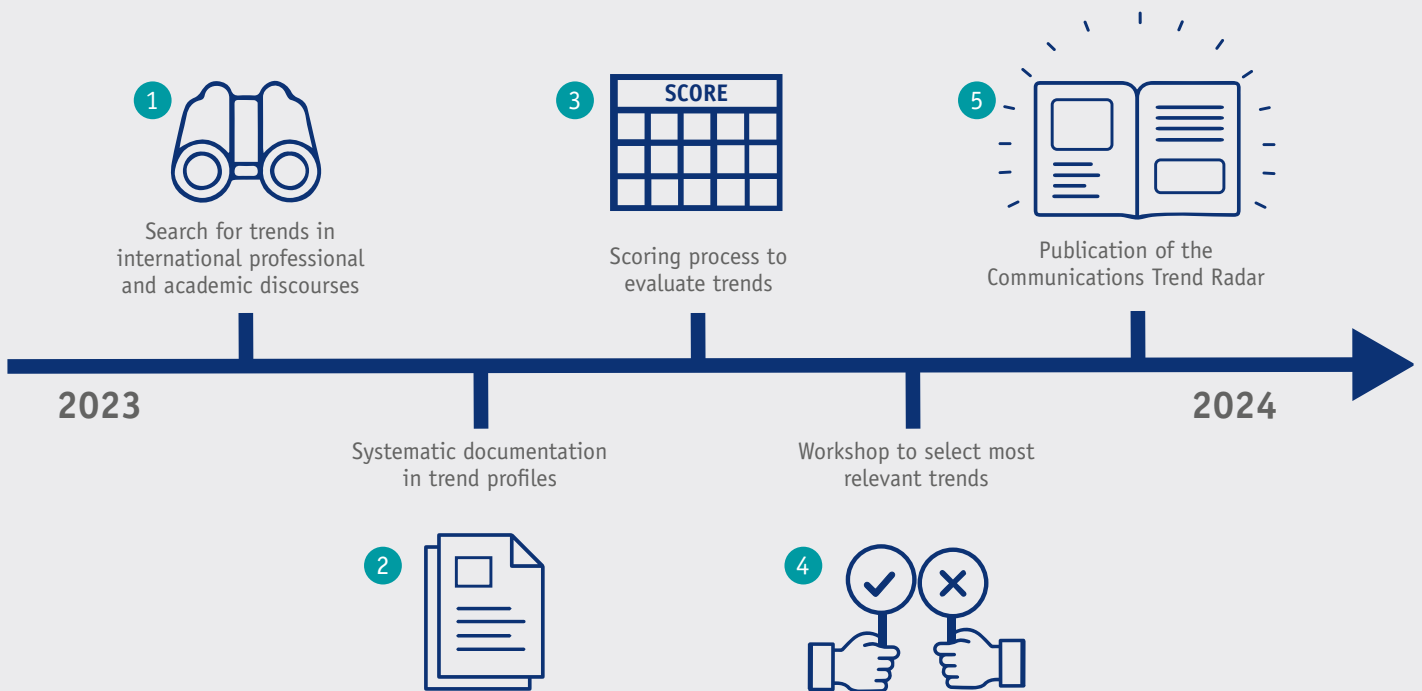
- ▶ **Management:** Trends in strategic management and organizational design that communication professionals should be aware of.
- ▶ **Technology:** Technological developments that could either impact corporate communications or be used by communication professionals.

RESEARCH PROCESS

1 **Sources & screening:** First, we selected information sources providing relevant insights into the professional discourse in management, technology, and society. These sources primarily include recent publications from scientific journals and conference papers in the respective focus areas, yet also selected newspapers (e.g., Die ZEIT), magazines (e.g., The Economist, Harvard Business Review, Wired), social news sites (e.g., Reddit Science), blogs and websites (e.g., ReadWrite), whitepapers, and corpo-

rate trend reports (e.g., from the Future Today Institute). Sources were chosen based on their scientific reputation (impact scores, rankings) within the research area, or their general reputation and website traffic (Alexa Internet) for non-academic sources. All selected sources were monitored and screened for potential trends during 2023. Screening and supplementary research on specific potential trends also considered content published outside of this timeframe.

2 **Trend profiles:** Each potential trend was systematically documented in a trend profile consisting of a brief description and several criteria estimating the trend's relevance to corporate communications. Specifically, we assessed the impact of the trend on the corporate communications functions (e.g., governance, goals, competencies), processes (e.g., platforms, formats, stakeholder interaction), and manage-



Selection process for trends in the Communications Trend Radar 2024

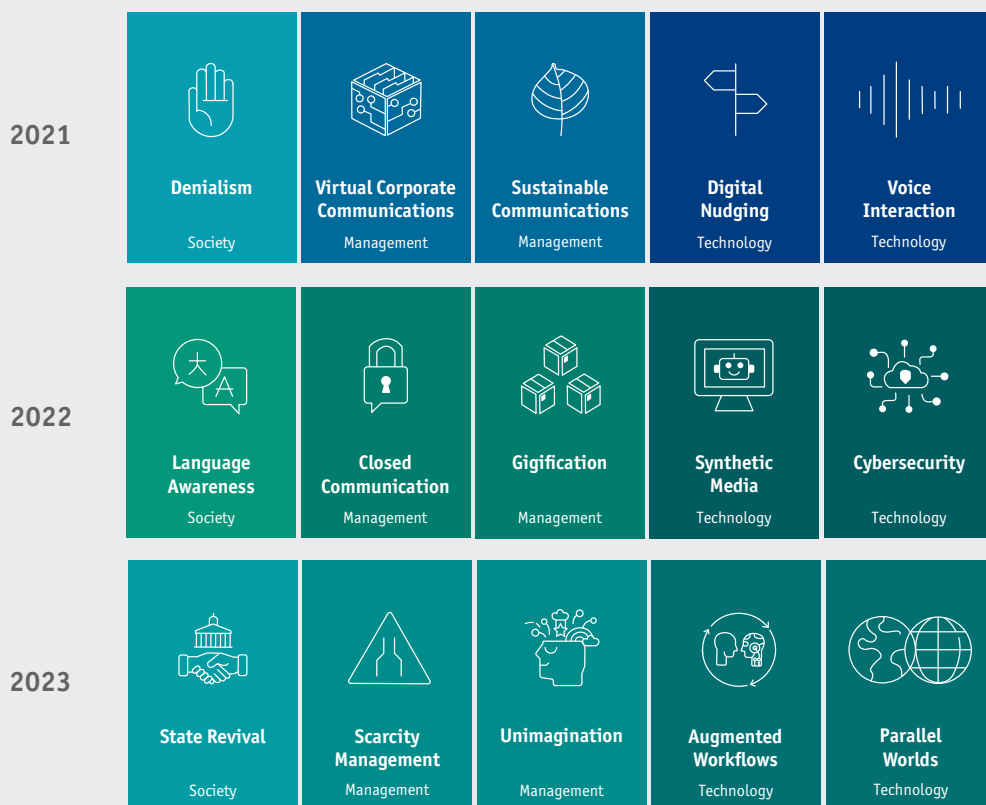
ment (e.g., content processes, cost structures). We also considered the extent to which a trend presents an opportunity for communication leaders to raise their profile within the company by advising on strategic issues. In total, twelve trend profiles were shortlisted during this phase.

3 Scoring: Based on the criteria detailed in the trend profiles, a scoring method was derived to rate each of the trends. Scoring was conducted individually by all researchers involved in the Communications Trend Radar project. Based on these ratings and qualitative feedback, all twelve trends (five technology, four management, and three societal trends) were shortlisted for further consideration.

4 Selection process: The shortlisted trends were then discussed by the research team during a workshop. Each team member voted individually for the most promising trends in management, technology, and society. As a result, five key trends for 2024 were identified and subsequently examined in greater depth by the research team.

5 Report: This publication provides a detailed analysis and description of all the identified trends.

Outlook: To explore a wider array of emerging trends, the research process for the next edition of the study will be expanded. Accordingly, the next trend report is scheduled for release in early 2026.



Previous trends identified by the Communications Trend Radar series

More information on the previous Communications Trend Radars is available at academic-society.net

INFORMATION INFLATION

DEALING WITH THE DECLINING VALUE OF INFORMATION



AT A GLANCE

- ▶ The trend **Information Inflation** focuses on the decreasing value of general information and the rising costs for generating, identifying, and using relevant information due to the ever-increasing availability of content in modern societies.
- ▶ Data and information are important resources for businesses and their stakeholders, but their value is decreasing as the overall volume and accessibility of content steadily grow. This growth is driven by the shrinking costs of producing and distributing content – whether by humans or AI – thanks to technological advances in data retrieval, storage, and processing.
- ▶ The deluge of information flood leads to greater efforts for managing information for all parties involved, particularly when dealing with data from multiple sources. Assessing the relevance and reliability of information for generating insights and advice, as well as effectively conveying valuable content to audiences, require new approaches.
- ▶ Communication leaders should enhance strategy-focused corporate listening and monitoring as a prerequisite for planning communication activities and advising top management. It is also imperative to develop new approaches for corporate messaging to stand out amidst the noise. In both areas, investments in digital technologies and routines that competitors lack can be a game-changer, enabling efficient and effective responses to the challenges posed by information inflation.

THE RAPID GROWTH OF DATA, CONTENT, AND INFORMATION

Information is an essential resource for both individuals and organizations, constituting a fundamental aspect of all communication processes. Various forms of data – bytes, numerical figures, text, visuals, audio fragments – serve as building blocks for diverse content, including texts, speeches, videos, animations, and more. Yet, the impact of this content hinges upon whether communicators and recipients interpret it as information, which allows them to create meaning and change their knowledge, attitudes, intentions, and behavior. This process is inherently subjective and demands effort from everybody involved.

Historically, the primary challenge lay in accessing data and content. **The focus is changing – what really counts is valuable information.** In the past, it was simply not possible to make books, reports, newspapers, videos, or public opinion data universally accessible in real time. Recipients were limited to sources controlled by influential organizations and mass media. Mediatization and digitalization have profoundly altered this scenario.

This development has been exponentially accelerated by the advent of artificial intelligence (AI) and

specifically generative applications like ChatGPT, Stable Diffusion, GitHub, and Jukebox. They significantly reduce the effort required to create and adapt content, resulting in professional and multilingual texts and videos. As a result, anyone can now generate and disseminate content in real time, often at minimal cost. While this offers many advantages, the **exponential increase in the volume and accessibility of data and content necessitates greater effort to identify relevant, trustworthy, and valuable information.**

Controversial public debates, for instance, are increasingly inundated with AI-generated information. Malicious actors, such as radical political parties, can exploit generative AI to create numerous posts that all represent the same opinion in different guises (Savage, 2023). False or harmful messages can be reproduced in endless variations, posing new challenges for content moderation. We are moving towards a world where human-generated content and “real” data (i.e., data collected in the real world) will become scarcer and harder to identify.

Information inflation, akin to economic inflation, is characterized by the rising costs and efforts required to offer and use relevant and reliable information amidst the huge volume of content generated in the digital world.



Data

Collection of raw facts;
unorganized



Content

Set of organized and
structured data crafted to
convey a message



Information

Processed data that
conveys meaning

From raw data to information



Information overload

Information overload can be visualized as an inverted U-curve (Eppler & Mengis, 2004). As the amount of information increases, the ability to make effective decisions becomes impaired.

THE PHENOMENON OF INFORMATION OVERLOAD

Given the unprecedented and exponential growth in data and content, the potential information available exceeds the processing capacity of individuals. In academic circles, this phenomenon is discussed across many disciplines as **information overload** (Eppler & Mengis, 2004). **Cognitive load theory** posits that the human working memory has a finite capacity (Atkinson & Shiffrin, 1968). Information overload occurs when the volume of information surpasses the recipient's working memory capacity (Graf & Antoni, 2021). While not a new phenomenon, information overload has become more pervasive than ever, and its relevance is twofold: it impairs decision-making and can lead to information burden.

Impaired decision-making is a critical consequence of information overload. Studies have shown that decision quality is intimately linked to both the quality and quantity of information available (Phillips-Wren & Adya, 2020). Generally, decision effectiveness initially improves with more information, but starts to decline as the volume becomes excessive (see figure above). This decline is a direct outcome of information overload, as the cognitive strain can confuse decision-makers, impede their ability to prioritize, and hinder the recall of

prior information. This phenomenon can significantly impair job performance, particularly among employees who must sift through an abundance of data to make informed decisions (Klein et al., 2023).

Moreover, empirical evidence underscores the adverse effects of information overload, such as **stress, burnout, and various other health complaints** (Klauegger et al., 2007; Junghanns & Kersten, 2020). Its impact spans to diverse aspects of life, including news consumption, workplace challenges, data management, and digital work environments.

Notably, information overload has been found to be negatively correlated with job satisfaction (Hunter & Goebel, 2008; Rachfall et al., 2015) and can lead to disengagement, reduced productivity, and a lower intent to stay with an organization. The consequences stem not just from the sheer volume of information, but also from the nature of the information itself, often referred to as **information burden**. This encompasses information that is redundant, irrelevant, labor-intensive, and inconsistent (Klein et al., 2023).

RELEVANCE FOR CORPORATE COMMUNICATIONS

With the rapid evolution of the information landscape and shifts in content consumption, there are profound implications for external and internal communications:

- ▶ **Avoidance of information:** Stakeholders may unintentionally or intentionally ignore content (e.g., employees or consumers overwhelmed by numerous email mailshots may not read or delete them immediately). Drawing from media and journalism studies, the concept of “news avoidance” has recently received substantial scholarly and public attention. Individuals increasingly choose to disengage from news due to factors like negative focus, distrust, or notably, news overload. Modifying the selection and presentation of information to emphasize **factual accuracy, transparency, constructive content, and context** can help reduce avoidance (Skovsgaard & Andersen, 2019). This underscores the importance of understanding how people interact with and retrieve content, which is inherently subjective and influenced by many parameters.
- ▶ **Fragmented media landscapes and public spheres:** Digitalization has transformed the processing of data and content, and the formation of opinions. Despite greater technical accessibility, penetrating the **digital noise** has become increasingly challenging. For instance, digital workers often struggle to find the information they need (Gartner, 2023). Moreover, the dynamics between audiences and **news sources** have evolved, requiring a nuanced understanding of the complex media environment for effective communication, reputation management, and crisis response. For instance, the consumption of traditional media continues to decline, while the popularity of digital audio and video is growing (Newman et al., 2023).

- ▶ **Content differentiation:** The pressure to create unique and engaging content has intensified. Standing out in a crowded digital landscape, particularly concerning issues like social causes or initiatives, is a formidable challenge. For instance, while businesses might engage in corporate activism, differentiating their message becomes tough when their competitors do the same. Generative AI applications, although part of the problem, may also offer solutions by facilitating the creation of diverse and personalized content. These tools can help businesses tailor messages at scale, enabling rapid **hyperpersonalization**. The communication agency network WPP recently announced a partnership with Nvidia to develop an AI-enabled platform for more tailored and faster content generation (WPP, 2023), indicative of this trend. This shift will further intensify the competition for audience attention, elevating expectations for personalized content.
- ▶ **Corporate listening and monitoring:** Monitoring and listening to customers, employees, and other stakeholders are essential for communication management, but scaling this effort presents challenges. The sheer volume of data necessitates the use of natural language processing, machine learning, textual analysis applications, and voice-to-text software. At the same time, identifying relevant information, such as trustworthy data and genuine opinions of stakeholders, is becoming increasingly complex.

RECOMMENDATIONS FOR COMMUNICATION LEADERS AND PROFESSIONALS

In response to the evolving information landscape, communication leaders need to ensure their messages are both effective and well received. While some aspects may already be part of the communication routine and strategy, there are five core elements to (re)focus on when adapting to these changing circumstances:



» Our goal is for stakeholders to attribute value to the perspectives provided by Swiss Re, as this will make them listen. Value is not easy to achieve. It results from offering actionable insights by high-caliber experts based on data-rich analysis, presented in a manner relevant to our audience. Targeting stakeholders effectively requires a deep understanding of their attitudes toward content and their media usage patterns. And companies must invest in this understanding.«

*Dr Jan Dietrich Müller,
Head Group Communications, Swiss Re*

- 1 Prioritize relevance-driven content:** Empirical studies across diverse domains, including social media, web searches, books, and more indicate a diminishing collective attention span, leading to rapid topic switches (Lorenz-Spreen et al., 2019). This highlights the need to keep messages simple and, above all, meaningful and relevant to the audience. Focus on delivering content that resonates with the interests and concerns of your audience.
- 2 Reduce the information burden for recipients:** A Gartner survey among almost 1,000 employees and managers showed that 38% of organizational members perceive the volume of communications in their organizations as “excessive” (Klein et al., 2023). Many employees, like other

stakeholders, are overwhelmed by the plethora of content offered, leading to a sense of futility in keeping track of everything. It is thus important to establish clear expectations for appropriate information flows for key stakeholders and to evaluate the number and density of communication channels.

- 3 Establish strategy-focused corporate listening and monitoring:** Resist the temptation to over-indulge in the abundance of data offered by service providers. Instead, define exactly what you need for planning communication activities and advising top management based on your company’s unique positioning and your team’s mandate.

»We will see a renaissance of very targeted, exclusive in-person dialogue forums.«

Dr Jan Dietrich Müller, Swiss Re

- 4 **Nurture personal relationships with key stakeholders:** Don't rely solely on digital channels. Foster and maintain personal relationships to ensure ongoing engagement and valuable feedback. This approach needs more resources, but makes it easier to understand preferences and tailor messages.
- 5 **Harness the potential of CommTech:** Invest in digital technologies for information retrieval, content generation, and personalization that will set your communication department apart from competitors. AI applications can be particularly useful in navigating the complex information landscape, pre-filtering content, and hyperpersonalizing messages at scale.

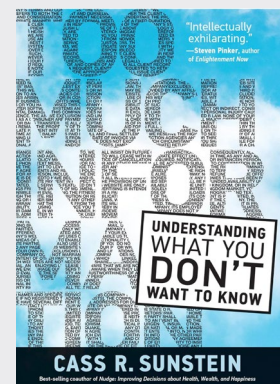
QUESTIONS FOR REFLECTION

- ▶ How can communication departments effectively convey strategic messages to stakeholders amidst the noise?
- ▶ What can be done to leverage analytics and AI to tailor corporate communications to individual stakeholder preferences and needs?
- ▶ What approaches for corporate listening and monitoring are available to identify relevant developments and stakeholder opinions?

READING RECOMMENDATION

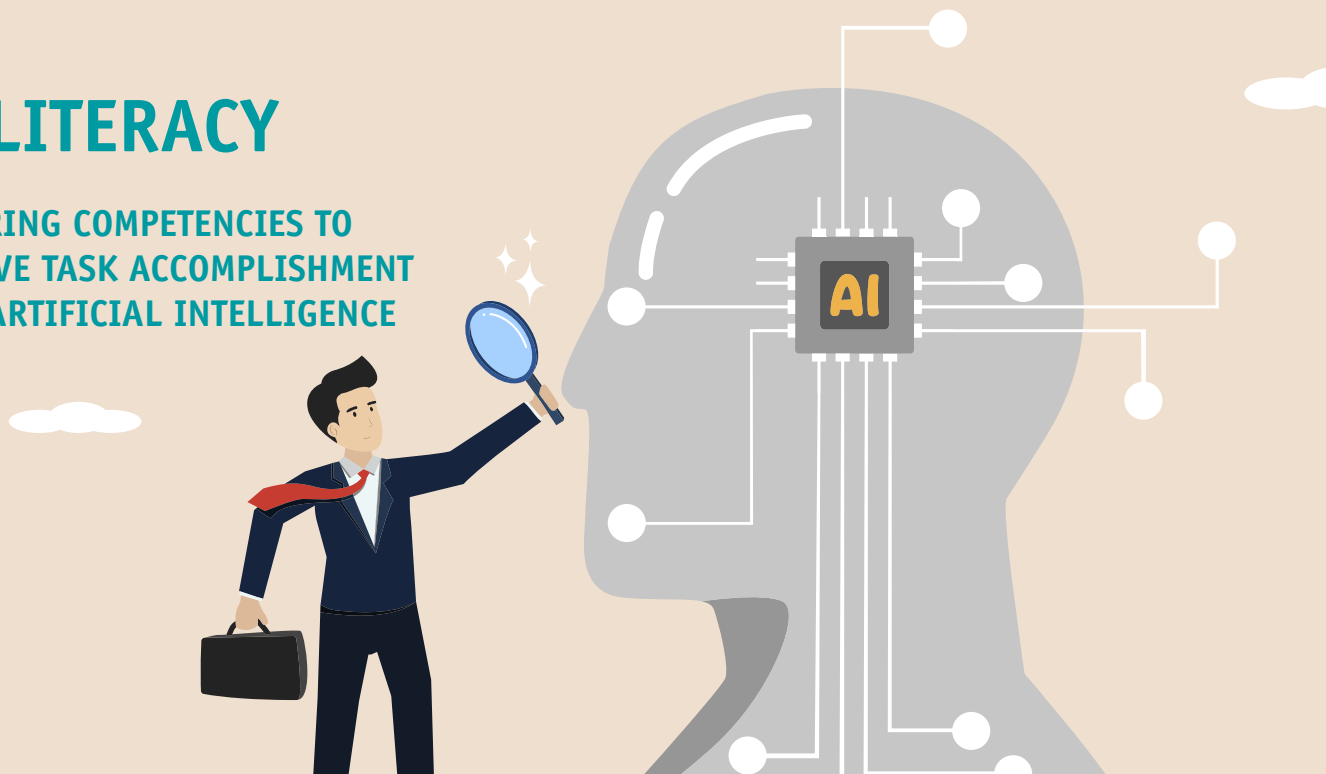
Cass R. Sunstein: Too much information

Harvard law professor Cass Sunstein examines the effects of information on our lives. While policymakers often emphasize “the right to know,” Sunstein takes a different perspective, suggesting that the focus should be on human well-being and what information contributes to it. He argues that governments should mandate disclosures from companies, employers, hospitals, and other entities not based on a general “right to know,” but when such information would significantly improve people’s lives.



AI LITERACY

FOSTERING COMPETENCIES TO
IMPROVE TASK ACCOMPLISHMENT
WITH ARTIFICIAL INTELLIGENCE



AT A GLANCE

- ▶ The trend **AI Literacy** refers to the increasing importance of cognitive, affective, and socio-cultural skills for dealing with AI in everyday life.
- ▶ Rapidly developing technologies based on AI are transforming the communication practices of societies, organizations, and individuals alike. AI literacy is an important cornerstone for navigating these changes, both for those communicating on behalf of businesses and for their stakeholders. Understanding the current AI literacy of those involved in specific communication processes and knowing how to enhance missing competencies helps leverage the full potential of digitalized corporate communications.
- ▶ Communication leaders should assess and develop the AI literacy of themselves, their team members, and others in the organization, including top management and audiences, and listen to concerns about AI-driven corporate communications. They can also contribute to increasing AI competencies internally through training and externally by promoting awareness and transparency. This can help to mitigate feelings of overload and reactance.

GROWING RELEVANCE OF AI IN EVERYDAY LIFE

AI-based technologies already permeate many aspects of everyday life. Recommendations for songs, movies, or information on social media platforms, fatigue detection and driving assistants in cars, and smartphone camera features like “portrait mode” are just a few examples of the many consumer technologies that are at least partially powered by AI methods. AI-based technologies also increasingly augment workflows in communication management (Zerfass et al., 2023a). Application scenarios range from automated conversations (e.g., handling routine inquiries with chatbots) and automated content creation (e.g., drafting social media posts, illustrations, and press releases with generative AI) to advanced listening (e.g., identifying topics and sentiments in public communication). Ensuring effective collaboration between humans and technology, whether in everyday life, learning, or work environments, requires AI literacy as a necessary skill (Kong et al., 2023).

WHAT IS AI LITERACY?

AI literacy has been defined as “a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace” (Long & Magerko, 2020, p. 2). There are three general dimensions of AI literacy (Kong et al., 2023):

- ▶ **Cognitive:** Understanding fundamental concepts such as machine learning.
- ▶ **Affective:** Feeling empowered to participate with confidence in the digital world.
- ▶ **Sociocultural:** Being aware of ethical issues and other implications of AI-supported communication beyond the direct realm of communicators and recipients.

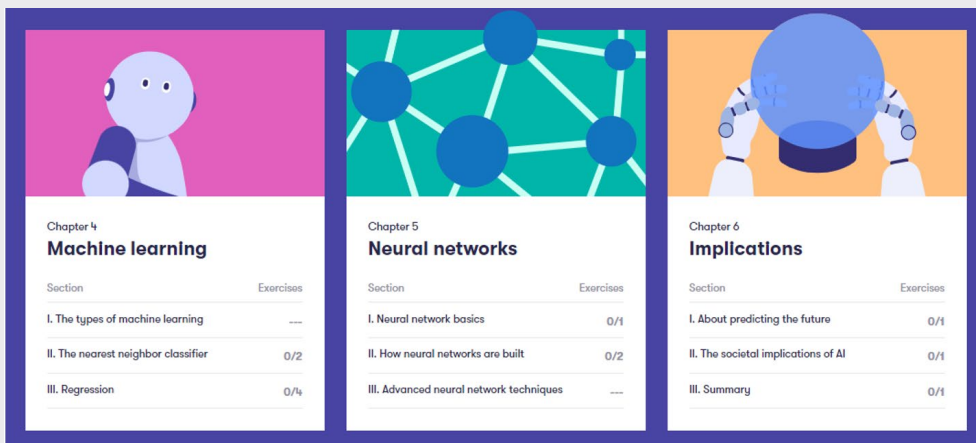
Generally speaking, AI literacy involves answering questions like: What is AI? What can AI currently do (and not do)? How do specific AI methods work? What are the implications of using AI-based technologies? In a professional context, employees should at least become competent with AI technologies relevant to their areas of responsibility. For example, corporate communications professionals using large language model applications in their work (e.g., ChatGPT) should understand that ChatGPT was developed based on data scraped from the Internet, meaning its answers may, for example, reflect stereotypes and be limited to content present in online communication at that time. Furthermore, understanding the differences between technologies like ChatGPT and Google Search is crucial. While Google crawls the internet to index and rank sources using AI, ChatGPT generates new content. A basic understanding of the technology, such as the data it uses and how it operates, enables employees to select suitable use cases and minimize potential harm.

One of the challenges in defining AI literacy and the requisite knowledge and skills is that there is **no exact definition of AI**. Information systems researchers Berente et al. (2021, p. 1435) describe AI as “the frontier of computational advancements that references human intelligence in addressing ever more complex decision-making problems.” Thus, AI should not be viewed as a single technology, method, or application, but as a constantly evolving field of research and practice. Our understanding of human intelligence, and consequently what we consider artificially intelligent behavior, is **changing with technological progress**. As soon as there is a solution for doing something that we consider “intelligent”, it loses some of its mystique and may be integrated into standard computer science or statistics curricular, while AI researchers focus on new, unsolved problems. Therefore, **learning about AI and AI-based technologies is an ongoing effort**, and AI literacy will change in tandem with the current state of the art in AI research and practice.

RESOURCES FOR DEVELOPING AI LITERACY

The growing relevance of AI literacy goes hand in hand with the emergence of educational resources provided by companies, educational institutes, and governments. These resources aim to provide everyone with a basic understanding of AI concepts. The goal is usually not to become a better prompt engineer, but to gain a basic understanding of what AI is and how AI methods work. One noticeable resource was developed by the Finnish consultancy Minna-Learn and the University of Helsinki. Their series of free online courses is titled “Elements of AI”

(www.elementsofai.com). It combines theoretical elements with practical exercises. The course covers the basics of AI, including applications, machine learning, neural networks, and potential impacts. It is available in English as well as in many languages spoken in Europe and globally (e.g., French, German, and Spanish). The website also offers additional, more in-depth courses. Communication professionals and other organizational members could use these or other resources as a starting point for learning about AI.



Section	Exercises
Chapter 4	
Machine learning	
I. The types of machine learning	---
II. The nearest neighbor classifier	0/2
III. Regression	0/4

Section	Exercises
Chapter 5	
Neural networks	
I. Neural network basics	0/1
II. How neural networks are built	0/2
III. Advanced neural network techniques	---

Section	Exercises
Chapter 6	
Implications	
I. About predicting the future	0/1
II. The societal implications of AI	0/1
III. Summary	0/1

Screenshot from the “Elements of AI” course

The course offers insights in AI such as applications and potential impacts.

ASSESSING AI LITERACY

Understanding the AI literacy of those involved in corporate communications and corresponding management processes is essential for utilizing the full potential of digitalization. Both within communication departments and across the entire organization, measuring and evaluating AI literacy (see p. 19) helps to assess the workforce’s current knowledge about AI and to **identify knowledge and skill gaps** that need to be addressed. This ensures that training

and development resources can be allocated more efficiently, and also provides a means for **quantifying progress**. Objective measures of AI literacy could **inform hiring decisions**, providing more insight into the AI competencies of potential team members. Understanding the **AI literacy of various audiences** is necessary to take informed decisions on the use of AI in internal advising and stakeholder communications. For instance, it might not be advisable to use AI-generated data extrapolation in scenarios presented to top managers without explaining how

it differs from real-world data. Similarly, automated conversations might be counterproductive when engaging with stakeholders who may not understand the limitations of chatbots, such as the lack of empathy and context knowledge.

RELEVANCE OF AI LITERACY FOR CORPORATE COMMUNICATIONS

As AI-based technologies are increasingly integrated into everyday life and work, both inside and outside communication departments, fostering AI literacy is both urgent and important. Rapidly evolving technologies based on AI, such as ChatGPT, are already transforming the communication practices of societies, organizations, and individuals. Examples of AI-based technology use cases in corporate communications include (Banholzer et al., 2023):

- ▶ **Monitoring and analyzing stakeholder communication:** Trend analyses, reputation management, stakeholder analysis, crisis monitoring (e.g., provided by Meltwater, Cision).
- ▶ **Editing and creating text:** Translation, feedback on grammar, and writing style (e.g., DeepL, Grammarly).
- ▶ **Creating visual content:** Presentations, images, videos, and designs (e.g., Canva, designs.ai).
- ▶ **Obtaining general support:** Idea generation, creating drafts, supporting project management, and training (e.g., ChatGPT).

Interaction with AI-based technologies can **differ from other technologies** in several ways. For example, AI-based technologies (e.g., Schuetz & Venkatesh, 2020) can:

- ▶ have a higher degree of autonomy;
- ▶ be opaque (a “black box”);
- ▶ learn through interaction and adapt dynamically.

Even before adopting an AI-based technology within a company, employees are likely to form **opinions about AI** (e.g., due to media reports, pop culture). Skepticism, fear, or a lack of self-confidence can influence subsequent **behavioral responses** to the introduction of a new AI-based technology in the workplace (e.g., the intention to use AI) (Chiu et al., 2021). The reluctance of communication practitioners to use AI has been identified as one of the most relevant challenges for using AI in corporate communications (Zerfass et al. 2023b). An AI-literate workforce is better equipped to navigate the wealth of AI applications, make strategic choices for integrating AI-based technologies into their daily work, and ensure that AI-based technologies are used effectively and responsibly.

RECOMMENDATIONS FOR COMMUNICATION LEADERS AND PROFESSIONALS

- 1 **Start by improving your own AI literacy.** Understanding the potentials and pitfalls of AI-based technologies is essential for making strategic decisions about and supporting the integration of AI-based systems in corporate communications. Given that AI is a rapidly evolving field of research and also a topic of intense media hype, updating any potentially outdated or incorrect notions of AI and the capabilities of AI-based technologies is crucial.
- 2 **Identify the current and developing levels of AI literacy** of those communicating on behalf of your business (including your team, top management and other decision-makers, prospective hires) and important audiences. This assessment will provide insight into the landscape of digital corporate communication management in your specific ecosystem.

- 3 **Allocate resources for employees to explore and experiment with AI-based technologies.** While learning takes time, many AI-based technologies

→ Continue reading p. 20

METHODS FOR MEASURING AND EVALUATING AI LITERACY

Assessing AI literacy is a complex task, given the breadth of methods and technologies encompassed by AI, and the varying relevance of different facets of AI literacy for each application scenario.

1 One recently proposed instrument focuses on AI literacy for practical applications (Wang et al., 2023). This 12-item questionnaire measures four dimensions of AI literacy:

- ▶ **Awareness:** The ability to identify and comprehend AI-based technologies. An example item is: “I can identify the AI technology employed in the applications and products I use.”
- ▶ **Usage:** The ability to apply and exploit AI technology to accomplish tasks proficiently. Example item: “I can skillfully use AI applications or products in my daily work.”
- ▶ **Evaluation:** The ability to analyze, select, and critically evaluate AI applications and their outcomes. Example item: “I can evaluate the capabilities and limitations of an AI application or product after using it for a while.”
- ▶ **Ethics:** The ability to be aware of the responsibilities and risks associated with the use of AI technology. Example item: “I am always alert to the abuse of AI technology.”

2 A second, more specific “scale for the assessment of non-experts’ AI literacy” was developed by Lauchpichler et al. (2023). This 31-item questionnaire measures perceived AI competencies in the following areas:

- ▶ **Technical understanding:** Knowledge about AI’s technical or theoretical aspects. Items include “I can describe how machine learning

models are trained, validated, and tested” and “I can describe the concept of explainable AI.”

- ▶ **Critical appraisal:** Competencies related to the critical evaluation of AI application results. Items include “I can describe risks that may arise when using AI systems” and “I can critically reflect on the potential impact of AI on individuals and society.”
- ▶ **Practical application:** Competencies for identifying AI applications and assessing their suitability for solving problems. Items include “I can give examples from daily life (personal or professional) were I might be in contact with AI” and “I can assess if a problem in my field can and should be solved with AI methods.”

It is important to note that both questionnaires rely on self-assessment, i.e., they reflect the respondents’ **perceived AI literacy**. Thus, responses can be influenced by conscious or unconscious biases. Accordingly, self-assessment questionnaires should not be used if the results of the survey have direct consequences for respondents (e.g., work evaluations, job applications).

3 For a more **objective measure** of AI literacy, questionnaires like the one by Hornberger et al. (2023) can be used, featuring 31 multiple choice questions (e.g., “How does supervised learning differ from unsupervised learning?”, “What is the black box problem?”) with four possible answers. Participants’ AI literacy is calculated based on the number of correct answers.

can ultimately enhance employee productivity and effectiveness. For example, results from an MIT study suggest that using ChatGPT can increase **worker productivity**, reducing the time taken for writing tasks by 40%, while improving text quality by 18%, as rated by independent evaluators (Noy & Zhang, 2023). Identify “**power users**” of AI-based technologies within your organization and encourage them to share their knowledge and experience with peers.

- 4 **Initiate or support initiatives to increase the AI literacy of important internal and external stakeholders.** Communicators can only profit from digital technologies if those addressed by AI-driven content are willing to use and able to interpret it. Educating stakeholders can help avoid resource misallocations.
- 5 **Listen to questions, needs, and concerns about AI-driven communication practices** among communicators, other members of the organization, and external stakeholders.

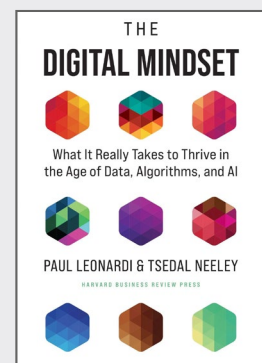
QUESTIONS FOR REFLECTION

- ▶ Are you aware of the AI-related competencies and attitudes of those managing communications on behalf of your business, as well as those targeted by or involved in your key corporate communications activities?
- ▶ What internal and external touchpoints and channels are available to ask questions and express concerns about the use of AI in your organization’s corporate communications?
- ▶ Are you aware of employees in your organization who use AI-based technologies for their daily communication activities? What risks arise from their (unofficial) use? How can you benefit from their expertise, support them, or establish an AI communication governance framework?
- ▶ How are you supporting members of your team, others in the organization, and external audiences important for your communication strategy to enhance their AI literacy?

READING RECOMMENDATION

Paul Leonardardi & Tsedal Neeley: *The Digital Mindset – What it Really Takes to Thrive in the Age of Data, Algorithms, and AI*

This book combines insights from technology management, provided by Paul Leonardardi from UC Santa Barbara, and organizational behavior, represented by Tsedal Neeley from Harvard Business School. Rather than providing an in-depth technical overview, the book introduces the “30 percent rule,” which advises cultivating sufficient digital literacy to enable leaders and decision-makers to ask the right questions, make strategic decisions related to data and AI, and evaluate and explore new possibilities for a digital future.





WORKFORCE SHIFT

PREPARING FOR THE INEVITABLE TRANSFORMATION IN LABOR SUPPLY

AT A GLANCE

- ▶ The trend **Workforce Shift** refers to the fundamental transformation of the workforce in organizations due to distinct sociological, economic, and technological changes.
- ▶ Factors shaping the future of the workforce include the ageing population, changing social expectations, labor shortages, and migration, as well as the impact of automation, robotics, and artificial intelligence.
- ▶ Communication leaders should rigorously analyze the people dimension of current business models applied by their departments. This involves assessing how workforce changes are reshaping job roles, existing practices, workflows, competencies, and initiating necessary change processes. Updating hiring and qualification policies, as well as knowledge management and internal workflows, is indispensable to ensure excellent corporate communications in the future.
- ▶ It's also crucial to monitor how the evolving workforce affects the company's communication ecosystem. The availability and quality of support from agencies, service providers, and those representing mass media and other stakeholders will change.
- ▶ Last but not least, internal communications and employer communications are becoming increasingly complex in an era of a workforce with diverse expectations, motivations, and influence. Intelligent and innovative approaches are needed.

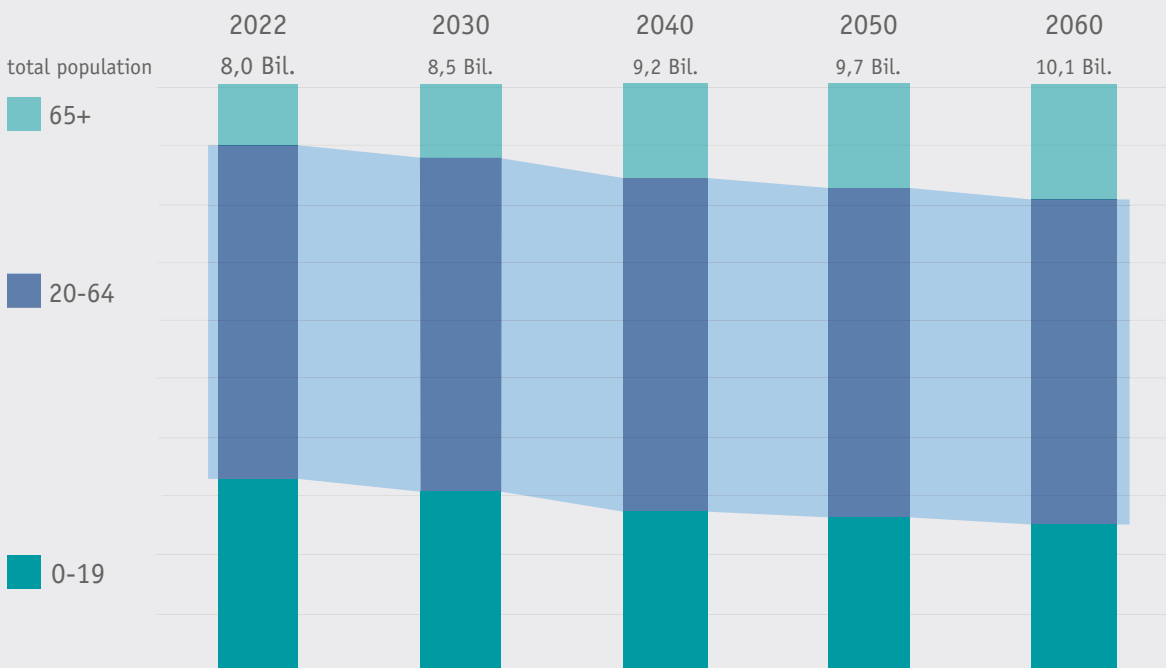
THE CHANGE OF LABOR SUPPLY THROUGH POPULATION AGING

In today's work landscape, profound shifts are underway, reshaping how we work and interact with the world. Transformations in areas like wages, employment, careers, automation, and leadership are redefining not only the future of labor but also the very structure of organizations that rely on it (Lynn et al., 2023). While work-related changes have always been present, current shifts are more interconnected and overlapping, thus reinforcing each other.

Above all, the phenomenon of **population aging** is dramatically altering global demographics (see figure below). By the end of this decade, one in six people in the world will be aged 60 years or over (WHO, 2022). Furthermore, the emergence of Generation Z,

smaller in number compared to the Millennials, and the even smaller subsequent Generation Alpha, add complexity to the changing labor supply (Hennelly et al., 2023).

While all countries are experiencing major shifts, the pattern and pace of population aging vary, depending on factors like fertility and mortality rates. Initially more pronounced in high-income nations (e.g., in Japan, where 30% of the population is already over 60), this demographic shift is now also significant in low- and middle-income countries, such as India and China (WHO, 2022).



Changes in the working population from 2022 to 2060

Estimated shares of the population worldwide based on "World Population Prospects 2022" (UN, 2022)

FACTORS SHAPING THE FUTURE OF THE WORKFORCE

The transformation of the workforce is driven by various interconnected factors that mutually influence each other:

Sociological shifts



- ▶ Besides the phenomenon of **population aging**, workforce changes are being influenced by **rising life expectancy**. Many people are extending their careers. Although this does offset the loss of labor, it alters the composition and dynamics of the working population (Wittenberg-Cox, 2020).
- ▶ Furthermore, **societal expectations are evolving**. Concepts such as purpose-driven work, sustainability, work-life balance, mindfulness, lifelong learning, and upskilling have gained prominence (Lim, 2023).
- ▶ Also, the **diversity and inclusion movement is gaining momentum**. Longer-term trends indicate an increasingly diverse workforce in companies of all sizes – not only multinationals – in terms of race, ethnicity, gender, age, religion, culture, nationality, and language (McCarthy et al. 2023). This will reshape both the employee base and the potential recruitment pool in many industries.

Economic shifts



- ▶ **Labor shortages:** The European Commission's 2023 report on employment and social developments highlights current and future labor shortages across a range of occupations and skill levels. Firstly, people will leave the workforce as their jobs become less relevant or even obsolete in the ongoing green and digital transformation, unless they are prompted by circumstances

to reskill. Secondly, the workforce will diminish as the population ages. This situation will be compounded by the constant consumption and service needs of an increasingly older population (European Commission, 2023).

- ▶ Dynamics of **labor migration:** Migration is driven by demographic shifts and the need of many countries to attract skilled people to support long-term economic growth. Yet today it is also influenced by several complex factors such as war, persecution, and poverty. The number of refugees around the world has nearly tripled over the last decade, leading to a new mix of workforce competencies in many countries. Global economic imbalances and climate change will intensify this, impacting all countries for good or bad (World Bank, 2023).
- ▶ The growth of the **gig economy:** Emerging as an important trend (Stieglitz et al., 2022), the gig economy represents a new form of contingent work facilitated by digital platforms, connecting on-demand workers with client organizations for fixed-term tasks (Duggan & Jooss, 2023). Experts estimate that the gig economy accounts for up to 12% of the global labor market with demand growing rapidly (Datta et al. 2023), redefining how and where people work.

Technological shifts



- ▶ One of the foremost debates centers on the profound impact of **automation, robotics, and artificial intelligence (AI)** on the overall number of jobs, wages, and demand for certain professions. According to Goldman Sachs, generative AI has the potential to automate up to 300 million full-time jobs (Hatzius et al., 2023). But history has shown that worker displacement due to automation is often offset by the creation of new jobs and occupations (World Economic Forum, 2023). A future of work where humans

and AI work in tandem (“augmented workflows”) is likely, reshaping job profiles and modifying workflows, including content creation and team collaboration (Zerfass et al., 2023a).

- ▶ The concept of **hybrid work**, enabled by advanced digital technologies and blending in-person and remote work, has gained significant traction. A report from McKinsey reveals that over four out of five employees who have experienced hybrid work models over the past two years expressed a desire to retain them (McKinsey, 2023a). Then again, the majority of German CEOs surveyed for a recent industry report anticipate that their employees will return to the office full-time within the next three years (KPMG, 2023). These discussions reflect changing attitudes towards traditional work arrangements as well as the growing importance of flexibility and agility in the workplace (Zerfass et al., 2018).

RELEVANCE FOR COMMUNICATION DEPARTMENTS

A shift in the workforce **alters the manner of collaboration in organizations and changes their skill and competency pool**. With a growing number of workers extending their careers, GenZ entering the labor market, and increasing migration, more generations and ethnicities are working together than ever. Each individual brings different social, political, and economic experiences and expectations, which can lead to conflicts due to differing work behaviors and values (Appelbaum et al., 2022):

- ▶ **Behavior-based conflicts** often arise through differences in communication and collaboration styles and feedback expectations. While Baby Boomers, for instance, may prefer face-to-face communication, younger generations favor instant messaging, social media or emails.

- ▶ Moreover, different views and work values can trigger **value-based conflicts**. Older generations might view younger ones as challenging the status quo, whereas younger generations may see older ones as resistant to change. Cultural variations in work ethos can also be a factor.

- ▶ **Identity-based conflicts** occur when generational or ethnic characteristics are used to negatively generalize a group, creating stigmas and leading to discriminatory behavior in the workplace.

Some research, however, indicates that generational conflicts might be overstated, as differences often occur across generations (Appelbaum et al., 2022).

As the transformation of the workforce is marked by various demographic criteria such as age, gender, and ethnicity, the difficulty lies in navigating a diverse pool of skills, competencies, values, and expectations (e.g., regarding work arrangements). This dynamic adds to the existing **skill gap** within the communication field: According to the European Communication Monitor, a significant proportion of communicators in Europe is underskilled, particularly in digital and data competencies (Zerfass et al., 2023b). Exacerbating the existing challenges, this calls for constant training and increased investment in knowledge management to address both current and future skill gaps. As conflicts may arise due to disparities, monitoring employee expectations is crucial for conflict avoidance and management.

The rapid pace of technological advancements, including automation and datafication, is reshaping professional roles and collaborations. Changes due to technological advances are already evident in various areas of communication management, such as automating standardized tasks, press monitoring, analyzing data sets, and optimizing databases (Banholzer et al., 2023). This ongoing transforma-

tion is expected to expand, potentially automating numerous activities in the near future. This evolution has a dual impact on the roles of professional communicators: some roles may become obsolete, while others emerge, demanding specialized skills not previously needed (Buhmann & Gregory, 2023).

Many communication practitioners are aware of the importance of **CommTech**, the use of digital technologies for both executing and managing communications at different organizational levels (Zerfass et al., 2023b). However, evidence suggests that the digital maturity of communication departments and agencies is still relatively low (Brockhaus et al., 2023). Challenges in adapting technology to the needs of communication departments include securing user acceptance and motivating communication practitioners to embrace AI. Interestingly, younger

practitioners are more concerned about potential AI-related risks, especially job losses, compared to their more seasoned colleagues (Zerfass et al., 2023b). Communication leaders are thus faced with the challenge of harnessing the potential of AI-based technologies while remaining mindful of the competencies and tasks central to their team members' professional identity.

The transformation of labor supply has also a direct impact on corporate communications aimed at current and future employees. The importance of **internal communications and employee communications** will continue to rise across many facets (Einwiller et al., 2021). New approaches are needed to engage with a changing workforce (Tkalac Verčič, et al., 2023).



» Like many other companies, we are already feeling the effects of demographic change at Continental. To make sure that we do not lose the valuable know-how our employees have acquired over the years, we have launched a structured and moderator-supported knowledge transfer program. After all, knowledge is always found between people – not on hard drives. We have also created a pool of expertise from retired employees, who can provide support in the event of reduced capacity or as part of projects.«

Birgit Hiller, Senior Vice President Group Communications and Public Affairs, Continental

»It seems that communicators are good in talking about societal, economic, and technological changes on behalf of their organizations – but they find it hard to reflect on the consequences for their own profession and act accordingly.«

European Communication Monitor (Zerfass et al. 2023b, p. 17)

RECOMMENDATIONS FOR COMMUNICATION LEADERS AND PROFESSIONALS

Communication departments face the complex challenge of adapting to demographic shifts, meeting skilled workers' expectations, leveraging technology effectively, and addressing the challenges associated with AI, all while aligning with the competitive goals of the organization. The following aspects offer guidance in dealing with workforce transformation:

- 1 Use internal communication and employer branding for the changing workforce as a driver of business success:** Skilled employees are gaining more bargaining power, which is accompanied by rising demands for a conducive work environment. This exerts pressure on organizations to adapt their communication strategies to attract, retain, and engage high-value talents. Addressing their needs and expectations is becoming essential for companies to maintain a competitive edge. This also includes raising awareness and motivating top and middle managers to reflect on their leadership communication.
- 2 Reflect on knowledge management practices and be prepared for increasingly diverse teams:** With the aging population and migration trends reducing the pool of workers with specific competencies in Western societies, new challenges arise in knowledge management and collaboration within communication departments. Find ways to transfer and preserve critical institutional knowledge as

experienced communication practitioners retire or move on. Adapting workflows to cater to a diverse workforce with varying backgrounds and experiences can be beneficial – and even a competitive advantage.

- 3 Invest in an environment of psychological safety:** As labor shortages make it challenging to quickly fill positions, the remaining team members often face extra work and stress. A healthy feedback culture is vital to secure team effectiveness and prevent further resignations. An environment of psychological safety allows employees to voice concerns, disagree openly, and suggest improvements or changes (McKinsey, 2023b).
- 4 Future-proof the people dimension of your communication department:** Upskilling and the cultivation of digital dexterity will become more important than traditional measures like tenure and experience (Turner, 2022). Lead initiatives to revise existing communication business models (Zerfass & Link, 2024) and tackle the impact of workforce changes on job roles, competencies, team culture, and knowledge management.
- 5 Assess the consequences of the workforce shift for the overall communication ecosystem of the company:** Communication agencies and service providers will also suffer from the shrinking labor supply – this can result in a scarcity of

services needed by communication units in businesses. The mass media and key stakeholders may soon be represented by people with a different background than today. They may

show a different kind of communication behavior, possibly limiting the impact of corporate communications.

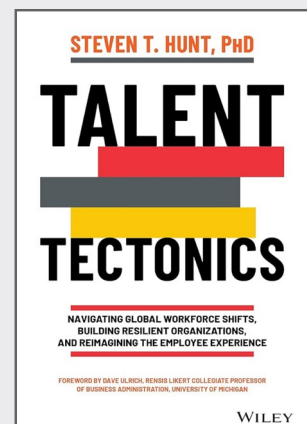
QUESTIONS FOR REFLECTION

- ▶ What is the demographic composition of your communications team? Are you actively addressing generational or cultural differences regarding workplace expectations, values, and behaviors?
- ▶ Have you implemented knowledge management systems to preserve critical institutional knowledge in corporate communications? For example, could rehiring after retirement mitigate labor shortages and knowledge drain?
- ▶ How are you assessing the competencies of your team members? Do you have a plan for further development and upskilling to adapt to changes?
- ▶ Do you regularly analyze changes in the employee base of your organization and in the people representing your key stakeholders and multipliers, including mass media and social media influencers? Are you aware of concrete shifts in labor supply when preparing internal communication and employer branding activities?

READING RECOMMENDATION

Steven T. Hunt: Talent Tectonics – Navigating Global Workforce Shifts, Building Resilient Organizations and Reimagining the Employee Experience

Dr. Steven Hunt, an expert at the intersection of human psychology, work technology, and business performance, explains how technology is changing the purpose of work and why creating effective employee experiences is critical to building organizations that can thrive in a rapidly changing world with growing skill shortages. Shifting demographics combined with the digitalization of all aspects of life influence how people can be attracted, retained, developed, and motivated. This dynamic compels companies to reassess their approaches to job design, recruitment, and employee engagement.





CONTENT INTEGRITY

DEALING WITH THE FLOOD OF FABRICATED CONTENT

AT A GLANCE

- ▶ The trend **Content Integrity** refers to the rising need to ensure genuineness of data and material used in communication processes, in the face of growing risks associated with technology-enabled content generation and modification.
- ▶ The burgeoning volume and realism of artificially generated content make it increasingly difficult, if not impossible, to verify the source and authenticity of texts, numbers, imagery, videos, animations, and other material interpreted, used, and produced in public and private communications. This poses major challenges for communication departments, which need to rely on accurate information to manage activities, use third-party material to create content, and ensure their output can be trusted by audiences.
- ▶ Technology can support communicators in verifying and authenticating data and content. Familiarizing oneself with media forensics methods can help practitioners understand how to check the integrity of content.
- ▶ Communication leaders should urge their teams to recognize stakeholder concerns and expectations about the increasing prevalence of fabricated data and content, explore approaches for verifying content integrity, safeguard their own content through authentication technologies, participate in initiatives (e.g., content credentials), and prepare for threat scenarios through education and crisis preparation.

HOW WE MAKE SENSE OF THE WORLD

What we see, hear, smell, or feel forms the basis of how we make sense of the world. Both in empirical research and in navigating day-to-day life, sensory experiences allow us to communicate, gain knowledge, form opinions, and make decisions. Today, many of our **experiences are mediated by digital technologies**, significantly influencing our perception of the world, information gathering, and decision-making processes. We're faced with multiple challenges:

- ▶ The emergence of synthetic media (Stieglitz et al., 2022) and especially generative AI has made it **cheaper, easier, and quicker to create or alter media content** (see figure below). This can be abused to deliberately mislead recipients.
- ▶ Due to the abundance of information online (see trend "Information Inflation"), the available **time**

and cognitive resources for verifying information have decreased. Accordingly, there is more fabricated or altered media content, and humans are less likely to identify it as such (Hendrix & Morozoff, 2022).

- ▶ Additionally, it has become **easier to disseminate manipulated or inauthentic content**, for example, by using bot accounts (Di Domenico et al., 2021).

Fostering **media literacy**, i.e., educating recipients about the types and risks of manipulated media content and encouraging healthy skepticism, is one important element for dealing with the flood of fabricated content. However, as it becomes harder for humans to distinguish between real and fabricated content, we also need **computational techniques** to verify the source and authenticity of media content.

	Model level	System level	Application level
Output Modality (Selection)	Underlying AI model for different data modalities (image, text, code)	Embedding model functionality to provide interface for interaction	Solving dedicated business problems and stakeholder needs
Text Generation	X-to-text models, e.g., GTP-4 and LLaMA2	Conversational agents and search engines, e.g., ChatGPT and YouChat	Content generation (e.g., SEO and customer service), translation and text summarization
Image/Video Generation	X-to-image models, e.g., Stable Diffusion and DALL-E	Image/video generation systems and bots, e.g., Runway and Midjourney	Synthetic product and advertising visuals, educational content
Speech/Music Generation	X-to-music/speech models, e.g., MusicLM and VALL-E	Speech generation systems, e.g., ElevenLabs	AI music generation, text-to-speech generation (e.g., news, product tutorials, etc.)
Code Generation	X-to-code models, e.g., Codex and AlphaCode	Programming code generation systems, e.g., GitHub Copilot	Software development, code synthesis, review, and documentation

Multimedia content generation with generative AI

Overview of of generative AI models, the systems in which AI models are embedded in, and applications of such models and systems adapted from Feuerriegel et al. (2023). These examples show how technology can be used to create and modify media content, although there are also other methods for doing so.

IDENTIFYING DEEPFAKES

Deepfakes are created by AI algorithms that superimpose or replace faces and voices with remarkable realism, making it appear as if real individuals are saying or doing things they never did. As deepfakes can pose threats to democracy, security, and personal reputation, identifying them is crucial. There are different types of deepfakes (e.g., face swapping, speech synthesis) that are created with different methods. Accordingly, there is no one-size-fits-all technological solution for detecting fabricated or altered content. Instead, different detection methods focus on different aspects of content (Godulla et al., 2021; Masood et al., 2023). Some of them can also be detected by humans. These aspects include:

- ▶ **Facial landmarks and biological signals:** Inconsistent head poses, unrealistic or absent eye blinking, variations in facial texture, reflections and details in teeth and eyes.
- ▶ **Synchronization:** Inconsistencies between frames or modalities, for example, between mouth movements and spoken words (phoneme-viseme-mismatches).
- ▶ **Environment:** Abnormalities in the background, such as lighting and shadows, or unexpected changes in contrast.

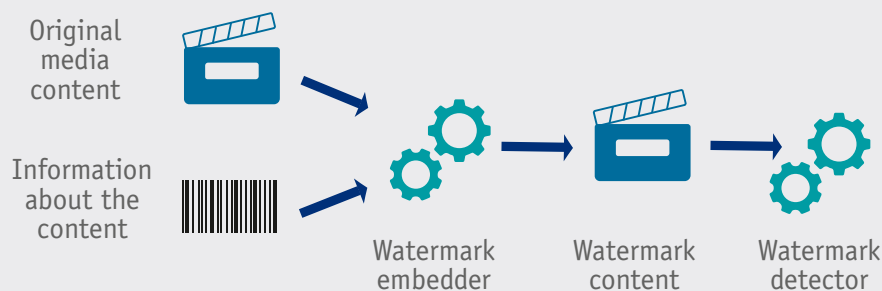
However, as deepfakes continue to improve, it is expected that humans will not be able to identify them anymore. This is where media forensic methods come into play.

MEDIA FORENSICS

Media forensics encompasses a range of disciplines aimed at analyzing and verifying multimedia content such as images, audio, and videos. It utilizes techniques from digital signal processing, computer vision, and audio analysis to authenticate content and reveal alterations, deepfakes, or manipulations. The field is crucial for verifying the authenticity of content (Sencar et al., 2022). Three key media forensic techniques include:

- 1 **Digital watermarking:** Digital watermarking (see figure below) of multimedia content refers to modifying the original media data (e.g., image, audio, video) in order to **embed information** about the content. Watermarks can be perceptible and imperceptible to the human eye, and can be used to identify, for example, the **owner** of the content or show whether the content was modified.

The Coalition for Content Provenance and Authenticity (see p. 32) suggests a procedure similar to digital watermarking, where cryptography methods are used to attach tamper-proof provenance information (“manifest”) to multimedia content.



Watermarking system

Process of modifying the original media data to embed information about the content.

Digital watermarking and similar methods cannot solve all problems related to fabricated content, as they require voluntary participation by different actors (e.g., camera producers, content creators, implementors). However, they mark an important and promising step towards authenticating multimedia content. For multimedia content that has not been watermarked, other methods outlined below can be used for authentication.

2 Source identification with sensor fingerprints:

Due to small imperfections in the manufacturing process and slight fluctuations in the intensity of individual pixels, imaging **sensors of cameras** introduce a noise pattern into each image. As the probability of identical sensor imperfections and corresponding noise patterns is very low, imaging sensors are considered to have a **unique noise fingerprint** (Kirchner, 2022). This makes it possible to **identify** the source sensor, i.e., the specific camera used to take a picture. However, modern digital cameras introduce a range of image **processing** steps (e.g., electronic image stabilization, high dynamic range imaging) that can overlay or distort this fingerprint. Additionally, this method raises privacy **concerns** in scenarios where **anonymity** is desirable (e.g., journalism, activism, legitimate whistle blowing), leading to techniques designed to conceal these noise patterns.

3 Verifying audio authenticity with power signatures:

Electric Network Frequency (ENF) refers to the standard frequency at which alternating current electrical power systems operate around the world, typically 50 hertz or 60 hertz. One can imagine this as the pulse or **heart-beat** of the grid, pulsing at 50 or 60 cycles per second. When audio recordings are made near electrical sources, these grid fluctuations are unintentionally embedded in the recording like an **imperceptible fingerprint**. The fluctuations are random, time-specific, and similar in all locations of the same power grid. Forensic

analysts leverage ENF analysis to verify the authenticity of audio and video recordings by comparing the embedded frequency patterns in the recording with known patterns from the ENF database. Any discrepancies or inconsistencies between the recorded ENF and the expected grid frequency at specific times can **indicate potential tampering, editing, or manipulation** (Hajj-Ahmad et al., 2022).

RELEVANCE FOR CORPORATE COMMUNICATIONS

Companies and their communication departments could be affected by fabricated or modified content in various ways:

- ▶ Communication strategies and activities often rely on interpreting information from various sources to assess public debates, stakeholder expectations, media use, outreach of alternative channels, etc. Using manipulated data and content can lead to misleading advice for top management on communicative challenges or ineffective stakeholder communications.
- ▶ Communicators use externally and internally sourced material (e.g., survey data, images, videos, animations) when producing their own content. Integrating false data and content into corporate communications may undermine its effectiveness and create legal and ethical problems.
- ▶ Third parties can misuse corporate content by modifying texts or videos for various reasons. These alterations can cast doubt on the standpoints and activities of a business or its leaders to attack its reputation. They can also misuse a company's name and authority to legitimize false news or lure audiences to malicious websites (Di Domenico et al., 2021).

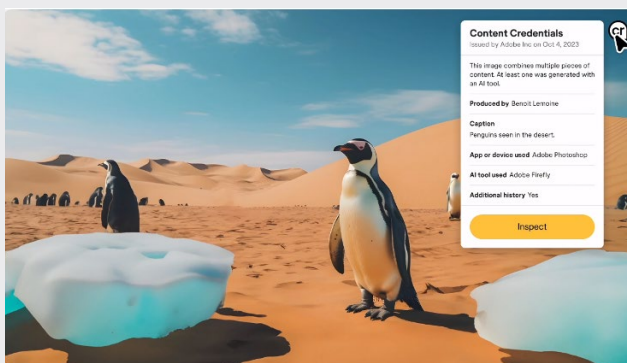
Overall, the threats are similar to those based on fake news. External stakeholders, such as consumers or (prospective) job applicants, might **get confused and question their previous knowledge** about the brand, which can influence subsequent behavior (Di Domenico et al., 2021). A study showed that posts with damaging fake news (e.g., accusations of food poisoning) causes participants to view the organization as undergoing a reputation crisis (Jahng, 2021). Last but not least, companies can be forced to publicly address controversial issues in order to

distance themselves from positions propagated by false content (Jahng, 2021).

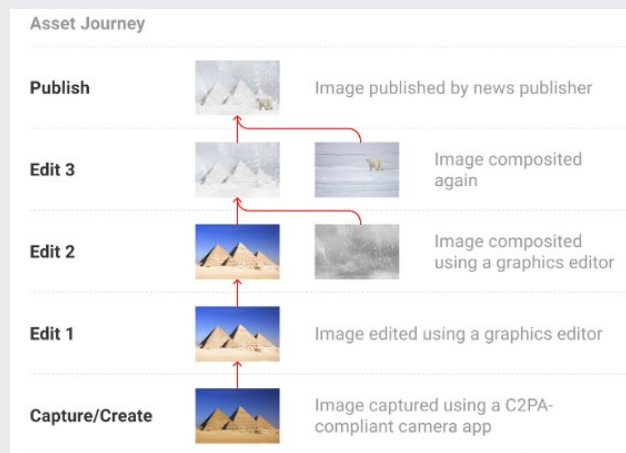
Thus, verifying the authenticity of media content is vital for corporate communications to take informed decisions, uphold credibility, prevent the spread of disinformation, and ensure compliance with legal and ethical standards. Reliable information and content are essential for successful corporate communications, regardless of the stakeholders involved, roles assumed, or objectives pursued.

INDUSTRY INITIATIVE: COALITION FOR CONTENT PROVENANCE AND AUTHENTICITY (C2PA)

This project was set up under an alliance between Adobe, Arm, Intel, Microsoft and Truepic. Its objective is to develop a global, opt-in technical standard and applications for organizations and individuals for **certifying the source and history (provenance) of media content**. The initiative aims to enable creators to voluntarily attach information to their original media content that is tamper-proof. For example, **Truepic** offers a C2PA-compliant technology for iOS and Android devices that captures, signs, and seals critical details in every photo or video, such as date, time, location, and the true pixels captured. With C2PA-compliant photo editing software, this provenance information can be read and extended with information on edits. Implementors (e.g., social media platforms, news outlets) must include mechanisms in their systems to examine and display media provenance information to users.



C2PA, 2023a



C2PA, 2023b

Examples of displays

“Icon of transparency” (left image, top right corner) for including content credentials in media content and possible visualization of an asset journey (right image)



» The emergence of AI will lead to a veritable inflation of content coupled with an unprecedented level of personalization. This will also open the door to misuse. Given this, two things will become increasingly crucial for corporate communications: the reliable authentication of corporate messages, and the good old-fashioned trust stakeholders place in the company and its communicators.«

*Dr Markus Talanow,
Head of Group Communications,
Dussmann Group*

RECOMMENDATIONS FOR COMMUNICATION LEADERS AND PROFESSIONALS

Dealing with false data and content is not a new challenge for organizations, and various strategies have already been developed to address it (e.g., Karinshak & Jin, 2023). With regard to the increase in fabricated content, communication departments should:

- 1 **Identify changing expectations and new responses of stakeholders** to corporate content due to the general rise of fabricated content, especially in social media.
- 2 **Implement verification technologies and routines** to check the integrity of external and internal **content used by communicators** for stakeholder communications and internal advising.
- 3 **Use authentication technologies when producing your own content** to ensure that it can be verified and trusted by audiences. For example, consider adopting C2PA standards to embed content credentials.
- 4 **Strengthen your network of trusted sources**, train team members, and promote integrity checking as a social practice by publicly sharing how multimedia content is verified and safeguarded by your communication professionals.
- 5 **Develop crisis response plans for different threat scenarios**, which may include quick response strategies to correct corporate communications based on false information and preemptive warnings about forged corporate content.

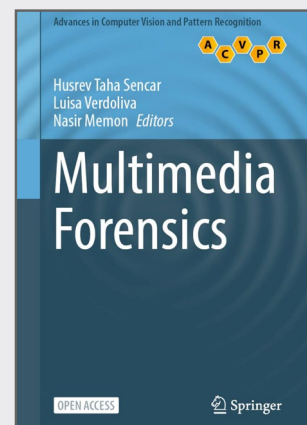
QUESTIONS FOR REFLECTION

- ▶ How does your communication team currently verify content used in daily operations?
- ▶ Are all communicators prepared to deal with real-time audio and video scams (e.g., fake instructions from yourself and top managers, or deceptive video calls)? What methods could be used to confirm identities?
- ▶ Are there any routines in place to safeguard corporate communications content produced by or on behalf of your organization?
- ▶ How quickly would you become aware of the circulation of fabricated corporate content harming your brand or organization?
- ▶ Are threats based on manipulated content part of your plans and training sessions for crisis management?
- ▶ What steps can be taken to educate and empower audiences to distinguish trustworthy corporate content from deceptive or manipulated material?

READING RECOMMENDATION

**Sencar, H.T., Verdoliva, L., & Memon, N. (Eds.):
Multimedia Forensics**

This compilation offers a comprehensive introduction to digital forensics of multimedia data and devices. Edited by renowned professors of computer science and cybersecurity from Qatar, Italy, and the United States, the technically detailed chapters are authored by expert researchers in the field. The book is open access and available for free on the publisher's website (SpringerLink).





DECODING HUMANS

LEVERAGING TECHNOLOGY TO HARNESS PHYSIOLOGICAL AND BEHAVIORAL DATA

AT A GLANCE

- ▶ The trend **Decoding Humans** focuses on the emergence of technologies capable of sensing and responding to human thoughts and feelings by recording, interpreting, acting upon, and altering cognitive and emotional states.
- ▶ Applications for capturing physiological and behavioral data from humans through non-invasive and invasive hardware are advancing. They range from audio surveillance systems and eye-tracking cameras to neurotech devices like brain-computer interfaces and biometric wearables (glasses, earbuds, headsets with electroencephalography) that connect directly with the nervous system. Combined with AI-based software for data interpretation (e.g., inferring emotions from brain activity), these technologies enable new forms of interaction between the human body, mind, and technology.
- ▶ This creates opportunities for automated communication processes which can be useful for corporate communications. Potential applications include measuring the success of messaging activities and offering customized content in real time using unobtrusive recipient feedback.
- ▶ Insights from research on brain-computer interfaces and biometric wearables help to form an understanding of what might become possible, helping to prepare for relevant changes.
- ▶ Communication leaders should monitor these innovations and explore potential use cases, while paying attention to reputational, legal, and ethical risks. Being a pioneer in this area can create a competitive advantage.

BRIDGING THE GAP BETWEEN HUMAN EXPERIENCE AND TECHNOLOGY

Traditionally, interactions with technology-based devices such as computers, smartphones, and machines involve **structured inputs** (e.g., specific commands, text, controls) **deliberately given** by the human user. In the future, however, technology will increasingly be able to automatically capture physiological and behavioral data and use it to **respond to** and directly **stimulate human feelings and thoughts**, sometimes without their awareness.

There are several related fields of research that investigate aspects of this trend, including:

- ▶ Research into **neuroscience** and, more specifically, **neurotechnology**, defined as “devices and procedures used to access, monitor, investigate, assess, manipulate, and/or emulate the structure and function of the neural systems of animals or human beings” (Hain et al., 2023, p. 9), including **brain-computer interfaces** (BCIs) (Munavelli et al., 2023), explore connections between technological components and the nervous system or the brain. In the most advanced applications, this includes the possibility of reading and even writing to the mind (e.g., Farahany, 2023a, 2023b; Roelfsema et al., 2018).
- ▶ Research in the field of **affective computing** focuses on sensing emotions from different types of data (e.g., voice recordings or facial expressions in videos). Often, machine learning algorithms are used to infer correlations between details in image, video, or audio files and corresponding emotions from large labeled training data sets (Daily et al., 2017).

The combination of advanced methods from neuroscience and computer science opens up new avenues for collecting, interpreting, and imitating **physiological and behavioral data** that signify human **experience**.

TECHNOLOGIES FOR WORKING WITH PHYSIOLOGICAL DATA

Wearables like smart watches can already collect a range of **physiological data**, for example, heart rate, skin temperature, or galvanic skin response. Appropriate software can then infer **emotional** and **cognitive states** from this data, like stress levels (Can et al., 2019). New devices like the Neurosity Crown headband or the MW75 Neuro headphones presented in January 2024 are able to monitor and respond to additional physiological signals such as **brain activity**.

There are different methods for recording activity in the nervous system or brain that are typically classified based on their invasiveness. Popular **non-invasive** technologies that are relatively low-cost and can be used outside a laboratory include electroencephalography (**EEG**) and functional near-infrared spectroscopy (**fNIRS**). EEG measures brain activity directly by recording **electrical impulses** from the skin or scalp, while fNIRS measures brain activity indirectly by recording the **blood flow** in different areas of the brain (high brain activity leads to higher blood flow and vice versa). Therefore, fNIRS has a lower temporal resolution than EEG, meaning there is a delay in measuring brain activity. In recent years, EEG has become better and cheaper. Companies have started to develop **consumer EEG technology (EEG wearables)**, especially EEG headsets and glasses (He et al., 2023). Earbuds from Emotiv can already record brain waves and, in combination with an analytics tool, measure cognitive load, attention, and cognitive stress. This allows users to receive **neuro-feedback** and take actions in response to their brain activity throughout different day-to-day activities.

Invasive technologies for measuring brain activity are implanted into the brain and thus require brain surgery. As invasive technologies carry higher risks for the individual, they are currently mostly explored in the health sector for treating neurological diseases.

TECHNOLOGIES FOR WORKING WITH BEHAVIORAL DATA

Beyond physiological data, there is also a range of hardware and software for collecting and interpreting **behavioral data**, such as facial expressions, eye movements, gestures and body movements, speech, tone of voice, keystrokes, and computer mouse movements. Similar to physiological data, behavioral data can be used to infer emotional or cognitive states. For example, facial recognition software and computer vision algorithms can **analyze facial expressions** from videos to determine whether someone is happy, sad, angry, surprised, or in another **emotional state** (Huang et al., 2023). Eye-tracking devices can monitor **eye movements** and gaze patterns to understand what people are looking at and how they react to visual stimuli. This technology can be used to infer interest, attention, and emotional responses. For example, SmartEye, a pioneer in human insights AI, offers tools for detecting emotions and cognitive states from facial expressions and eye movements. Other providers like Cogito AI offer emotion detection for **audio**. This can be used to analyze phone conversations and support call center workers. While these technologies are continuing to improve, accurately detecting emotional and cognitive states from behavioral data is still challenging and can be prone to error.

PREPARING FOR THE FUTURE BY LOOKING AT THE PRESENT

How might the possibility to read from and write to the mind affect individuals and society? With this technology still evolving, looking at **existing technologies that are responsive to human behavior** can offer a glimpse of what might be. Here, **social media** platforms stand out as they use AI methods to analyze and maximize how much time users spend on a platform. The basic idea is simple – if users linger over certain content, show them more of it and related content to increase the time they spend on the platform. The docudrama “The Social Dilemma” (2020) explores this principle in more depth. According to the Digital 2023 October Global Statshot Report, approximately 61% of the global population use social media for an average of 2 hours and 26 minutes daily (**Kemp, 2023**). This underscores the impact of social media technologies on the way people gather information, connect, and communicate by optimizing content for specific human behaviors.

Emerging technologies, with access to more diverse physiological and behavioral data, can pave the way for applications optimized for evoking specific emotions, thoughts, or behaviors. The **opportunities for improved automated, contextualized, and**

»These [mind-reading] technologies embody and enact the premise that the brain is the place where mental events are located and that there must, therefore, be material traces of such mental events in the brain itself. And if those traces exist, it must be possible—both in principle and now it seems in practice—to make them legible.«

Nikolas Rose, co-author of the book

“Neuro: The New Brain Sciences and the Management of the Mind” (Rose, 2016, p. 144)

personalized messaging and listening activities are obvious. On the other hand, such applications could also **exacerbate many of the challenges linked to social media** (e.g., polarization, addiction, and mental health issues). Accordingly, preparing for potential negative impacts of neurotech and biometric wearables is crucial.

ETHICAL CONCERNS

The use of technology for decoding humans raises a number of ethical concerns, particularly regarding **data privacy and security**. Preliminary research suggests that brain data collected by EEG consumer technologies could be abused to extract sensitive information such as addresses or financial details (Ienca et al., 2018). Several researchers argue that we need **new laws to protect mental privacy** and prevent unauthorized mind-reading, or “brain spying” (Roelfsema et al., 2018). This issue is also discussed by Farahany (2023a) in her book “The battle for your brain” (see reading recommendation). Other concerns relate to the **safety of EEG consumer devices** as, for example, the potential side-effects of brain stimulation are not well-understood (Ienca et al., 2018). Lastly, while providers of software and hardware solutions are quick to make bold claims, the precise detection of emotional and cognitive states remains a challenge. The technology is **not yet reliable enough** for all application scenarios. As EEG consumer devices provide less accurate readings of brain activity than, for example, medical-grade EEG sets, the inferences are often not comparable (Paek et al., 2021).

RELEVANCE FOR CORPORATE COMMUNICATIONS

Advanced hardware for capturing physiological and behavioral data and AI-based software solutions for interpreting such data are increasingly enabling direct interaction between the human body and mind and digital applications for automated listening and messaging. While originating in neuroscience research for

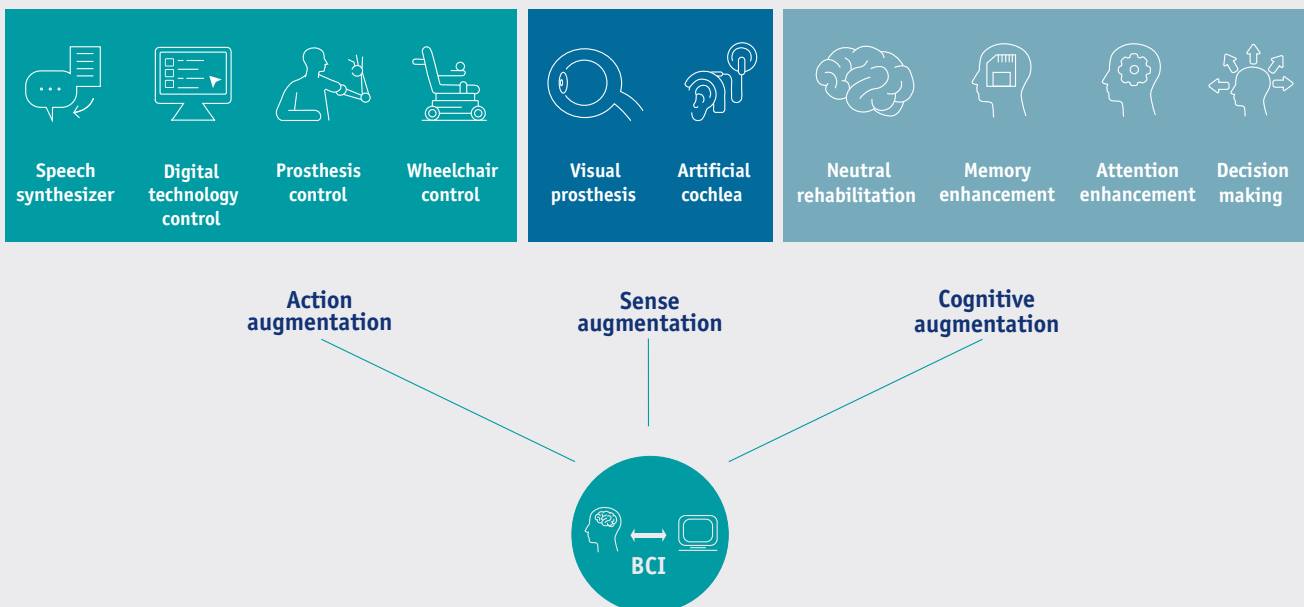
medical applications (e.g., enabling communication for patients with locked-in syndrome), the decreasing costs and improved accuracy of inferences are driving the rapid development of **commercial neurotech applications**. Debates on the business impact of this development for various industries, functions, and value chains have just begun in strategic management (Farahany, 2023b) and marketing (Mende et al., 2023). The past has shown that similar technological breakthroughs driven by consumer and leisure applications can quickly impact communication behavior in general and thus fundamentally change communication in, by, and about businesses. In corporate communications, neurotechnology could be used as follows:

- ▶ **Gaining insights into how recipients react to corporate content:** By measuring behavioral reactions and physiological responses, communicators can assess the emotional impact of specific messaging activities. This could lead to more effective and engaging stakeholder communications.
- ▶ **Neurofeedback for personal development:** Communication leaders and team members can benefit from neurofeedback, for example, to improve their decision-making skills and stress management. Neurotechnology can help individuals recognize when they are too tired or stressed, and guide them in making better decisions and managing their emotional responses.
- ▶ **Neurofeedback for training and learning:** Neurotech can help to assess the effectiveness of training programs needed to upskill communicators in a rapidly changing media environment. Analyzing brain data helps leaders to identify the most successful training methods and adapt competency development programs in communication departments.

HUMAN AUGMENTATION WITH BRAIN-COMPUTER INTERFACES (BCI)

Brain-computer interfaces enable direct communication and interaction between the brain and a computer or technology. BCIs can be used to collect and interpret information from the brain, yet also to influence the brain by stimulating different areas with electrical impulses. There are three main ways in which BCIs can augment humans:

- 1 Action augmentation:** BCIs can translate thoughts into actions by associating specific brain activity (e.g., thinking about moving a hand to the right) with technological commands (e.g., moving a cursor to the right). This allows individuals to communicate or interact with their environment and digital technologies through their thoughts. For example, the YouTuber Fireship used an EEG wearable (Neurocity Crown) to record his brain activity and a machine learning algorithm to recognize a specific thought pattern (i.e., recognizing the brain activity of him thinking about biting into a lemon). By linking this thought pattern to a command for a digital technology (e.g., prompting ChatGPT), it becomes possible to control digital technologies through one's thoughts (Fireship, 2023).
- 2 Sense augmentation:** Neurotech devices can stimulate different areas of the brain with electrical impulses to restore sensory capabilities. For example, cochlear implants directly stimulate the cochlear to provide hearing for those with severe deafness.
- 3 Cognitive augmentation:** BCIs monitor brain patterns associated with attention and decision-making, serving as indicators for fatigue or lying (Cinel et al., 2019). Neurotech can be used to monitor these activity patterns and provide neurofeedback to individuals. Other potential applications include extending our working memory with BCIs (Roelfsema et al., 2018).



How brain-computer interfaces can augment humans

Figure adapted from Gao et al. (2021)

RECOMMENDATIONS FOR COMMUNICATION LEADERS AND PROFESSIONALS

- 1 Follow the neurotech debate regarding future applications** that could infer what a person sees, hears, thinks, feels, or wants by measuring and interpreting physiological and behavioral data – even without their awareness.
- 2 Identify and assess new opportunities** for a) measuring the effectiveness and success of communication activities (e.g., in controlled situations such as internal or external events, showrooms), b) creating and conveying personalized
- 3 Utilize advanced methods for personal development and training** through real-time feedback based on monitoring systems, biometric wearables, and non-invasive brain-computer interfaces.
- 4 Remain skeptical** of bold claims that commercial applications can reliably detect emotional and cognitive states, and be aware of the reputational, legal, and ethical, challenges associated with using such technologies, including concerns about transparency, privacy, and safety.

and context-specific content, and c) establishing settings for automated corporate communications.

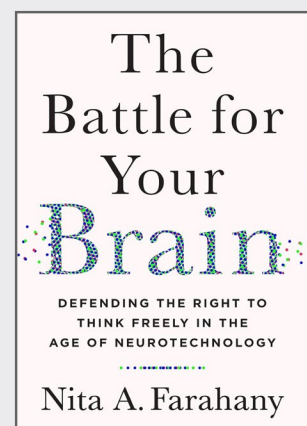
QUESTIONS FOR REFLECTION

- ▶ How can physiological and behavioral data be collected and integrated into our communication management processes to better understand and connect with our target audiences?
- ▶ How can current monitoring technologies and emerging neurotech be utilized for the operating model and products/services of communication departments?
- ▶ How can neurotech enhance competency development for communicators?
- ▶ What are the potential pitfalls of using these approaches in corporate communications – and how can they be avoided?

READING RECOMMENDATION

Nita A. Farahany: *The Battle For Your Brain – Defending the Right to Think Freely in the Age of Neurotechnology*

Imagine a world where your thoughts are legally scrutinized, and your emotions can be weaponized against you. Neurotechnology, capable of probing political beliefs and intervening in health crises, is advancing rapidly. While it holds great potential for humanity, the lack of safeguards poses a threat to privacy and individual rights. The author, a distinguished professor of law and philosophy at Duke University, explores the complex dilemmas we face and offers a roadmap for safeguarding personal freedom in the face of evolving neurotechnological advancements.



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