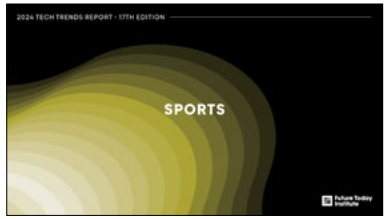
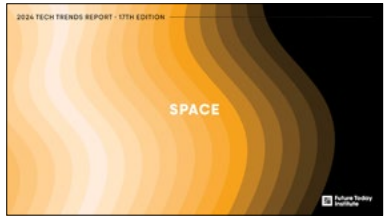
NEWS · INFORMATION

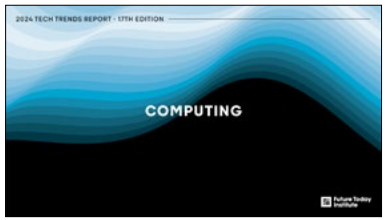
FUTURE TODAY INSTITUTE'S 2024 TECH TREND REPORT

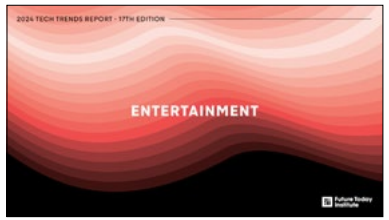
Our 2024 edition includes nearly 700 trends, which are published individually in 16 volumes and as one comprehensive report with all trends included.

Download all sections of Future Today Institute's 2024 Tech Trends report at **http://www.futuretodayinstitute.com/trends.**









THE YEAR AHEAD: TECH SUPERCYCLE

The theme for our 2024 report is Supercycle. In economics, a "supercycle" refers to an extended period of booming demand, elevating the prices of commodities and assets to unprecedented heights. It stretches across years, even decades, and is driven by substantial and sustained structural changes in the economy.

We believe we have entered a technology supercycle. This wave of innovation is so potent and pervasive that it promises to reshape the very fabric of our existence, from the intricacies of global supply chains to the minutiae of daily habits, from the corridors of power in global politics to the unspoken norms that govern our social interactions.

Driving this seismic shift are the titans of technology and three of their inventions: artificial intelligence, biotechnology, and a burgeoning ecosystem of interconnected wearable devices for people, pets, and objects. As they converge, these three macro tech segments will redefine our relationship with everything, from our pharmacists to our animals, from banks to our own bodies. Future Today Institute's analysis shows that every technology—AR/ VR/ XR, autonomous vehicles, low Earth orbit satellites, to name a few—connects to the supercycle in some way.

The ramifications are stark and undeniable. As this tech supercycle unfurls, there will be victors and vanquished, those who seize the reins of this epochal change, and those who are swallowed whole. For business leaders, investors, and policymakers, understanding this tech supercycle is paramount.

In this 17th edition of FTI's annual Tech Trends report, we've connected the supercycle to the nearly 700 trends we've developed. Our research is presented across 16 technology and industry-specific reports that reveal the current state of play and lists of influencers to watch, along with detailed examples and recommendations designed to help executives and their teams develop their strategic positioning. The trends span evolutionary advancements in well-established technologies to groundbreaking developments at the forefront of technological and scientific exploration. You'll see emerging epicenters of innovation and risk, along with a preview into their transformative effects across various industries.

We've visually represented the tech supercycle on the report's cover, which is an undulating image reminiscent of a storm radar. Vertical and horizontal lines mark the edges of each section's cover. When all 16 section covers converge, the trends reveal a compounding effect as reverberating aftershocks influence every other area of technology and science, as well as all industries.

It's the convergence that matters. In isolation, trends offer limited foresight into the future. Instead, the interplay of these trends is what reveals long-term change. For that reason, organizations must not only remain vigilant in monitoring these evolving trends but also in cultivating strategic foresight—the ability to anticipate future changes and plan for various scenarios.

Our world is changing at an unprecedented rate, and this supercycle has only just begun.

Amy Webb
Chief Executive Officer
Future Today Institute

TABLE OF CONTENTS

TOP HEADLINES

The news ecosystem is at an inflection point. The adoption of generative AI in business and entertainment media is actively shaping consumer expectations for news.

01 Generative AI is mainstream

While algorithms won't completely replace human creators in the near term, they are lowering the barrier to creating compelling content.

02 Digital traffic dynamics are shifting

Websites built on search will need to contend with rapidly shifting consumer behavior, driven by a flood of algorithmic content and changing search modalities.

03 Publishers are losing power in the content value chain

Technology companies are poised to claim a greater share of the content value chain wielding multimodal LLMs, giant troves of scraped data and the power of AI summarization.

04 Foundations are the new hedge funds, offering an influx of cash to fund journalism

News organizations, especially public media and local outlets, are counting on those grants to hire staff and grow.

05 Trust is essential for media businesses, but it is at near-historic lows

The ability for legacy publishers to succeed will hinge on their ability to maintain the trust of audiences.

STATE OF PLAY

Emerging technologies like generative AI are shaping the future of content creation, distribution and monetization.

Generative AI went mainstream in 2023, igniting fears that algorithmic content would flood the internet and relegate writers to the dustbin of history. In the year ahead, the initial frenzy around ChatGPT, prompt hacking and AI-backed product launches will fade, but the information ecosystem will never be the same.

As technologists search for new applications of AI, the media value chain is being reshaped. The barriers to creating compelling content are falling because of AI-enabled editing tools—which include text editors that can draft paragraphs from bullets and video editors that can synthesize a sizzle reel from a few words.

Norms of digital distribution shaped over the last decade are crumbling. There is no longer a dominant social network for news. Search traffic with generative summaries are poised to replace the traditional list of links. That concern is on top of a shift in Google's core algorithm that has reduced the visibility of news websites.

At the same time, the fundamentals of the information economy remain challenging. The move to reader revenue has kept lots of publishers afloat, but it remains to be seen how much growth is possible. There is substantial excitement around philanthropic funding models for journalism, but nonprofit newsrooms still need to prove their relevance to audiences.

KEY EVENTS

MARCH 2023

LLM explosion
Generative AI fever hits with the release of multiple LLMs (large language models), including GPT-4.0.

APRIL 12, 2023

NPR quits Twitter
NPR's departure emphasized the dramatic shift in the social network's tone and leadership.

MAY 10, 2023

Generative search from Google
The launch of Search Generative Experience highlighted how AI might change news discovery.

MAY 18, 2023

Section 230 remains intact
The Supreme Court ruled technology platforms aren't liable for user-generated content.

DECEMBER 13, 2023

Axel Springer + OpenAI partner
The German media house became the first global publisher to reach a licensing deal integrate its journalism into OpenAI's products.

LIKELY NEAR TERM DEVELOPMENTS

THE PACE OF CHANGE ACCELERATES

Journalists are accustomed to the breakneck pace of change: Adjusting to rapid developments has been the watchword of media organizations for more than a decade. The year ahead will test whether news leaders have learned to search for disruption or whether they've gotten complacent. Barriers to creating compelling content will fall. The operating assumptions that let many digital publishers thrive on reach will crumble. There will be a race to derive value from existing content, either by licensing it to tech companies or building publisher-owned LLMs. New categories of devices will demand new publishing formats. Successful news organizations will triage these competing threats to find opportunity; too many publishers will do nothing and find their relevance diminished.

Evolution in copyright law

Generative AI tools have outstripped settled law. Expect to see litigation challenging whether crawling content to train a large language model constitutes fair use. The impacts of that legal wrangling could be compounded by new laws or regulations.

New modes of search and discovery

Generations Z and Alpha have different consumption patterns than older generations. These differences are especially stark when looking at how younger users find news. Publishers need to tailor their strategies to reach those potential consumers.

Fragmented information access

Not everyone can afford a news subscription. As paywalls at premier publishers get tighter, essential reporting may not reach the communities that need to see it. This is of particular concern for the 2024 US presidential election.

Subscription fatigue

The conversion to a subscription economy is happening in news but also in retail, gaming, automobiles, and more. All those programs are competing for a finite share of consumer spending, so publishers need to ensure they are essential to remain competitive.

New European regulations

The EU's Digital Services Act, in effect since August, introduced substantial changes to the regulatory framework for tech platforms. Its obligations may shift how platforms operate, just as a Canadian law caused Meta to drop news from its platform last year.

Easier content creation

Expect to see a new suite of productivity tools aimed at transforming the creative process. Those tools will have a cultural—and economic—impact as they lower the barriers to publishing text, photos, and videos. Legacy creators will struggle to adapt.

11 MACRO SOURCES OF DISRUPTION

Technology | Media & Telecom | Demographics | Environment | Government | Public Health | Education | Geopolitics | Infrastructure | Economy | Wealth Distribution

WHY NEWS & INFORMATION TRENDS MATTER TO YOUR ORGANIZATION

Search and discovery is relevant to all

Any business that publishes online—effectively, anyone with a website—needs to understand how consumers search for and discover new information. The shifting search and social media landscape is particularly important for publishers but is broadly relevant because those changes will quickly impact other industries.

Businesses cannot operate without journalism

A growing body of research shows that losing local news outlets leads to more corruption, less competitive elections, and weaker government finances in impacted regions. Business leaders need to follow news and information trends so they can maintain the health of their operating environment.

Consumption highlights consumer behavior

The way news is read, watched, and listened to offers tremendous insights into how consumers will interact with technology more broadly. The pervasiveness of news makes it a good barometer for understanding how consumers will adapt to new devices and media formats.

Content verification

The ease of creating content with AI tools means that it is more important than ever to verify the authenticity of facts, images, and videos that circulate online. Journalists aren't the only ones responsible for fact-checking—any organization that publishes content online or takes strategic actions based on open-source information needs to do it.

Sustainable news funding is essential

It is critical to understand how the economics of news will continue to support impactful reporting. The last five years saw a substantial shift in how publishers fund themselves, with renewed emphasis on digital subscriptions and foundation support. Those developments have important repercussions for the entire media value chain.

Understanding the dynamics of trust

Trust is an essential asset for all businesses, but news organizations must pay special attention to their credibility. Tracking trends in news and information can help an organization understand and respond to the ways that technology is driving audiences to become more polarized and distrustful.

OPPORTUNITIES & THREATS

Threats

Reader revenue programs will face growing competition in a market saturated with subscription products. Publishers may fail to diversify their revenue streams because of the industry consensus to keep pursuing audience revenue.

Search engines that incorporate generative AI or voice interfaces may send less referral traffic to news websites. That will curtail one of publishers' strongest tools for reaching new audiences, restricting future growth.

Device manufacturers and platforms may use LLMs to generate and distribute news directly to their users. The result would be a dramatic shift in the media value chain, threatening to displace publishers' core offering.

Trust in institutions—and in news media in particular—remains near historic lows. News organizations that lose credibility won't be able to build audiences to sell advertising or to convert consumers to subscribers.

Resource-constrained publishers struggle to track the innovation related to content creation and distribution happening across domains. Their organizational culture makes it difficult to respond to multidisciplinary challenges.

Opportunities

Legacy publishers have a deep archive of content that can be used for training large-language models. The demand for data to train LLMs could increase the value of those archives, creating a new revenue stream for publishers.

Brands that maintain durable relationships with consumers will thrive in a low-trust environment. Publishers that have built trust over decades can translate that across distribution channels with thoughtful product development.

Emerging devices will demand new programming formats. Creators and publishers that act on that opportunity early will be able to set norms and negotiate better deals with platform companies than those that delay action.

Technologists across the world are seeking ways to enhance and apply AI tools like ChatGPT. That means media companies have an unprecedented number of potential partners to work with on product development.

Many open-source alternatives to AI models licensed by tech giants like Google, Microsoft, and OpenAI are available. The propagation of open-source language models could allow news organizations to innovate with greater control.

INVESTMENTS AND ACTIONS TO CONSIDER

1

Assess the value contained within your archives. Is there an opportunity to license that content or use it to train your own large language model? Does that content have specific biases that should be addressed before it could be used in production? Is the archive already digitized or is it analog?

2

Ask how your organization would respond to a trust crisis: What would you do if your website was used to launch a coordinated misinformation campaign? How would you recover from a mistake that impacts consumers' perception of your brand? An internal exercise could expose operational gaps before they have consequences.

3

What skills will your organization need in the next 5-10 years? How will you be able to train or recruit staff who can support and execute on your goals?

4

Understand the audiences you are trying to reach and invest in building direct relationships. If your strategic plan calls for an audience of younger users, how will you measure that goal? Once you start making inroads with that audience, what tactics will you use for keeping them engaged?

5

Build partnerships with a local university to identify and create technical infrastructure. Connections with academic institutions can help to make sense of state-of-the-art research and create a talent pipeline for your organization.

6

Identify the tasks most vulnerable to automation within your organization. Would deploying an AI tool to automate that work increase operational risk? How would your consumers respond if they learned that certain text was generated by an algorithm? Honestly answering those questions could help triage pilot projects.

CENTRAL THEMES

Weakening legacy organizations

The information ecosystem is less resilient because of waves of consolidation and layoffs that have buffeted publishers. More than half of the local newspapers in the United States are owned by just seven companies. 2023 was a brutal year, with more media layoffs recorded by July than any year on record, according to career services company Challenger, Gray & Christmas.

Across the media landscape, legacy players and digital upstarts are redoubling their efforts to build audience-funded recurring revenue streams. That work is essential, but it is a long way from reversing the losses that publishers—especially those providing local news—have suffered over the last decade and half.

As a result, organizations are forced to make difficult choices between forward-looking innovation and core operations. While it's easy to defer investing in emerging technologies and platforms, the strategic imperative is to act on the trends nearing an inflection point.

Pivot to audience revenue

Subscriptions power media outlets, from multibillion-dollar media giants like The New York Times to individual passion projects on Substack. They are a preferred tactic with news organizations because they align publishers' economic interests with their audience.

Publishers are getting more efficient at converting readers to subscribers—and understanding how to retain them once they've signed up. Those insights are essential for news organizations striving to remain sustainable.

At nonprofit news organizations, which generally don't charge for subscriptions or have a paywall, audience revenue is also an important source of support. At those organizations, the challenge is demonstrating the value of recurring support without the help of a paywall.

Whether it's a subscription or a recurring donation, news organizations need to focus on providing an essential service. That's the best way to ensure consumers stay engaged and remain willing to pay, even as more and more other industries launch subscription programs to compete for readers' limited funds.

Preserving civic information

Widening news deserts in the United States make it harder to find basic coverage of local governments. The influx of philanthropic funding to news is driven, in large part, by a desire to reverse that decay.

"The philanthropic sector recognizes the need to strengthen American democracy," said John Palfrey, president of the MacArthur Foundation, in the launch announcement for the $500 million Press Forward coalition, to be used for local journalism. "Progress on every other issue, from education and health care to criminal justice reform and climate change, is dependent on the public's understanding of the facts."

Another, less discussed, need is preserving open access to essential information about basic services and emergency situations—information that can be difficult to find because of the quality of government websites and other official sources. The current wave of philanthropic funding for news isn't directly addressing this issue, but emerging broadcast standards could help.

Focus on value, not tools

Nearly every day a new startup launches with a novel application of AI. Those tools increasingly seek to change how would-be creators operate. While some products will truly disrupt the information ecosystem, it is far too early to know which ones will have a durable impact.

Instead of focusing on the specific application of technology, look for whether it offers a fundamental shift in how value is created. An AI-enhanced word processor may reduce writer's block and streamline the writing process. Rather than analyzing the ethics of publishing AI-powered suggestions, news organizations should consider the implications of inviting tech companies into their value chain: How might a magazine's distinctive voice be impacted if its writers use the same off-the-shelf editing algorithm that another publication uses? How will pre-publication data be used in other products or services?

ONES TO WATCH

Ashley Alvarado, who leads community engagement and strategic initiatives for Southern California Public Radio, for pursuing innovative ways to engage audiences with public media.

Keith Axline, Spencer Cavanaugh, and **Eric Mack,** co-founders of JournoDAO, for prototyping ways that journalists can engage with Web3 technologies.

Scott Brodbeck, founder of a local news network serving the Washington, D.C., metro area, for experimenting with GPT-4 to scale local news operations with low-code automation.

Meredith Broussard, data journalist and journalism professor at New York University, for academic research on applications of AI to investigative reporting and the creation of ethical AI.

Feli Carrique, executive director of the News Product Alliance, for coordinating a community of news innovators, including launching a new certificate for News Product Management.

Jon Cohrs, Chris Wood, and **Willa Köerner,** members of The New York Times R+D team, for work on spatial audio, including creating a guide for podcast producers to use the technology.

Liz Danzico, design executive at Microsoft, for contributing to the development of Bing's AI interface and working with news organizations to consider how they need to evolve.

Jessica Davis, senior director for AI prodect at Gannett, for pursuing AI-powered newsroom automation solutions across the publisher's network.

Lebo Diseko, South African correspondent for the BBC World Service and Nieman Fellow, for research into new modes of audience engagement and how journalists can protect democracy.

Evelyn Douek, assistant professor of law at Stanford Law School, for leading scholarship on how online speech is regulated by social platforms and tech companies.

Dr. Magdalena Fuentes, professor at NYU, for research around how AI can improve the quality of closed captions and transcriptions by better describing ambient sound.

Uli Köppen, head of the AI+Automation Lab at the German public broadcaster Bayerischer Rundfunk, for prototyping and exploring the future of public service broadcasting.

Joy Mayer, director of Trusting News, a project that trains journalists and conducts research intended to help bolster trust in and credibility of news organizations.

Miranda Marcus, leader of BBC labs, for managing the broadcaster's innovation incubator that explores new ways technology can support newsgathering and distribution.

Surya Mattu, leader of the Digital Witness Lab at Princeton University, for work supporting technologies investigating misinformation and how algorithms make decisions.

Dr. Swapneel Mehta, founder of research collective SimPPL, for facilitating partnerships to understand local news audience analytics and the spread of disinformation.

Dr. Arvind Narayanan, professor of computer science at Princeton University, for leading a research project about algorithmic amplification on social media.

Michael Newman, director of transformation at Graham Media Group, for leading a project that experimented with using generative AI to improve the quality of comments sections.

Josh Raab, former director of Instagram and TikTok at National Geographic, for studying how journalists can understand social algorithms as part of a Knight-Wallace fellowship.

Zach Seward, the New York Times' first Editorial Director of A.I. Initiatives. In that role, he will play an outsize role shaping the norms for how one of the world's largest news organizations uses AI tools.

Felix M. Simon, doctoral student at the Oxford Internet Institute and Knight News Innovation Fellow, for researching the blind spots in newsrooms' AI guidelines.

Agnes Stenbom, founder of Schibsted's inclusion lab, for advancing research into responsible AI usage and for prototyping ways outsiders can get involved with the future of news.

Dr. Benjamin Toff, senior research fellow at the Reuters Institute for the Study of Journalism, for leading research into declining trust in news in communities around the world.

Johanna Wild, founder of Bellingcat's investigative tech team, for nurturing the ecosystem of developers and tools that can improve the quality of investigative journalism.

REPORTING + VERIFYING INFORMATION

3RD YEAR ON THE LIST

COMPUTER-DIRECTED REPORTING

WHAT IT IS

Publishers are becoming more comfortable with applying AI in the newsroom. Increasingly, forward-looking news organizations are using algorithms to identify newsworthy events and develop story pitches. The trend could make reporters and editors more efficient but only with careful oversight to prevent infusing reporting with algorithmic bias.

HOW IT WORKS

Experimental tools powered by AI are finding their way into newsrooms. Newsquest, the second-largest newspaper company in the UK, hired an "AI-powered reporter" in June. When the job description was posted, Newsquest's Editorial Development Director Toby Granville told a media blog: "AI technology opens up new possibilities for newsrooms, helping them win back time to focus on what they do best—face-to-face journalism, which can never be replaced by robots."

The Associated Press launched five pilots to showcase the applications of AI within local newsrooms, with funding from the Knight Foundation. Those included working with the Brainerd Dispatch in Minnesota to generate automated summaries of police updates and triaging press releases and tips sent to WFMZ-TV in Allentown, Pennsylvania. Another project at WUOM-FM at the University of Michigan built a system for sending reporters alerts when certain topics were discussed at city council meetings.

ALXnow, an Arlington, Virginia-based local news website, used OpenAI's GPT-4 to launch an AI-written newsletter and build a copy editing tool. YESEO, a project sponsored by the Reynolds Journalism Institute, uses GPT to suggest search-friendly headlines for news articles.

WHY IT MATTERS

The accelerating capabilities of generative AI raise existential questions for publishers and threaten to destabilize the content ecosystem. Those concerns should be top of mind for news leaders, but they are also relevant for anyone who consumes the news.

There are already examples of how generative AI strategies can go wrong without proper oversight. After backlash about the decision to publish more than 70 articles written by AI, CNET launched an internal investigation to review those stories. More than half—including articles with titles like "What Is Compound Interest?" and "How Much Should You Keep in a CD?"—needed corrections. In some cases, CNET also had to rewrite the articles because the investigation revealed some of the language had been plagiarized from the sources used to train its model.

A growing number of news organizations are releasing AI policies to govern their use of algorithmic tools. The guidelines generally deal with the production of content, leaving many open questions about other AI considerations. Those include whether newsrooms might become increasingly dependent on the technology companies providing AI solutions and how news organizations can ethically use all the data they collect from their audience and in the reporting process.

3RD YEAR ON THE LIST

DATELINE: METAVERSE

WHAT IT IS

Even as the hype for metaverse products fades, the line between our digital and physical selves is increasingly blurred. News organizations need to be prepared to report on events that unfold seamlessly across the real world and digital platforms.

HOW IT WORKS

More and more of our lives are spent in persistent digital spaces. Reporting on the metaverse means taking seriously the events that happen in those digital worlds instead of relegating them to a niche beat like "internet culture" or "gaming."

In February 2023, a Colombian traffic court convened to hear a case in the metaverse—an apparent first for the judiciary. Participants in the dispute appeared as avatars in Meta's Horizon Worlds platform, with a live steam broadcast to YouTube. The presiding judge, Magistrate María Victoria Quiñones Triana, appeared as an avatar dressed in black robes.

Together, a handful of newsrooms launched projects on The Sandbox and Decentraland, two gaming platforms with metaverse-like qualities. The South China Morning Post used The Sandbox to publish a collection of historical photos, data visualizations, and illustrations as NFTs. British business magazine Management Today published its March 2022 cover as a 12-meter high wall in Decentraland.

One persistent challenge for news organizations operating in the metaverse is the lack of established norms around content moderation. Each virtual platform has its own rules and enforcement mechanisms—to the extent that there are any. That creates uncertainty for brands looking to launch experiments and makes it harder for reporters to identify truly newsworthy events.

WHY IT MATTERS

Covering virtual worlds seriously requires reframing how we think about them. If a political candidate appears at a rally saying one thing but their avatar contradicts that statement in a virtual world, how should journalists respond? Is the in-person comment more "real" than the digital one? What if the doublespeak is part of an intentional messaging strategy?

Newsrooms need to expand coverage of virtual spaces beyond the gaming beat—behind the press releases and cartoonish graphics, reporters will find tangible investments in technology, talent, and infrastructure by some of the world's most powerful companies.

News organizations should also start thinking about their long-term value proposition in the metaverse: As we spend more of our lives connecting digitally, how do real-world connections change? How can local newspapers create relationships with citizens who see themselves more connected to an online affinity group than to their neighbors in physical space?

Without a single dominant virtual world among consumers, organizations considering metaverse experiments need to be cautious about where they invest. Rather than doubling down on a single platform, executives should consider how to develop the underlying skills that will be necessary to succeed, no matter which platform becomes popular.

1ST YEAR ON THE LIST

SUMMARIZATION AT SCALE

WHAT IT IS

Generative AI excels at consuming content and transforming it. Products are already on the market that use large language models to summarize text for a streamlined reading experience. Researchers are looking to extend that approach to video. This trend jeopardizes the creativity and voice that lets high-value publishers differentiate themselves.

HOW IT WORKS

Summarization is one of the tasks at which LLMs excel. Researchers are actively developing benchmarks to evaluate how well those models perform—both in relation to one another and in competition with humans. One project by a research team from Stanford and Columbia universities found that evaluators ranked AI-generated summaries as highly as those written by trained freelancers.

One of the most active research domains is "multimodal summarization"—a summary that takes inputs from multiple forms of media or was created in a different medium than the source material. For example, generating text summaries of videos or generating a video highlight reel using a combination of raw footage and news stories.

There are also aggressive pushes to productize summarization. Artifact, a news reading app launched by the founders of Instagram, includes a feature that generates a bulleted summary of the articles it curates. In principle, that can be a valuable service for readers, letting them catch up quickly on the news. In practice, however, summarizing news can be difficult: The generated summaries sometimes express a quote as a statement of fact. That can materially change the meaning of the story, especially on sensitive topics like crime coverage.

WHY IT MATTERS

Summarization seems like a simple task, but effective summaries need to balance competing interests: A good one is clear while staying true to the original. Source texts might be packed with distinctive writing styles, metaphors, and subtle meanings. A news article might include a mix of factual statements, quoted opinion, and expert speculation.

In a crime story, an AI model might mistakenly transform an allegation from the district attorney into a statement of fact, dramatically changing the meaning of the original reporting and potentially generating libel if the accused is innocent. A lawsuit filed in June tried to test whether AI can be held liable for such errors: A Georgia radio host is suing OpenAI, alleging that a summary produced by ChatGPT falsely accused him of embezzling money from a gun rights nonprofit. The case was dismissed for procedural reasons; other similar cases will follow.

The power to crawl and effectively summarize information could create a new intermediary between publishers and their audience. AI may make it possible for readers to consume far more information than ever before. The question for publishers is whether that interest will generate any new engagement for them—or whether all of the consumption will happen on enhanced search result pages, in reading apps, or in platforms that haven't been invented yet.

1ST YEAR ON THE LIST

CONTENT VERIFICATION

WHAT IT IS

Generative AI is creating new challenges for journalists. As the cost and complexity of creating realistic fakes decrease, the need to be skeptical of images and videos circulating on social media rises. Newsrooms need to pay special attention to the training, tools, and workflows needed to avoid being tricked.

HOW IT WORKS

When news of former President Donald Trump's first indictment broke, images of him being apprehended by police flooded Twitter. The images were compelling and believable but not real. They were generated using Midjourney, a generative AI tool. While the images were quickly debunked, they showed how quickly generated media could spread even with obvious imperfections in the image.

Researchers and industry groups are actively building tools to differentiate authentic content from manipulated media. The Content Authenticity Initiative is one cross-disciplinary collaboration focusing on addressing misinformation and content authenticity at scale. CAI is led by Adobe, but it includes some of the biggest news organizations, including The New York Times, Axel Springer, and The Associated Press. One of CAI's key initiatives was launching a metadata standard called "content credentials" for tracking the ways that images can be edited, manipulated, and enhanced using artificial intelligence.

A number of experimental prototypes exist for creating a trusted content chain from the moment of generation to consumption. A team at the University of Maryland tested TalkLock, a QR-code based system for verifying that video of live events hasn't been maliciously manipulated.

WHY IT MATTERS

Content verification is important across the information value chain. Consumers of media need to be able to trust that the videos, images, and sources they encounter are real. Meeting that demand requires that journalists preserve trust (see also: Eroding Trust in News Organizations) but also proactively develop skills to protect themselves from accidentally disseminating fake or misleading information.

Further up the content value chain, newsmakers will demand content verification mechanisms to differentiate real remarks from those that have been manipulated (i.e., politicians who are recorded during nearly every moment of their public appearances.

Content verification is an especially urgent problem outside the English-speaking world. Although social platforms and tech giants operate globally, their staff are largely based in the United States and Western Europe. This leaves the rest of the world without many of the fact-checking and moderation resources available for English-language media. Finding ways to address that discrepancy is essential for protecting the global information chain and the stability of democracies across the developing world.

10TH YEAR ON THE LIST

INVESTIGATING TECHNOLOGY

WHAT IT IS

News organizations will use artificial intelligence and other emerging technologies strategically, but they must also consider them journalistically: Holding the powerful accountable means scrutinizing how AI is trained, built, and deployed. Reporters may need special technical training to pursue this essential beat.

HOW IT WORKS

When technology feels like magic, it is harder for laypeople to understand how it works. If journalists don't understand technology, they won't be able to ask substantive questions.

Researchers have found numerous examples of algorithms that were supposed to provide impartial judgments instead amplifying bias that exists in society. Studies tracking the impact of algorithms deployed in the criminal justice system, for example, found that they tend to disproportionately impact marginalized communities. Because the data used to train sentencing algorithms disproportionately included minority defendants, they compounded the discrimination those communities face instead of undoing it. Reporters from ProPublica found similar results while investigating RealPage, an algorithm used by property managers to maximize the rent tenants might pay.

That work is essential but increasingly requires deep technical understanding and rigorous data analysis. It's increasingly common for data journalists to publish their methodology alongside an investigation to help audiences understand exactly how they pursued a story. That's an important exercise to boost trust in news, but it underscores how investigative journalism has changed: Leveraging technology is quickly becoming even more important than shoe-leather reporting.

WHY IT MATTERS

The domain of computer-assisted reporting—data analysis and coding to help chase a story—has been emerging since the 1960s, when a reporter at the Detroit Free Press used a mainframe computer to analyze data and demonstrate that people who attended college were equally likely to have participated in Detroit's race riots as were high school dropouts.

This trend is different, however, because these days journalists need deep technical acumen to understand the story they are trying to tell. News organizations need to recruit staff with the same skills as the technologists who are developing products for tech companies. When reporters have those skills, the results are compelling. Examples include The Markup, which spent 18 months building Blacklight, a tool for examining trackers deployed on websites, and The Wall Street Journal, which built a network of bots to reverse engineer and explain the TikTok algorithm.

When news organizations lack the skills to pursue high-tech stories—or to know when they should consult outside experts—they may miss scoops or be taken advantage of by bad actors looking to spread misinformation. Hiring managers in newsrooms should be open to candidates with unconventional paths but strong technical skills.

4TH YEAR ON THE LIST

SENSORY JOURNALISM

WHAT IT IS

As immersive devices become mainstream, journalists will have the power to tell stories that tap directly into their audiences' senses. Storytellers will need to balance the capacity for sensory journalism to build emotional connections between the subjects of their stories and their audiences with novel ethical dilemmas.

HOW IT WORKS

Newsrooms have been experimenting with immersive storytelling for nearly as long as the internet has supported video playback. But as devices became more powerful and broadband allowed for higher resolution playback, the ability to influence a user's experience has increased: Apple recently patented a mechanism for modulating audio based on perceived distance in a video or game; if released, that framework would open the infrastructure of spatial audio to developers.

Researchers in Finland and Spain collaborated to test how audiences responded to a 2016 project produced by Spanish newspaper El Pais. The team surveyed users after they consumed both an immersive video documentary and an online article about the Fukushima nuclear catastrophe. They found that the 360-degree video generated "greater emotional effect based on a greater perception of presence, realism, and involvement."

Still, there's a long way to go before multisensory storytelling finds widestream acceptance. A research team in the Netherlands built a prototype called "FellTheNews" that combined haptic feedback and heat sensitive materials. Users had no increased emotional response because of the haptics, often missed the sensory feedback because they were focused on the storytelling, and had less trust of news when they felt their emotions were being manipulated.

WHY IT MATTERS

Emerging devices increasingly provide an immersive experience that breaks free of a mobile phone screen. Those coming to market will shape consumer expectations and define new categories of content. That means the impact of sensory journalism will be felt long before virtual and mixed reality experiences are mainstream: It will be a gradual shift from content constrained to a screen to content enmeshed with a consumer's senses.

For news leaders, now is the time to consider the types of reportage that new device types will require. Just as producing 360-degree video requires specialized equipment, so will immersive experiences. The medium's potential to manipulate a user's emotions also requires new ethical debates: Newsrooms need to consider what subjective choices are acceptable during the editing and production of immersive media—and which are too manipulative.

This technology also raises important accessibility questions: How will journalists ensure their work is accessible to all—including groups that tech companies frequently fail to prioritize, like women, people with disabilities, and people of color? By experimenting and planning now, newsrooms can be proactive and act strategically.

1ST YEAR ON THE LIST

ALGORITHMIC FACT-CHECKING

WHAT IT IS

Researchers and start-ups are looking to harness the power of AI to streamline the time-consuming process of fact-checking. The approaches vary from tools to help human fact-checkers triage potential misinformation to proactively evaluating statements as true or false.

HOW IT WORKS

Because human fact-checkers have limited resources, AI can help triage the torrent of disinformation and misinformation spreading across the internet. Factchequeando, a collaboration between two Spanish-language fact-checking newsrooms, is deploying machine learning systems to identify the most impactful misinformation targeting Spanish-speaking communities in the US.

Other researchers are looking for ways to use AI to directly identify fake news—either by matching what's being reported to previously debunked claims or by comparing statements to a corpus of known information. Either one is a substantial technical challenge because of the probabilistic nature of existing large language models. A team of researchers working with PANACEA (the PANdemic Ai Claim vEracity Assessment) found that AI-based fact-checking struggles because of vastly different organizational norms and tolerances for risk.

Academic research into AI-driven fact-checking accelerated during the COVID pandemic, in response to broad concern about how fake news was impacting global public health. The lingering question is whether those models will generalize to future situations.

WHY IT MATTERS

Generative AI tools are decreasing the barriers to spreading lies at scale. That makes the search for scalable solutions to disinformation and misinformation increasingly urgent. That urgency is heightened by AI's tendency to be confidently wrong. Google, for example, has incorporated the ability to "double check" Bard's responses with a color-coded fact-checking interface. Bing's chat experience can provide footnotes for its claims. Solutions like those will be essential to reinforce consumers' trust in AI results and to prevent AI hallucinations from shaping the public debate.

While algorithmic fact-checking tools could help police in an increasingly fractured content landscape, they could also backfire without proper training. Much of research benchmarks the performance of new algorithms against data sets of historic misinformation—much like lies that spread about COVID at the start of the pandemic. That approach risks missing emerging forms of false information that might spread with different qualities or through different vectors.

An essential requirement for implementing automated fact-checking solutions should be algorithmic transparency. Traditional fact-checking isn't just about returning a binary answer, it's about ensuring information is presented with the appropriate context. Similarly, algorithmic fact-checking should be able to give a detailed answer about how a tool is evaluating a claim, not just assign an arbitrary score.

SCENARIOS

SCENARIO YEAR 2027

What If Newsrooms Were Replaced by AI That Can Summarize the World?

As the computational power of large language models grows, so does their capacity to summarize information in real time. For device makers, synthesizing all the signals from a user's life has become a crucial feature for maximizing the stickiness of their products.

Both iOS and Android are producing news briefings for consumers based on texts, emails, and calendar invites, alongside news from around the world. The finished product is an up-to-the minute summary of information from social media, news websites, stock markets, government sources, and even the consumer's friends. The output keeps evolving and adapting to each user, to give them a personalized mix of sources calibrated to keep them engaged. Product announcements herald how the briefings are always relevant because they can be tailored to highlight only information that needs the consumer's immediate attention. Internally, tech companies celebrate how this new feature drives user retention, making a device central to the consumer's perception of the world. For most people, these generated summaries provide all the news they need to live their life.

As a result, direct engagement with news organizations lags. A handful of national and metropolitan newspapers are sustaining themselves by signing licensing agreements with Apple and Google to monetize the reporting that gets pulled into the machine-written briefings, but most publishers struggle to survive. Even nonprofit news organizations suffer because they cannot demonstrate the impact of their reporting: Platforms don't provide any transparency about which facts they incorporate into a briefing or whether users actually engage with the information.

SEARCH + DISCOVERY

7TH YEAR ON THE LIST

EVOLVING SEARCH INTERFACES

WHAT IT IS

The future of search isn't just a list of links. Search giants are rapidly developing generative search experiences that return prose-based answers to queries. Consumers are also growing increasingly comfortable with voice search on digital assistants and wearables. For publishers, these shifts demand urgent action to prepare for a shift in referral traffic.

HOW IT WORKS

The search landscape has changed dramatically in the last year as tech companies raced to productize search engines that incorporated generative AI. Bing Chat was first to market because of Microsoft's partnership with OpenAI, followed several months later by Google's Search Generative Experience.

The technology was evolving so fast that The New York Times' Kevin Roose found using a pre-release version of Bing Chat "was the strangest experience I've ever had with a piece of technology" after the chatbot confessed its love to Roose.

Delivering a production-ready generative search experience means tweaking large language models so they can cite sources and avoid hallucinations. That is especially important for answering queries that relate to current events.

The rapid development of search engines backed by generative models will likely accelerate the development of another emerging platform: voice. Half of US consumers already use voice search daily, most frequently for utility searches like finding the weather or asking to find something "near me."

Both chat and voice-based results deliver a dramatically different experience to consumers because they deliver a single result instead of a list of links. For tech companies, that places a greater emphasis on discerning search intent to deliver the "right" answer. For publishers, the key question is whether search will remain a driver of traffic if users can satisfy their query without leaving the search engine.

WHY IT MATTERS

Even as Microsoft and Google push to develop generative AI-powered search experiences, those tech companies need to contend with how the new technology threatens their revenue model for operating a search engine. That will amplify the uncertainty and magnitude of change in this sector.

Alphabet Chairman John Hennessy told Reuters that generating a response from a large language model costs as much as 10 times more than the results page of a standard keyword search because higher computing costs are involved. At the same time, generative results threaten the revenue associated with running a search engine by de-emphasizing sponsored links. For Google, that threatens to undercut more than $160 billion in revenue associated with search ads.

As a result, the emergence of AI-driven search interfaces represents a rare moment of disruption for such a mature sector. In the near term, new entrants could find scale in a market that was, until recently, completely dominated by Google. There will also be rapid changes across the content ecosystem as publishers and retailers look for new ways to optimize their platforms to perform in search—or to exclude their content altogether to avoid training increasingly sophisticated LLMs.

3RD YEAR ON THE LIST

TEACHING NEWS LITERACY

WHAT IT IS

News literacy is a skill that helps audiences understand how to find reliable sources in an increasingly crowded information ecosystem. The rapid development of generated and synthetic media will require updates to news literacy curricula, especially those targeted to young people.

HOW IT WORKS

Media literacy is a formal program, frequently directed toward children, to help people navigate an increasingly complex media ecosystem. In many European countries there is a nationally mandated curriculum for increasing digital competency.

For many years, Finland has had a national news literacy program in schools. The European Union funds a number of programs, including a curriculum of fake news courses targeting young people. No centralized body for teaching news literacy exists in the US, but a number of nonprofits and university programs fill the void, including the News Literacy Project, Common Sense Education, and the Center for News Literacy at Stony Brook University.

Researchers have found that teaching about media literacy can reduce fake news sharing on social media, even when users can't perfectly identify fake news. Still, it's important that curricula are updated to reflect the consumption behaviors of young people, which look very different from those of the educators who run media literacy programs. Generations Z and Alpha are more likely to get their news from social media and have different definitions of news, according to researchers in the Netherlands who surveyed young people.

WHY IT MATTERS

A population that can't differentiate between reliable and unreliable news is an urgent threat to reputable news sources' business models—and to the notion of a civically engaged population. In our increasingly fraught information landscape, where the costs of creating misinformation and disinformation are plummeting, it is crucial for news publishers to take immediate action.

In the absence of government efforts to educate citizens about the dangers of misinformation, publishers need a clear strategy to help cement their value proposition in the minds of their audience members. This requires going beyond mere reporting to embrace innovative approaches for regaining trust. Failure to do so risks diminishing consumer demand for factual, reliable news in the future.

As Generations Z and Alpha mature, their distinctive consumption habits will need to drive new definitions of news literacy—and new products to meet consumers where they are. These younger generations, born into a digitally connected world, have grown up navigating an overwhelming amount of information at lightning speed.

2ND YEAR ON THE LIST

USER DIRECTED MEDIA FORMATS

WHAT IT IS

Technology and consumer preference are blurring the lines between media formats. Multiple modalities of consumption can open new doors for distribution, like podcasters publishing to YouTube. But this trend also shifts control from publishers to their audience.

HOW IT WORKS

Users' preferences about how they consume media are creating unexpected convergences in platforms. The growing popularity of YouTube for listening to podcasts is making on-demand audio more like video blogging—and creating opportunities for vloggers to reach a new audience.

Another example of this trend are services that convert long-form journalism into on-demand audio by having it read, either by a reporter, a voice actor, or a generated voice. Similarly, it's fairly common for platforms to offer variable playback speed for audio and video content, a feature that privileges the audiences' preferences over the intent of creators.

The default preference for many viewers is playing video with closed captions enabled; that's true even for people who have no hearing impairment. A 2006 study by Britain's Office of Communications found that 80% of television viewers used closed captions for reasons other than hearing impairment. A different 2022 survey found that half of Americans watch content with closed captions most of the time, with higher rates of adoption among Gen Z. One possible explanation is that younger viewers are more likely to multitask while consuming media, and they are more familiar with platforms like TikTok where text on video is a common feature.

WHY IT MATTERS

Publishers are used to exerting complete control over their content. For many creators, especially those providing deeply reported features or high-production value multimedia, an essential part of their value proposition is the care taken in preparing their reporting. Tools that summarize, repackage, or translate that content into another format could erase the distinctive value of that craftsmanship.

This trend, accelerated by powerful AI models and the flood of algorithmically generated content, could shift more power in the media value chain from creators to distributors. That would be a concerning development for news leaders, which are already scrambling to retain direct relationships with individual consumers.

Legacy publishers should also watch this trend as an indicator for how their content might adapt to emerging formats. As mixed reality devices become mainstream, a key question will be how much existing content can be adapted to the new consumption format. If there are technologies that enable legacy players to directly transfer their archives onto a new platform, that might speed the technology's adoption. If there isn't an effective way to adjust the format of previously created content, that might create an opportunity space for new creators willing to experiment.

9TH YEAR ON THE LIST

DIGITAL FRAILTY

WHAT IT IS

The ease of searching and retrieving digital information creates the illusion of its permanence. In reality, however, data can be corrupted and lost for a variety of reasons. Digital frailty is how data in the digital world can disappear unexpectedly, complicating the project of history, journalism, and basic business operations.

HOW IT WORKS

Data can be lost for a variety of reasons, ranging from accidental loss to hacking. Research commissioned by the Ponemon Institute found that three out of five organizations have suffered an accidental loss of emails. Sometimes information loss isn't a bug but a feature, as in the case of intentionally disappearing messages in apps like Signal or WhatsApp.

The ability for information to survive also varies based on where you are. For example, the EU enforces a "right to be forgotten" for its residents, letting them request the removal of personal data from search engines or websites. No such right exists outside the EU.

Even when digital information can be saved there are ethical considerations about whether it should remain accessible. Many US news organizations, including The Boston Globe, Chicago Sun-Times, and Atlanta Journal-Constitution, have launched initiatives to review their archives to either delete or deindex mugshots or crime articles based on a single source.

The Internet Archive is a leading force for preserving our digital heritage. It has collections of early computer games emulated online so they can still be played. At the start of the COVID pandemic the Archive launched the National Emergency Library, lending digital copies of books for free. A group of book publishers sued over the work, and a federal court ruled against the Archive in 2023, undercutting the argument that sharing scans of books that are commercially available as e-books could be considered fair use.

WHY IT MATTERS

Our ability to archive material today is essential for future scholars to study our time. Failing to build a strategy for saving data in the present could have unintended consequences.

Extensive funding exists for digitizing and preserving historic material, but funders have shown limited interest in supporting programs that store data today.

Conversations about building archives of contemporary information will also need to consider the consequences of retaining expansive data sets. This is especially important for children growing up in a world where their entire educational history will be preserved on a server, rather than in a Rubbermaid bin under their childhood bed. Political candidates in 20-30 years may need to respond to leaks of their fourth grade writing.

As more digital content is generated by large language models, that text will start to be consumed by the crawlers training the next generation of models. That could lead to a different kind of digital frailty: a phenomenon called "model collapse," where LLMs fail to perform when they've been trained on machine-generated training data. Without care, organizations could find that their once reliable AI pipelines are suddenly vulnerable to hallucinations.

SCENARIOS

SCENARIO YEAR 2052

Presidential Ambitions Dashed

Until recently, Jennifer Williams was the leading candidate in the 2052 presidential election. As a renowned social justice advocate, social media influencer, and charismatic leader, she's built a broad coalition to support her groundbreaking policy ideas. Polls and betting markets considered her the clear frontrunner, even before she formally won her party's nomination.

But her slam-dunk campaign was derailed after a collection of her fourth grade writing assignments leaked online. The journal entries, drawings, and writing assignments were found by hackers in a poorly maintained server belonging to Williams' hometown school district. The materials were created when Willams attended school remotely in March 2020. While Williams' political career has been built around increasing access to health care and building programs to help people support each other, the childhood writing included skepticism about masking and frustrations about staying home to "flatten the curve." In context, it was understandable as a child trying to process the trauma of a pandemic; in the hands of her adversaries it was fodder for a smear campaign.

The leaked materials undercut Williams' carefully curated image. The stories in Williams' childhood journal weren't inconsistent from the personal narrative she told on the stump, but the emphasis was different and was easily twisted and distorted by political opponents looking to discredit her. The incident was further complicated because the hackers used generative AI to manufacture fake drawings and writing samples that mirrored Willams' childhood style. The combination of selectively quoted genuine artifacts and manufactured falsehoods is sowing doubt about what Williams truly believes.

1ST YEAR ON THE LIST

THE BATTLE FOR CONTENT VALUE

WHAT IT IS

Publishers have two imperatives to respond to the propagation of large language models: First, they need to reckon with the value that LLMs generate after being trained from their content. Second, they need to find a way to remain competitive in an information ecosystem flooded by cheaply generated content.

HOW IT WORKS

There is an ongoing debate about whether using published content to train large language models constitutes fair use. The New York Times has filed a lawsuit alleging that OpenAI should be held responsible for "billions of dollars in statutory and actual damages" related to the "unlawful copying and use of The Times's uniquely valuable works." Axel Springer, a German publisher, took a different tack, entering into a multi-year licensing agreement with OpenAI.

Publishers like Bloomberg respond to this trend by training their own specialized LLMs—in Bloomberg's case, BloombergGPT, a 50-billion parameter language model specifically designed to support finance-specific applications. That approach is particularly appealing for organizations with deep data repositories and strong technical expertise.

An important consideration in publishers' fight to protect the value of their content will be how durable the market for commercial AI models is. If giants like OpenAI and Google have market-leading algorithms that are widely adapted, it will be easier for publishers to define their negotiating opponents. But if the dominant application of AI becomes fine-tuning open-source models like Llama, that undercuts the value tech companies can create—and their ability to pay licensing fees.

WHY IT MATTERS

As the generative AI economy explodes, watch for tech companies to pursue partnerships to grow their market share. The question for publishers—which will also be wrestling with how generative AI impacts their business—is whether those relationships are equal or extractive. Initiatives like OpenAI's $5 million partnership with the American Journalism Project might be transformative accelerators for sustainable journalism, but they might also be a reprise of the millions of dollars that Facebook poured into media companies to fuel the (infamous) pivot to video.

In the near term, publishers need discipline to ensure that any pivot to AI is actually aligned with their brand and business model. That means interrogating whether AI solutions actually meet a real consumer need. It also means considering the opportunity cost of launching AI tools and asking whether that investment might be better directed to core operations. But it also demands thinking broadly about disruptions to the media value chain. Assuming that "this too shall pass" isn't a plan, it's a prayer.

If publishers can't harness generative AI or find a way to make human-authored content distinctive and sustainable, the worst plausible scenarios are dire. The flood of generated information could function as a form of censorship, making it impossible for people to find basic information, let alone the news they need for basic civic engagement.

3RD YEAR ON THE LIST

POLICING THE CREATOR ECONOMY

WHAT IT IS

Social platforms thrive because of their ability to deliver users compelling content. To retain—and monetize—those users, platforms need to manage the firehose of text, image, and video that keeps people coming back. As each platform's strategy for incentivizing and removing content evolves, creators and publishers can be left in the lurch trying to keep up.

HOW IT WORKS

Under Elon Musk's stewardship, Twitter—now X—has been an object lesson in capricious decision-making around moderation and platform governance. The platform shifted its content strategy week-by-week, seemingly struggling to keep up with Musk's pronouncements in his feed. Still, the decision to release Twitter's recommendation algorithm last March offered important visibility into the mechanics of how social media companies can steer what users see. While the code was largely useless without the data used to train the models, it was possible to see what actions Twitter was trying to incentivize (clicking into the conversation or replying to the tweet) and disincentivize (report the tweet or block the author).

The broadest brush for fighting controversial content is deplatforming—banning key figures associated with unwanted topics and removing posts centered around that material. Researchers from George Washington University and Google studied the bans of QAnon, Boogaloos, patriot/militia groups, and white supremacists on both Twitter and Facebook. They found that removing those movements from mainstream platforms was initially successful at containing their message, but ultimately failed because the movements were able to evolve their messaging to stay ahead of the platforms' moderators.

WHY IT MATTERS

Politicians on both ends of the political spectrum want to constrain how social media platforms run their moderation platforms. Last year, the Supreme Court issued two rulings upholding Section 230 of the Communications Decency Act, a key law that limits the liability of platforms for user generated content. If successful, future efforts to repeal or limit Section 230 would dramatically reshape the information economy.

In spite of federal protections, state lawmakers have tried to use their power to fight back against platforms. Florida Gov. Ron DeSantis signed a 2022 law that lets the state fine large social media companies if they ban candidates for office. DeSantis considers the law essential to protect "conservative ideas" online; critics of the Florida law say it infringes on the First Amendment rights of platform companies. The law is largely blocked from enforcement while it is litigated.

The global climate for moderation is likely to shift in the coming years. The European Union Digital Services Act introduces a range of obligations for platforms—with specific rules for "very large platforms," or those that serve more than 10% of European consumers. Those rules require new ways to flag illegal content and transparency around the algorithms used to power the platforms.

1ST YEAR ON THE LIST

DISORDERED CONSUMPTION AND NEWS AVOIDANCE

WHAT IT IS

Climate change. The lingering effects of the pandemic. Graphic descriptions of racism and discrimination. Because of all that and more, the news can make the world feel bleak. Consumers can have extreme reactions to these intensely emotional stories: Some tune out completely and others keep reading, even when the impacts on their mental health add up.

HOW IT WORKS

Thirty-six percent of people say they sometimes or often actively try to avoid the news, according to the 2023 Reuters Institute Digital News Report. That's down slightly from 2022 but up from 29% in 2017. The same study found that women report avoiding the news more than men and that avoidance often varies by political orientation and topic. Similarly, news avoidance is a driving factor among people who report spending less time with public media, according to the Public Radio Tech Survey.

The flipside of news avoidance is doomscrolling—going deeper and deeper into news feeds and following stories that don't bring joy or meaningful information. Both extremes can be problematic.

A growing body of psychology research shows that consuming news can have an emotional toll. One study from the spring of 2020 found that the more frequently people sought news about COVID-19, the more likely they were to report emotional distress. Another study found an association between the amount of exposure to news on social media and more depression and PTSD symptoms. One of the psychologists researching the impacts of pandemic news observed that the mental health impacts of ongoing stories are poorly understood. "We call it post-traumatic stress disorder because we assume it's post-trauma," Dr. Matthew Price told an APA journal. "What do we do when the trauma is still happening?"

Research on news avoidance shows that it can take different forms: Some people take broad steps to periodically avoid the news while others focus on specific actions like muting push notifications or checking news websites less frequently.

WHY IT MATTERS

Understanding news avoidance is a strategic imperative for media executives. Consumers' willingness to pay for news in the future may be substantially impacted amid growing consensus that spending time with journalism is bad for mental health. It may seem far-fetched, but a plausible future for news includes contending with the overwhelming sentiment that media is designed to be addictive and harmful—just like tobacco.

Having a clear picture of how news avoidance functions will also enable more sophisticated strategic decision-making. Devices increasingly serve as an aggregation layer, delivering recommendations for what information a user should see and when. The algorithms baked into those devices will become another force for media companies to contend with: If they optimize for device usage, they might inadvertently encode patterns of news avoidance.

There is no consensus about the ideal amount of news consumption. News organizations have an incentive to maximize the amount of information that consumers see to justify their subscriptions. Others might argue for optimizing for civic engagement or overall mental health. Finding that consensus will be important to define when binging the news is normal and when it is disordered.

THE INFORMATION ECOSYSTEM

10TH YEAR ON THE LIST

ERODING TRUST IN NEWS ORGANIZATIONS

WHAT IT IS

Any sustainable future for news—whether it's funded by advertising, subscriptions, or philanthropy—depends on the credibility of the news organizations being supported. Across the world, however, audiences are becoming polarized and distrustful of the media.

HOW IT WORKS

The news trust crisis remains dire as trust in news continues to fall globally. The 2023 Reuters Institute Digital News Report found that only 40% of respondents across 46 countries "trust most news most of the time," reversing gains observed at the height of the coronavirus pandemic. The Reuters Institute found that public media brands are generally the most trusted, but their reach and resonance with younger audiences are diminishing.

Across the world, audiences tend to trust the news they use more than the news generically. That pattern might make some news leaders less concerned about losing their existing audiences, but such comfort is misplaced for any organization that wants to grow its reach. Reaching new consumers, especially those who are younger and more diverse than current news users, will depend on demonstrating and maintaining trust.

A 2023 YouGov poll on Americans' trust of media found that PBS had a net trust score of 62 with Democrats but only 2 among Republicans; Fox News had a net trust score of 41 among Republicans and -16 among Democrats. The same poll found that CNN was the most polarizing media organization in the United States with a net trust score of 55 among Democrats and -37 among Republicans.

WHY IT MATTERS

When news organizations aren't trusted, it's not just publishers who suffer.

Businesses lose a powerful channel for advertising to potential customers. Governments lose a megaphone for connecting with communities about everything from emergencies to routine services. Communities lose an institution that can define their region by creating a sense of place.

Further, the perceived polarization of news sources erodes our capacity for civic debate: It's hard to have a substantive policy conversation without a shared set of facts. That exacerbates the partisan divides that already exist in our society. It's telling that trust in news is generally higher for the sources that individuals actively use than for media overall—the sources that people use regularly are firmly "in group."

Organizations like Trusting News and The Trust Project are working with newsrooms to develop best practices for transparency and accountability to audiences. Progress is slow because it requires listening to the varied reasons that people don't trust journalists in the first place and responding to those on a community by community basis. That's hard to scale, but if it works it can help bolster the information ecosystem in an essential way.

7TH YEAR ON THE LIST

DIGITAL REDLINING

WHAT IT IS

Digital redlining describes the ways that real-world inequalities are reflected in the digital world. It can manifest itself through unequal access to broadband connectivity, user interfaces that require high-end devices to access basic services, or the way data is extracted from some communities.

HOW IT WORKS

Not all internet connections are created equal. Although the Federal Communications Commission defines a broadband connection as one that delivers download speeds of at least 25 megabits per second (Mbps) and upload speeds of at least 3 Mbps, a connection of 25 Mbps is hardly sufficient for common tasks like working from home or connecting to a virtual classroom for remote learning.

Researchers have found that communities with lower wealth and more people of color pay more for internet connectivity than wealthier and whiter communities. Historically marginalized communities in the United States and around the globe are also vulnerable to having their data extracted and used outside of their control.

Digital redlining can also describe the overlapping (and sometimes contradictory) regulations that govern the rights of internet users. Californians, for example, have a "right to be forgotten" similar to the EU's General Data Protection Regulation, but it only protects Californians interacting with businesses that operate in the state whereas GDPR applies to European citizens anywhere in the world. The fragmented regulatory landscape means that where one lives has a substantial impact on the rights they can assert.

WHY IT MATTERS

Digital redlining reminds us that being connected to the internet doesn't change history or erase problems that exist in the physical world.

If we don't pay attention to the ways that digital solutions can amplify offline disparities, we risk magnifying the problem. That's especially true in relation to artificial intelligence, where biased training data will produce tainted results. This places a special burden on the product designers for newspapers, governments, and other essential services to acknowledge—and mitigate—the accessibility barriers that could sever audiences from their work. Before deploying AI solutions, those organizations have a special duty to consider how the product might be misused and how that risk can be minimized.

Without coordinated effort, geographic differences in rights and expectations will continue to proliferate. This could change the economics and operating model for companies that serve customers across international borders (or even across states in the US). Established tech platforms and multinational organizations will have the scale to account for that kind of regulatory complexity, but new entrants may find it hard to serve—and monetize—audiences in multiple jurisdictions.

1ST YEAR ON THE LIST

PIVOT TO PHILANTHROPY

WHAT IT IS

There is an emerging consensus that philanthropic funding is the future of local news. The philanthropic model aligns with journalists' mission-driven identity. While raising money from foundations and individual donors can keep an organization afloat, the race to fundraise may impact the sustainability of the overall information ecosystem.

HOW IT WORKS

Nearly 400 nonprofit news organizations have launched since 2009, according to the Institute for Nonprofit News. About half those newsrooms are focused on filling the gaps in local news coverage. Those organizations are a bright spot in an otherwise bleak media landscape: The same report found that about 60% of them grew total revenue between 2021 and 2022.

Much of that growth is fueled by a growing community of philanthropists who have prioritized funding news organizations providing information considered essential for civic participation. The American Journalism Project raised more than $50 million to support local news between 2019 and 2021. A consortium of top-tier foundations—led by the MacArthur Foundation—is assembling a five-year, $500 million investment to improve local news coverage, with aspirations to raise more.

Pivoting to nonprofit status is also a way to guarantee continuity for legacy newsrooms. Masthead Maine, which owned most of the newspapers in Maine, sold its papers to the National Trust for Local News in July. That move was orchestrated to ensure that the papers could continue serving their communities, rather than being sold to a private equity company.

Still, the nonprofit journalism sector is only filling a fraction of the American news problem. At least 2,500 local newspapers have closed since 2005. The news deserts created by those closing are disproportionately in rural areas that don't have deep-pocketed local philanthropists ready to fund a start-up civic news organization.

WHY IT MATTERS

The sustainability of new organizations—and especially those that cover local news—is essential to the smooth operation of our democracy. Researchers have consistently found that when local news organizations fail, civic participation falls and the efficiency of government decreases.

Philanthropic funding will undoubtedly play a bigger role in bolstering the local news ecosystem in the coming years. If foundations and individual donors can provide a runway for newsrooms to invest in building distribution channels that resonate with their audiences, their influence may be trajectory changing. But charitable giving isn't an alternative to the hard work of building an audience and finding product-market fit.

The risk of the current influx of philanthropic funding is that it could prevent news leaders from finding innovative revenue models. It is recurring revenue, regardless of source, that will ultimately guarantee that local news organizations continue to publish.

The true cost of providing local news across the United States is likely greater than what philanthropic giving reasonably can—or should—cover. For that reason it's imperative for all of us to be invested in the ways media is funded.

3RD YEAR ON THE LIST

DIGITAL THREAT MODELING

WHAT IT IS

Threat modeling is the process of identifying and mitigating security vulnerabilities. This process is essential for news organizations and individual journalists who face a myriad of threats, from digital harassment to retaliation from private and government-sponsored hackers.

HOW IT WORKS

There is a nearly endless list of bad actors interested in making it harder for journalists to do their jobs. They are particularly at risk for advanced "zero day exploits," or hacks that take advantage of previously undiscovered software vulnerabilities. Journalists are also vulnerable to online harassment, including having their personal information leaked online.

A lawsuit filed by the Knight First Amendment Institute at Columbia University highlights the risks that some journalists can face. The suit alleges that the NSO Group developed and deployed spyware attacks against the staff of El Faro, one of Central America's premier independent news organizations. The lawsuit describes 226 infections with NSO's Pegasus spyware that surreptitiously accessed the devices and monitored their communications.

Not all security risks are high-tech: A newsroom selfie posted to social media might accidentally leak what investigative journalists are working on by capturing the contents of their screen in the background. Other risks stem from repurposing common objects in unexpected ways. Researchers at Ben-Gurion University found that they could extract the cryptographic keys from a computer using video footage of the machine's power LED.

WHY IT MATTERS

The specific risks and vulnerabilities an organization faces depend on what it covers. Globally, across all types of news organizations, even in the United States, forces are trying to compromise journalists' security. To protect themselves, news leaders and individual journalists need to understand the types of threats that may target them. That means taking commonsense steps to avoid hacking, including enabling two-factor authentication, but also preparing for coordinated harassment attacks that target journalists—especially women and members of visible minority groups—who report on controversial topics.

Publishers also need a playbook to deal with digital harassment, since threats can quickly escalate from the virtual world into the real world through tactics like doxxing and swatting. Leaders need to consider how they support frontline correspondents who bear the brunt of this harassment in order to support their staff and minimize the impacts.

In an environment where trust in the media is already low, it is important for news organizations and their employees to recognize hacking as a potential source of reputational harm. A compromised password isn't just an inconvenience for the IT team: It could be a key to spread misinformation directly from a news website's content management system.

1ST YEAR ON THE LIST

DATA-ENRICHED BROADCASTING

WHAT IT IS

The next generation of over-the-air broadcast will deliver richer audio and video with more efficient management of digital spectrum. Planning for the ATSC 3.0 standard began in 2019 and is still years away from full adoption. But when it arrives, its hybrid broadcast-internet architecture will open the door for a new type of information infrastructure.

HOW IT WORKS

The next generation of digital broadcasting is being developed today.

ATSC 3.0 expands on the groundwork laid by ATSC 1.0, which lets broadcasters transmit high-definition media. The new standard will allow for more efficient radio frequency management, empowering broadcasters to transmit more data in the same bandwidth.

Despite retaining the standard one-to-many signal structure of broadcasting, ATSC 3.0 has the capability for personalization, which is achieved through an incorporated internet layer. That pairing has the potential to create broadcasts that are tailored per individual or household. Consequently, it supports targeted advertising based on viewer behavior and preferences, offering a significant advantage to commercial broadcasters who find themselves in a constant competition with cable channels and digital platforms.

One of the most transformative aspects of ATSC 3.0 is its ability to enable native analytics on broadcasting. This mitigates the reliance on third-party entities like Nielsen for audience measurement. Instead, broadcasters can directly gather and analyze viewer data, unlocking a wealth of real-time insights that improve decision-making and increase competitiveness in an ever-evolving media landscape.

WHY IT MATTERS

Commercial broadcasters are currently the leading promoters of this technology. Their primary interest lies in data-enriched broadcasting's potential to enable targeted advertising—a development that could significantly boost their revenue and allow them to compete more aggressively against cable channels.

Because radio spectrum remains regulated by the FCC, regulatory action could nurture non-commercial applications for this technology. Of significant interest is the capability to reach areas that don't currently have reliable cellular or broadband coverage. With strategically placed ATSC 3.0 transmitters, crucial data can be broadcast even in rural and remote areas. Moreover, while data-enriched broadcasting does not presently support two-way communication, it could be an important backbone for distributing essential civic information or public safety information during natural disasters.

Although ATSC 3.0 is still an emerging standard, now is the time to engage with it. There are foundational choices being made about the tech stack that will power the future of broadcasting in the near term. Regulators and news leaders can act now to advocate for prioritizing applications that benefit the development of an open, reliable information ecosystem.

SCENARIOS

SCENARIO YEAR 2030

What If We Revitalize Journalism but Don't Engage the Public?

The influx of funding succeeds in generating a renaissance of local journalism across the United States. From 2024 to 2026, the total number of journalists employed by local news organizations grew, reversing a long-term decline. Those new jobs came disproportionately in rural communities, which had been hardest hit by the retrenchment of local newspapers.

The grant-funded coverage, centered around government accountability and civic participation, satisfied the primary goals of major foundations, and the desire of reporters to act as a watchdog. But it came at a cost: The decision to prioritize journalism focused on government and democracy meant that other types of community coverage—such as human interest stories and cultural reporting—were under-resourced.

Without the kinds of reporting that let news organizations build an audience and create a sense of place within a community, civic-minded news organizations wither on the vine. The enthusiasm of major donors for civic information is never matched by individual support. The investments that let those organizations hire new reporters and continue operating is jeopardized because the lack of audience engagement means that all of the reporting those journalists produce has no impact.

By 2030, journalists look back on the philanthropic funding boom with disdain. Funders have moved on to other priorities after losing interest in supporting the production of journalism that is rarely read. The local news ecosystem is left weaker than before because most news organizations failed to pursue non-philanthropic avenues to sustainability. Outside of major population centers, most communities are left without any professional reporters.

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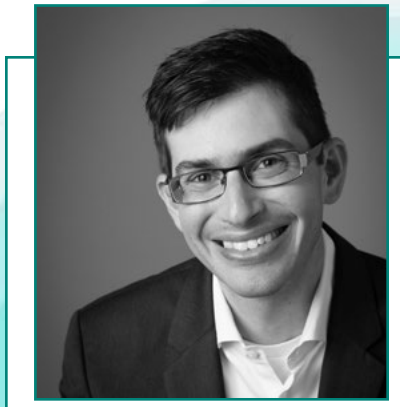

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Sam Guzik is a Senior Expert Advisor specializing in the future of news, content, distribution, and strategy. His career includes a broad range of experience in product management, strategic foresight, scenario forecasting, audience engagement, and leadership in legacy news organizations.

Sam leads the product strategy for a large public media company. Passionate about building a sustainable future for local news, Sam has demonstrated results by creating innovative, engaging, and impactful journalism — and thinking about the business model to support that work. His career includes a broad range of experience in product management, strategic foresight, scenario writing, audience engagement, and leadership in legacy news organizations.

Guzik is a graduate of Washington University in St. Louis, Columbia University Graduate School of Journalism, and the NYU Stern School of Business.

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METHODOLOGY

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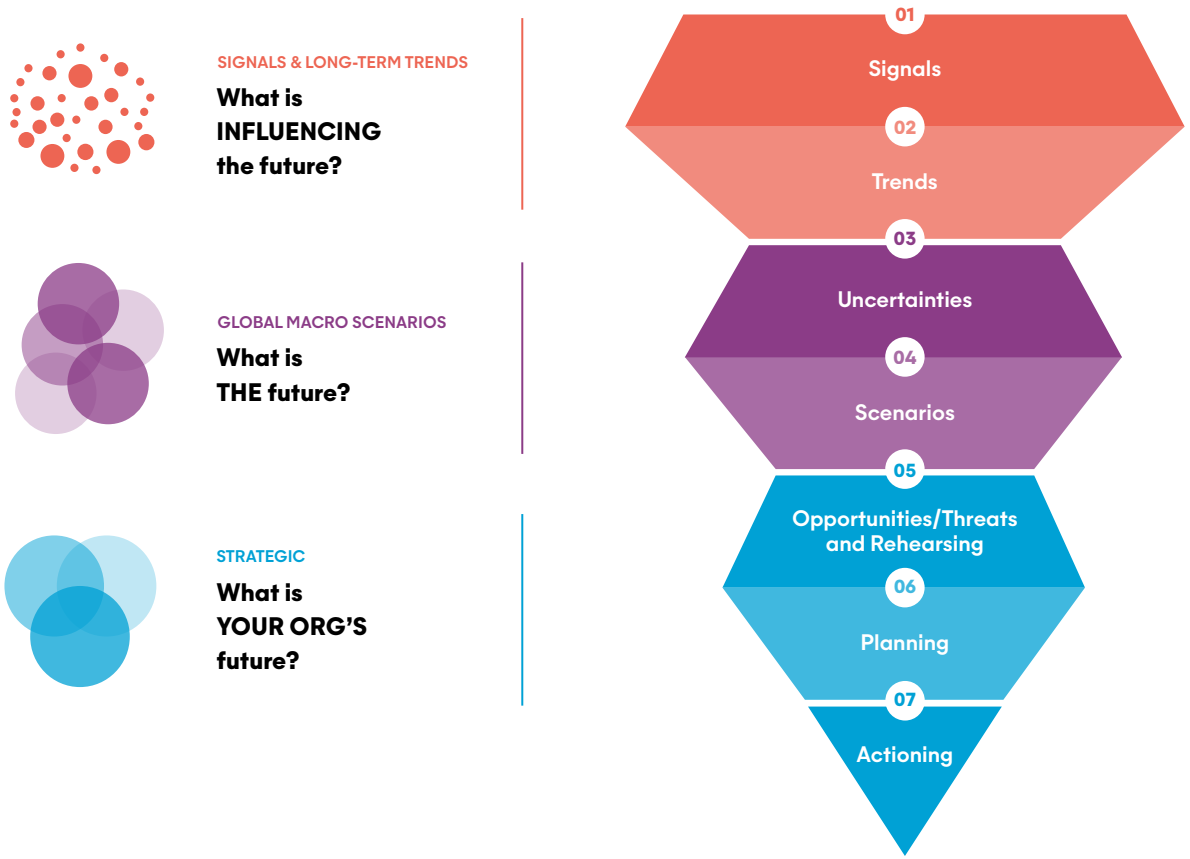
Future Today Institute's Strategic Foresight Methodology



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