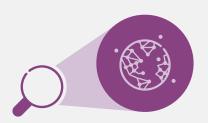# THE FUTURE OF JOURNALISM IN A NETWORKED SOCIETY

Exploring potential new business models
and smarter journalism for the digital era

ERICSSON

2017

CONTENTS

ERICSSON NETWORKED SOCIETY LAB

The Ericsson Networked Society Lab is focused on delivering unique insights about the emerging opportunities in society enabled by information and communication technology (ICT). Since 2008, we have conducted research into vital aspects of the technology-driven transformation of industries, business, society and everyday life. Our lab community includes a dedicated core team, Ericsson experts, and partners such as university professors and independent thought leaders. By gathering a wide range of perspectives and experiences, the Networked Society Lab aims to provide a deeper understanding of the fundamental changes empowered by ICT.

ABOUT THE AUTHOR

Mikael Törnwall is a business journalist and author, now working as a senior advisor at Hill+Knowlton Strategies. Mikael Törnwall has covered tech, telecom and media for many years and has also been the US Correspondent for Swedish business paper Dagens Industri. He has held various management roles in media, including head of Dagens Industri TV station DiTV.

LOOKING BEYOND TODAY'S MEDIA CRISIS

Many reports discuss the dire straits of media – how the internet is killing off media companies, and the fact-free social media bubble – but our report looks beyond today's crisis to a brighter future.

We explore how technology can lead to new business models, enable reporters to do a better job, and produce content that wasn't previously possible. In this future, we see personalized content and smarter algorithms – while robot journalists write about events that media companies couldn't otherwise afford to cover. Instead of digitizing traditional media, new and innovative forms of journalism will emerge, based on the possibilities of a networked society.

Yet any story about media in a networked society must begin today, where persisting problems haunt journalism and business alike.

Unsolved business models

In the mid-1990s, the internet emerged as a threat to media companies – generating a belief that content should be free of charge. Replacing shrinking subscription and advertising revenues has proven hugely challenging – and in the US alone over 300 newspapers have closed since 1990.[1] Between 2000 and 2014, newsroom employees in the US fell from 56,400 to 32,900.[2]

Although this trend is not universal (printed newspaper circulation and revenue is increasing in some countries, including India[3]), we still expect digital to eventually replace all printed news media, as it is faster, cheaper and easier to personalize.

The bubble

Back when a few media companies controlled huge markets, editors could decide what people saw and heard. Today, it is much easier to exclusively consume media that conforms to our world view, through information we receive via Google searches and our personalized Facebook feed, which are likely to be biased.

This creates a problem for democracy. While it is difficult to confirm whether media and social media bubbles have affected outcomes – such as close results in the US presidential election and the UK's EU referendum in 2016 – many people are reading news from just one side of the debate.

In this report, we point to existing efforts to handle this situation. The question is not if it is possible to create such tools, but if people will use them.

The future

Nobody knows exactly what a sustainable media business model will look like, but we see a bright future ahead. Consumers want the product (relevant information, analysis and exclusive news) and are prepared to pay for it (ads or subscriptions). Many people (journalists) are prepared to produce this product for a reasonable cost – we just need to wait for the free market to resolve the situation.

While we cannot cover every aspect of technology – as the possibilities created by a networked society are simply too vast – we present some of the possible ideas for new business models and new forms of journalism in this report.

The internet emerges as a threat to media companies

The Associated Press uses software to generate articles about quarterly earnings reports

About 40% of the world's population use social media as a news source

The UN uses VR to create a first-of-its kind, 360-degree report inside a refugee camp

We spend more time using mobile devices than desktops

What's next for TV and media online?

[1] Brookings' Center for Effective Public Management, The News Today, 7 trends in old and new media (November 2015)
[2] Journalism.org, Newspapers: Fact Sheet (June 2016): www.journalism.org/2016/06/15/newspapers-fact-sheet/
[3] Wall Street Journal, 5 reasons Indian newspapers have been unshaken by the internet storm (September 2015): blogs.wsj.com/briefly/2015/09/09/5-reasons-indian-newspapers-have-been-unshaken-by-the-internet-storm

SMARTER JOURNALISM

Much discussion around technology's impact on media focuses on the current lack of sustainable business models in the digital world. Before studying the business of media in a networked society, we explore an even more important question: how can technology enable media companies and individual journalists to produce better content?

Personalized news

For years, Yahoo! and Google have offered personalized news sites – where every user's front page content is customized by an algorithm, based on preferences and search history. News searches also vary according to search history.

Many online newspapers (such as Canada's Winnipeg Free Press) now offer personalized starting pages. For example, a reader interested in sports sees a different front page to someone who follows arts and literature.[4] But the article itself could also be customized – for example, if a paper publishes a story about a new project in a city, a reader living nearby may already have some knowledge but requires in-depth details, while someone elsewhere needs more background. Based on previous readings, a smart system would guess which parts of a story to present to whom.

This possibility to understand every consumer and tailor content accordingly will blur the border between journalism and services in the future. Take traffic reports for instance: those who use the subway to get to work are interested in delays affecting their line, but not those in other parts of the city – and an individualized service can provide only relevant updates.

> This possibility to understand every consumer and tailor content accordingly will blur the border between journalism and services

> A smart system would guess which parts of a story to present to whom

4   CMS Wire, How personalized web experience saved a newspaper (March 2016):
    www.cmswire.com/digital-experience/how-personalized-web-experience-saved-a-newspaper

EXPERIENTIAL STORIES

Most media companies with a web publication offer more than a digital version of the printed paper, and most publish text, pictures, video and audio. But are they taking advantage of all new possibilities? Anna Körnung, Editor-in-Chief at Stockholm-based newspaper group Mittl doesn't think so: "Typically, when you click on a video you see a person saying exactly what you just read in the article, which doesn't really add value. Media companies need to be better at using video and interactive graphics to add value."

While traditional journalism would present users with different scenarios, the website 270towin.com allows users to create their own US presidential election forecasts via an interactive map. Swedish newspaper Svenska Dagbladet allows readers to feed in information on their mortgage interest rates and addresses online – and this data is combined to produce 'Räntekartan' (the interest map), which displays deals across the city.
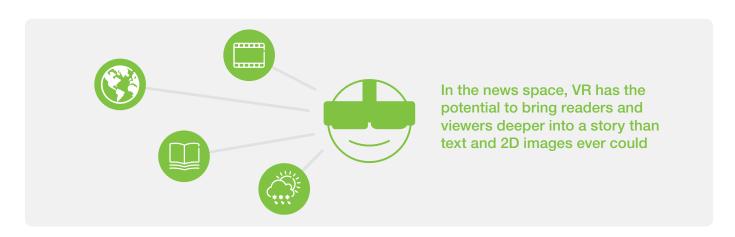
"Typically, when you click on a video you see a person saying exactly what you just read in the article, which doesn't really add value. Media companies need to be better at using video and interactive graphics to add value."

Anna Körnung, Editor-in-Chief at Mittl

USA Today is using basic VR technology to give online readers a story 'experience' with a VR news show available on any screen

Virtual reality (VR) and augmented reality (AR) are yet to make their way into mainstream media, but we have seen promising experiments in recent years. The American newspaper USA Today is using basic VR technology to give online readers a story 'experience' with a VR news show available on any screen.[5] In 2015, the United Nations used VR to create a first-of-its-kind, 360-degree report inside a refugee camp.[6]

One significant obstacle is that VR glasses are still expensive or not good quality. Yet this could change soon, with USD 150 billion forecast to be spent on VR by 2020.[7] In the news space, VR has the potential to bring readers and viewers deeper into a story than text and 2D images ever could.

In the news space, VR has the potential to bring readers and viewers deeper into a story than text and 2D images ever could

[5] USA Today, Take Flight: USA Today network debuts VR show (October 2016):
www.usatoday.com/story/tech/2016/10/20/usa-today-network-debuts-first-vr-news-show/92412428
[6] Tech Crunch, UN launches powerful, first ever VR film following Syrian refugee girl (January 2015):
www.techcrunch.com/2015/01/23/un-launches-powerful-oculus-virtual-reality-film-following-syrian-refugee-girl
[7] Digi-Capital, Augmented/virtual reality to hit $150 billion disrupting mobile by 2020 (April 2015):
www.digi-capital.com/news/2015/04/augmentedvirtual-reality-to-hit-150-billion-disrupting-mobile-by-2020/#.WSfyc2jyvIU

SMALL, AGILE ORGANIZATIONS

Look at a traditional media company and you will likely see a huge organization with the ambition and resources to cover multiple areas. A national or regional print newspaper has sections covering everything from international news to art, which is largely due to logistic necessity. Print and linear TV distribution is a scarce resource. Consumers need only pick one paper to fulfill most of their daily information needs, and the TV network has room for just a few stations on the airwaves. Even cable TV is limited.

However, the internet has changed everything. Consumers can suddenly cherry-pick what sports news to read and which foreign policy experts to follow, and are no longer limited to what a particular newspaper or TV channel decides they should access. They can also watch online content made available by TV stations across the planet, meaning no cable company has the power to decide what consumers can and can't watch.

Hyper-local, hyper-niche

All over the world, we are seeing the birth of local news sites. These are run by professional journalists, but instead of a large organization covering a big city or a region, small groups of reporters (or a single reporter) cover a much smaller area. Technology has made this possible, with low-cost, consumer-grade cameras and smartphones to produce simple videos – making the investment (besides start-up time) close to zero.

Yet small does not necessarily mean local in terms of geography. Many one-person media companies have developed around niche interests that broader media fails to address. Photography site Luminous-Landscape.com is

> The internet has changed everything. Consumers can suddenly cherry-pick what sports news to read and which foreign policy experts to follow

one example. While most magazines in this field focus on equipment and technology, this website identified a space covering art and techniques – targeting photographers who want to read about how to use their new gear, not just technical specifications. Run by two photographers rather than writers, it attracts millions of visitors a year, with more than 50 percent coming from outside the US – and it is ranked twice as high as the world's oldest photography magazine, British Journal of Photography (established 1864). Luminous Landscape relies mainly on a subscription model, charging USD 1 per month, and together with revenue from advertising and workshops, it generates enough to support two full-time employees.[8]

> New local news sites are made possible by technology – using low-cost, consumer-grade cameras and smartphones to produce simple videos
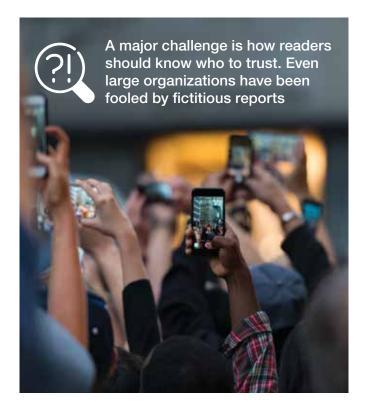
[8] Interview with editor Kevin Raber (December 2016)

CITIZEN JOURNALISM

Journalism is not easy and not everyone can be a good journalist.
On the other hand, there are no rules for exactly what defines a journalist.
The role is not defined by a certain education or a formal accreditation
by any organization, as a strict definition would restrict free speech.

Citizen journalism has existed at least since the invention of the printing press in 1440, but it has accelerated thanks to the internet and reduced costs of using web and mobile instead of print. Today, all over the world, we see areas that have been neglected by large media companies for decades being covered by citizen journalism.

In Nigeria, ICFJ Knight International Journalism School fellow Babatunde Akpeji trains citizens on journalistic reporting of health issues. Using mobile phones, people can record audio and video that is later used for reporting.[9] Elsewhere, during the Arab Spring in the Middle East, citizen journalists reported events that professional journalists could (or dared) not cover. They exposed themselves to great danger in order to do so, and one prominent citizen reporter is believed to have been murdered as a result of her reports.[10]

Citizen journalism is, of course, not problem-free. A major challenge is how readers should know who to trust – as a journalist with a major organization behind them can usually be considered trustworthy, but it is more difficult to know whether a story posted by an unknown citizen is true. Even large organizations have been fooled by fictitious reports. In 2008, CNN's user-generated website iReport shared a viewer report about Steve Jobs' heart problems that turned out to be false, but before the story was retracted Apple's share price had dropped 10 percent.[11] See our The Robot Age section for more information.

A major challenge is how readers should know who to trust. Even large organizations have been fooled by fictitious reports

Today, all over the world, we see areas that have been neglected by large media companies for decades being covered by citizen journalism

[9] International Center for Journalists, Nigeria: Increasing citizen engagement with health news:
www.icfj.org/our-work/nigeria-increasing-citizen-engagement-health-news

[10] The Guardian, Ruqia Hassan killed for telling the truth about ISIS (January 2016):
www.theguardian.com/world/2016/jan/13/ruqia-hassan-killed-for-telling-truth-about-isis-facebook.

[11] CNN Money, Apple's stock hit by web rumor (October 2008): www.money.cnn.com/2008/10/03/technology/apple

NEWS EVERYWHERE

News and media consumption is increasingly mobile, and we now spend more time using mobile devices than desktops.[12] This development has not been missed by media companies, and most major news organizations now have apps for smartphones as well as tablets.
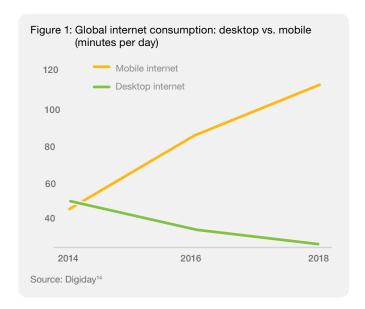
There is still potential for the media to take advantage of mobile, including content that is optimized for different screens. The Huffington Post in the US has taken a step towards this. When you are sitting at a computer, you generally have more time to read long-form text and a bigger screen makes it is easier to see an overview of several articles – while mobile versions have fewer words in headlines and shorter articles.

In the near future, we will likely see more news organizations customizing content. For instance, a TV show shot in a studio and edited with a 55-inch TV in mind will not look as good on a smartphone – so TV stations need to produce different versions with shots to suit this screen. According to Jan Helin, Head of Programming at Sweden's national broadcasting company Sveriges Televison:

"You'll have a more laid-back experience when watching the news on your TV at home, and a much more interactive experience watching on your tablet or smartphone."

News is perfectly suited for interactivity, whether you want to make a comment or search for additional information on a subject. In addition, while storytelling has a well-defined beginning, middle and end, news is made up of fragments – so when optimizing for different platforms, you can easily take out one or more segments from a newscast or even reverse the order without losing the meaning.

One company already tailoring news for mobile is NowThis, which produces the NowThisNews app with a newsfeed specifically made for the smaller smartphone screen.[13]

Figure 1: Global internet consumption: desktop vs. mobile (minutes per day)

Source: Digiday[14]

In the near future, we will likely see more news organizations customizing content

News is perfectly suited for interactivity, whether you want to make a comment or search for additional information on a subject

There is still potential for the media to take advantage of mobile, including content that is optimized for different screens

News is most likely the first type of content that will be tailored to different screen types

[12] WAN-IFRA World Press Trends 2016 Report (November 2016)
[13] NowThis, www.nowthisnews.com
[14] Digiday, How mobile is overtaking desktop for global media consumption, in 5 charts
(June 2016): www.digiday.com/publishers/mobile-overtaking-desktops-around-world-5-charts
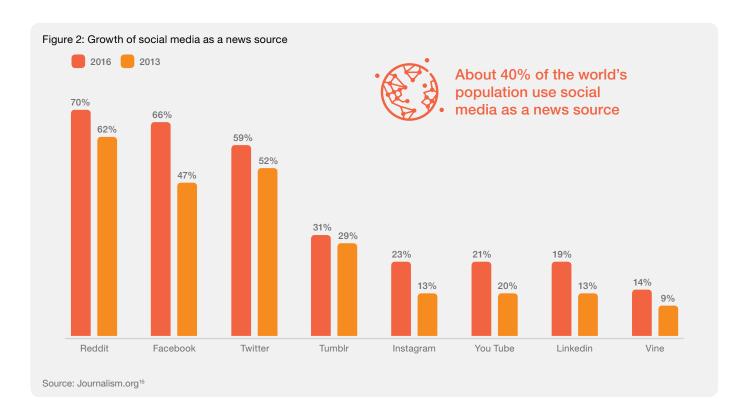
SKIPPING NEWS SITES

Today, about 40 percent of the world's population use social media as a news source.[15] In Latin America, the figure is about 50 percent. This does not imply that media companies are irrelevant, but rather that readers are finding stories in a different way. Instead of going straight to a news organization's website or app, readers can find stories via links from Facebook, Twitter and other social media. This poses a major challenge for news editors, as people seem to trust their friends more to pick the most interesting and relevant stories for them.

This isn't just a problem for editors, who could find themselves out of a job, but also for society as a whole. In traditional media, editors have made efforts to present consumers with a variety of news, making sure everything readers need to know is presented in the paper or on the news. When it comes to a Facebook or Twitter feed, there is no way to guarantee that the most relevant or important news stories of the day feature here.

Media companies must find a way to work with social media platforms rather than fight them. An early test is Kit.se – a news site owned by Swedish media powerhouse Bonnier – which uses Facebook as their main channel to reach readers. By actually being on Facebook, Kit.se reaches followers in their social media feed.

Figure 2: Growth of social media as a news source

■ 2016 ■ 2013

Reddit: 70% / 62%
Facebook: 66% / 47%
Twitter: 59% / 52%
Tumblr: 31% / 29%
Instagram: 23% / 13%
You Tube: 21% / 20%
Linkedin: 19% / 13%
Vine: 14% / 9%

About 40% of the world's population use social media as a news source

Source: Journalism.org[16]

[15] GlobalWebIndex 2016
[16] www.journalism.org/2016/05/26/news-use-across-social-media-platforms-2016/pj_2016-05-26_social-media-and-news_0-08/

THE ROBOT AGE

Could computers ever replace journalists? This prospect is a major worry for the profession, while some enthusiasts see it as hope for a brighter future. However, computers will not replace humans anytime soon. They will instead play an increasingly significant role in media, and we should be asking: what role will software play, and how can it help media companies and individual journalists do a better job with limited resources?

More coverage

The Associated Press (AP) news agency uses Automated Insights software to generate articles about quarterly earnings reports from approximately 3,700 companies.[17] Here, software is not replacing but supplementing human journalists – as these are companies AP would not have the resources to cover otherwise.

than the last quarter. It can also search every report issued by other companies in the same quarter in seconds to determine whether the CEO has been more optimistic than their peers for the last year, even if the company has underperformed.

Software input does not have to be verbal. Imagine a local sports event that is not major enough for a human reporter to attend, but is still important to those involved, their friends and family. We have already seen that a computer can write this kind of story, and the software could add flavor to the report by following simple rules – if one team is in the lead throughout the game, but the other scores in the final minute, then it was a 'thriller' and a 'surprise victory'.

> It is natural that the first examples of journalist-replacing software cover stories that can be understood through numbers

Other examples include robots writing sports event reports. In its simplest form, humans attending the event feed in data about results, players that scored, and the software produces a report. More promising is how the US' National Football League (NFL) uses sensors to track players and what they do, monitor the game, and produce a story to publish online seconds after the match.[18]

It is natural that the first examples of journalist-replacing software cover stories that can be understood through numbers. Financial news and sports are obvious places to start, answering questions such as how much did the company earn? Was it more or less than expected? Who won the game? Who scored and when?

The next step according to Automated Insights is finding topics that can be easily translated into numbers. This could mean expanding the quarterly report to include quotes from the CEO's letter to shareholders, which contains some numbers (results) – but their sentiments are more important: are they happy with the result? Why do they feel this way? It is still too early for software to independently analyze the language and write a story by itself, but it can use sentiment analysis to understand whether the CEO is more or less optimistic

> In its simplest form, humans attending the event feed in data about results, players that scored, and the software produces a report

[17] Automated Insights: www.automatedinsights.com/associated-press-leaps-forward
[18] Tow Center, Guide to automaed journalism (January 2016): www.towcenter.org/research/guide-to-automated-journalism

CAN SOFTWARE UNDERSTAND EMOTIONS?

Installing microphones and cameras to capture audience reactions could also provide important input. IBM's AI robot Watson can already detect basic human emotions using facial-recognition algorithms, so the computer could analyze and report audience reactions as well.

It is important to remember that today's journalistic software does not create its own language – it selects pre-written phrases from a database. If a robot writes that a company beat expectations by 1 percent, it was a human that decided the software should use the word 'slightly'. However, the way a robot works is not always that far from how a news agency reporter operates. Smaller companies' quarterly reports are considered routine and are often handed to young or trainee journalists – and reporters are restricted by strict rules, since their text will affect the stock market and careless language could have a dramatic impact.

A good reporter will recognize when something is missing and ask smart follow-up questions. Adam Long at Automated Insights believes software can be programmed to do the same. For instance, when looking at a financial report, it can also find whether the margin is much lower than last year, and could be programmed to ask why.

Even today's simple software can write articles that are hard to distinguish from 'real' journalism. A study at Karlstad University in Sweden showed that only 17 out of 27 students managed to correctly identify a story written by a computer – while nearly half mistook a human-written story for computer-generated one.[19] A robot capable of writing poetry good enough to fool humans also exists – a Duke University student paper published a poem believing it had been written by a student, when it was actually created by a program.

In addition, IBM's Watson created a trailer for the horror movie Morgan (2016) – leaving only the final editing to a real human. By analyzing factors including facial expressions, light and sound, the software identified various scene types (for example, happy or scary) and selected scenes for a trailer that was actually used by the film company. Currently, Watson can only identify scenes in certain categories – it does not understand emotions the way humans do.[20]

Mikael Haglund at IBM Sweden says that, for the foreseeable future, the line between what computers can and can't do is understanding emotions. According to Markus Gustafsson, Founder and CEO of Swedish news app Omni this is a main reason why they still use humans to find interesting news. Software can identify topics of interest, but not the best stories on that subject.

For the foreseeable future, the line between what computers can and can't do is understanding emotions

[19] www.kau.diva-portal.org/smash/get/diva2:699641/FULLTEXT01.pdf
[20] Wired, IBM Watson creates the first AI-made film trailer – and it's incredibly creepy (September 2016): www.wired.co.uk/article/ibm-watson-ai-film-trailer

SELECTING NEWS AND ESCAPING THE BUBBLE

Another challenge for software writing and collecting stories is that it tends to give us what we've already been looking at. For example, it is simpler for an algorithm to present us with another story on Latin America's economy if we have been interested in the subject for the past six months. Or, if we have been consistently liberal in our news-reading, the algorithm is unlikely to expose us to conservative content. The big question is: how can algorithms better understand us to present content we didn't even know we wanted?

The big question is: how can algorithms better understand us to present content we didn't even know we wanted?

First of all, Facebook, Google and other players can't solve this alone – users need to ask for it. The days when a handful of media houses with national or regional distribution could decide what the masses should read are gone. Those who feel most comfortable in their bubble will stay there, and if, for example, Facebook decides to not provide them with the comfort of the bubble, another platform will.

That said, algorithms show great promise. When Swedish newspaper Dagens Industri interviewed Google News founder Krishna Bharat, he said it could be possible to separate biased from unbiased news by analyzing sharing patterns. Take the reader interested in Latin America as an example – a human can easily spot a similar article about African development that could be relevant to this person, and an algorithm could learn to do the same. The liberal might not be interested in staunch conservative news shared only among other hardcore conservatives, but they could enjoy a piece written by a scholar that is shared among both conservatives and liberals.

Something software can do is ensure more of what we find in our news stream is actually true. Google, Facebook and other players have constant access to all the knowledge on the internet and the means to sort fake from true. Facebook has launched a 'related articles' function, designed to expose users to stories with different views than their own. Google has announced changes to its search algorithms to downgrade low-quality, misleading content.[21] So far, social media giants have been met with skepticism and are expected to come up with new and more sophisticated solutions to fight fake news and filter bubbles.

The days when a handful of media houses with national or regional distribution could decide what the masses should read are gone
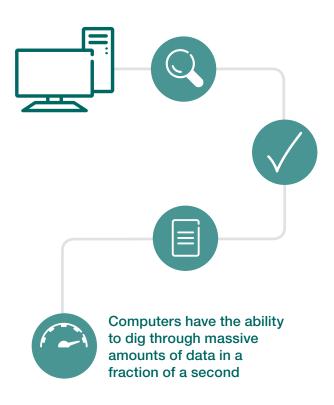
[21] AdWeek, Facebook and Google are testing tools to fight fake news (April 2017): www.adweek.com/digital/facebook-and-google-are-testing-tools-to-fight-fake-news/
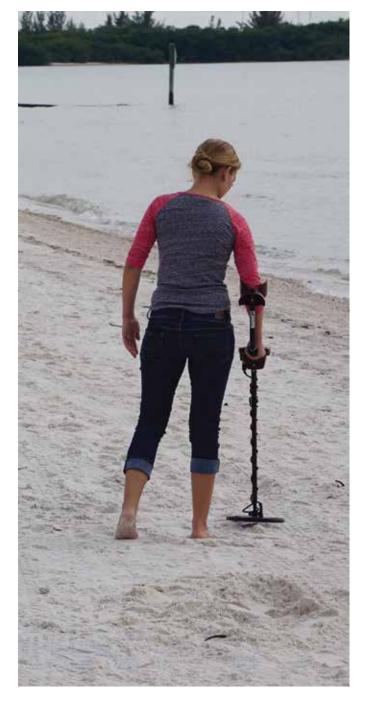
ROBOTS FOR RESEARCH

It takes intelligence to write smart analysis of a complex event – but sometimes a computer can outsmart people. An obvious area is the ability to dig through massive amounts of data in a fraction of a second.

Let's use unemployment statistics released by the US Government every quarter as an example. To complicate matters, the Government releases several data revisions so there are 12 reports each year in total. A reporter searches reports for odd patterns, recognizing that anomalies could indicate an unexpected turn for the economy. But with a dozen reports annually, and a need to go back at least five years to see clear patterns, the reporter needs to go through 60 reports – taking hours or even days for a human, but mere seconds for software.

The right software is often as good or better at identifying figures that stand out than a human. IBM's Watson even diagnosed a Japanese woman with a rare form of cancer when a team of experienced doctors failed. While an experienced doctor can only remember a limited number of cases, Watson can run through 20 million documented cases of cancer to make a correct diagnosis and even suggest a treatment.[22]

Computers have the ability to dig through massive amounts of data in a fraction of a second

[22] Dagens Nyheter (November 2011)

DO YOU TRUST ROBOTS?

As we have seen, most consumers are already exposed to the work of robot journalists or robot editors – they just don´t know it. For this report, Ericsson and Hill+Knowlton Strategies instructed polling company Kantar SIFO to conduct a survey in four countries (Sweden, US, Brazil and South Korea) to discover public opinion on media. Our results show an acceptance of more robots in media, even if there are huge regional, gender and age differences.

We asked two questions, covering whether respondents think that robots can replace journalists in writing articles, and if they will let algorithms choose news for them in the future.

Eighty-three percent of respondents in Korea think algorithms will select all or some of the news they consume. The second most positive country is Brazil with 72 percent, followed by Sweden (49 percent) and the US (46 percent).

There is a similar pattern regarding how likely people think it is that software will write news articles. Again, Korea is most positive – 81 percent believe robots will write some or most of the stories they read. This is followed by Brazil (63 percent), Sweden (53 percent) and the US (47 percent).
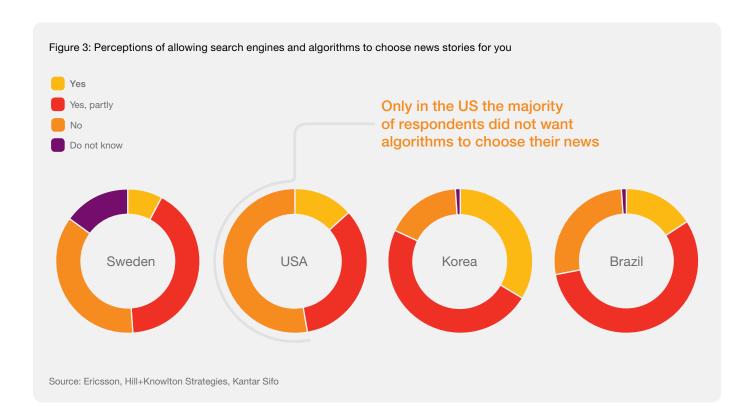
The age difference is not uniform over regions. In Sweden, the US and Brazil, younger people are much more likely than older groups to say algorithms will pick their news. We see a different trend in Korea, where slightly more of the oldest group feel positively towards algorithms than younger groups. In Brazil and the US, younger people are clearly more positive

to journalist robots than older people. In Sweden and Korea, there is a much smaller age difference.

We can also see a large difference between men and women in some countries. In Brazil, men are almost twice as likely to say that search engines and algorithms will pick most of the news they consume (21 percent compared to 11 percent). In the US, the gender difference among the most enthusiastic people are even bigger (18 percent male compared to 8 percent female). In Korea there is a similar difference, with men more positive, but in Sweden there are no statistically significant variations between the views of men and women.

The survey
The survey was conducted by polling company Kantar SIFO for Ericsson and Hill+Knowlton Strategies. We asked two questions about algorithms and robot journalism, and two about paid content. More than 4,000 people were surveyed (1,053 in Sweden, 1,021 in Brazil and 1,014 in the US and South Korea).

Figure 3: Perceptions of allowing search engines and algorithms to choose news stories for you

- 🟡 Yes
- 🔴 Yes, partly
- 🟠 No
- 🟣 Do not know

Only in the US the majority of respondents did not want algorithms to choose their news

Source: Ericsson, Hill+Knowlton Strategies, Kantar Sifo
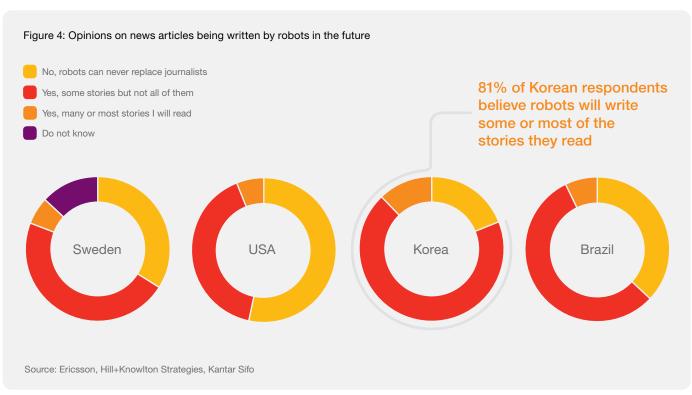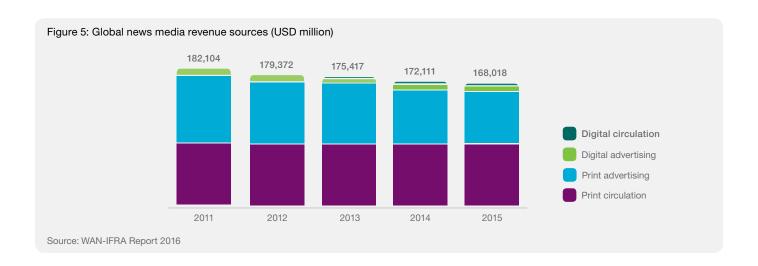
A helping hand from algorithms and software

The following are examples of where algorithms and software promise huge benefits for media companies, in addition to individual journalists:

> Routine work – such as writing a large volume of short news stories according to well-defined rules (for example, earnings reports).

> Presence at multiple locations – regardless of resources, a news organization can only cover so many events simultaneously. If you feed software the information it needs to write a sports report, a local newspaper can easily cover several events at once and deliver quality stories seconds after each game has ended.

> Research – even if you can't trust a computer to write up intelligent analysis of, for example, the US economy, it can still sift through data.

Figure 4: Opinions on news articles being written by robots in the future

- No, robots can never replace journalists
- Yes, some stories but not all of them
- Yes, many or most stories I will read
- Do not know

81% of Korean respondents believe robots will write some or most of the stories they read

Sweden

USA

Korea

Brazil

Source: Ericsson, Hill+Knowlton Strategies, Kantar Sifo

NEW BUSINESS MODELS

The internet, smarter software and social media can all be seen as a gift to media and journalism – since they have created vast opportunities. Yet it must be recognized that media companies have realized few of these opportunities.

Figure 5: Global news media revenue sources (USD million)

Source: WAN-IFRA Report 2016

It can be observed that when ad revenue moves away from print, TV and radio, it does not go towards online media. Instead, two companies – Facebook and Google – accounted for 64 percent of the US online advertising revenue in 2015.[23] According to market research company eMarketer, these companies had a global market share of more than 50 percent globally the same year.[24] It is also noteworthy that Facebook and Google are not even what we would call 'media companies', since neither is in the content creation business. But instead of calling for government intervention, it is possible to take a positive view of the future instead.

Reduced cost base
Today, newspapers make much less money from ads and subscriptions than in the golden era – when one or two papers could dominate a big city or a small country, and just a few TV stations covered a media market with millions of viewers. For a printed newspaper or magazine, printing and distribution costs are normally between 60 and 65 percent of the total cost base[25] – meaning a paper transferring from print to online could lose two thirds of its revenue and still have the same money left for reporters, marketing and everything else.

For radio and TV, the cost advantage is even more dramatic. In the old, linear world, the cost to start and run a TV station was so high that it was almost impossible for a new player to enter a mature market. To equip even a smaller station with studios, control rooms, editing equipment and TV cameras could cost millions of dollars.

Even semi-professional equipment was out of reach for most people wanting to broadcast themselves. In 1998, a semi-professional Canon TV camera used by a news crew costed about USD 4,500, or USD 7,000 in today's value[26] – plus the price of a PC and editing software. The price tag to make a semi-professional-grade video could easily reach USD 20,000.

Today, a freelance journalist can purchase a professional-quality HD camera for just over USD 1,000 – and coupled with a USD 500 laptop, they are ready to start broadcasting.

The same applies to TV distribution costs. Not only was old technology limited by the number of TV stations that could broadcast in a certain area, but spectrum in the air for TV signals and slots in the cable network were a scarce resource. It was also expensive – a TV station would pay millions of dollars every year to gain access to the TV or cable network, so even if a journalist could afford the expensive equipment in 1998, they would likely struggle to pay the bill to actually reach any viewers.

With the internet, this cost is effectively reduced to zero. Of course, it is still possible to invest large amounts of money in a professional studio – and even more in internet connections capable of handling millions of simultaneous viewers (such as Netflix) – but there are also plenty of hugely successful media entrepreneurs running businesses on YouTube, using a low-cost home studio to produce their content.

[23] Bloomberg, Google and Facebook lead digital ad industry to revenue record (April 2016)
www.bloomberg.com/news/articles/2016-04-22/google-and-facebook-lead-digital-ad-industry-to-revenue-record
[24] Eweek, Google and Facebook dominate digital ad revenue (July 2016): www.eweek.com/small-business/google-facebook-dominate-digital-ad-revenue.html
[25] TCITP 2009

The best paid YouTube star of 2016 was 28 year-old Swedish gamer Felix Kjellberg – or PewDiePie. He made USD 15 million by producing an online video show about gaming on a limited budget. The camcorder he used in 2016 to show his videos was a USD 1,300 Canon XA10.[27]

PewDiePie is also a great example of how difficult it can be for a non-professional to handle the demands of a global media house. Felix Kjellberg came under scrutiny in January 2017 when he used racist and anti-semitic language in several posts. Even though he apologized immediately, he was abandoned by several networks, including Disney-owned Maker Studios.

The internet, smarter software and social media can all be seen as a gift to media and journalism

Figure 6: Best paid YouTube stars 2016

	Age	Country	Net-worth (USD million)
Felix Kjellberg (PewDiePie) Video gamer	28	Sweden	15
Roman Atwoodage Video blogger	33	USA	8
Lily Singh (Superwoman) Rapper, comedian, dancer	28	Canada	7.5
Anthony Padilla and Ian Hecox (Smosh) Comedians	29	USA	7
Tyler Oakley LGBTQ activist	28	USA	6
Rosanna Pansino (Nerdy Nummies) Cooking show host	31	USA	6
Mark Fischbach (Markiplier) Gaming	27	USA	5.5
German Garmendia Comedian and musician	26/27	Chile	5.5
Rhett James McLaughlin and Charles Lincoln Neal (Rhett and Link) Comedians	39/30	USA	5
Colleen Ballinger (Miranda Sings) Comedian, singer	28	USA	5

Source: Forbes

[26] Videomaker.com, Innovative camcorder is worth the high price (January 1998):
www.videomaker.com/article/c5/3263-innovative-camcorder-is-worth-the-high-price
[27] Man of Money, PewDiePie's camera, desk, setup and gear behind all that money (August 2016):
www.manofmany.com/featured/pewdiepies-camera-desk-setup-gear-money

INTELLIGENT ADS

A major challenge for online media is making adverts more relevant. Currently, when you search for what to do on vacation in Cape Town your screen will be flooded with ads for hotels in South Africa long after you return home. Media needs a better understanding of what you need and when.

Smarter ads aren't impossible to create, but they could represent challenges in terms of privacy. For an ad platform to post highly relevant travel ads, it needs to know detailed plans – so if a person has already booked a hotel for their vacation, then other hotel adverts are irrelevant. Instead it could suggest possible places to eat during your stay, and would need to know about preferences and where a person will be to do so.

Smarter ads can be accomplished by analyzing search and posting patterns

"I get so frustrated by how primitive ads are. We need to be much better at understanding what is really important and relevant for our audience. If we can do that we can also create ads that generate enough money for us to have a sustainable business"

Jan Scherman,
consultant and former head of
TV4 television station, Sweden

Reasons why respondents don't click online advertisements

> 61 percent don't want to be distracted

> 58 percent say online banner ads are not that relevant

> 57 percent worried about virus, spam, pop-ups, and so on

> 43 percent say online banners are not interesting or engaging

> 31 percent are not in the mood or interested

> 31 percent are worried that their internet behavior will be tracked

(Source: Nielsen, 2011)

In 2011, Nielsen conducted a five-day study of 600 randomly selected adult residents in the US (aged 18 to 54) who rarely or never click online banner advertisements.[28] Research showed that these ads are useless and worthless for the advertiser, the platform and the user – and they can even have negative value. People view these ads as annoying and time-wasting, leading to a negative emotion towards the brand.[29]

Smarter ads can be accomplished by analyzing search and posting patterns. Searches for car tires are a good indication that someone is about to purchase a car, so it makes sense to display Goodyear or Continental ads – for a while. Usually, though, the platform continues displaying these ads long after new tires have been purchased, making them redundant to the consumer and advertiser.

Search patterns can give clues as to when a person no longer needs to see tire ads – perhaps they have shifted from tires to workshops that replace tires. That should mean new tires have been purchased and now need to be fitted – meaning shop ads are more relevant.

[28] Market Wired, Top reasons users don't click banner ads (April 2011):
www.marketwired.com/press-release/top-reason-users-dont-click-banner-ads-they-dont-want-be-diverted-from-their-current-1504178.htm
[29] Key Media Solutions, Research shows consumers are annoyed by irrelevant online ads (May 2013)
www.keymediasolutions.com/news/online-advertising-news/research-shows-consumers-are-annoyed-by-irrelevant-online-ads

JOURNALISM AS A SERVICE

One way to make advertising smarter could be linking content to services. As discussed in the previous section, digital creates opportunities to customize content that weren't possible in the analogue world.

Digital makes it possible to uniquely tailor content to an individual consumer

Digital makes it possible to uniquely tailor content to an individual consumer. In his book Geeks Bearing Gifts: Imagining New Futures for News, American journalism professor Jeff Jarvis describes a situation where New Jersey was virtually out of gas after hurricane Sandy hit the East Coast. Citizens used Twitter and the hashtag #NJGas to share information about which gas stations were open. Although the system wasn't very accurate, it was the only one available – and it worked. It is possible that more up-to-date, accurate information is something people would have been willing to pay for.

Even more likely is that media companies will make money from services when they lead to a transaction. Swedish home improvement company Byggmax offers a design tool for homeowners to plan a new kitchen or patio. Now imagine coupling this tool with an online magazine for homeowners.

Before the internet, magazines and TV shows could present a generic description of how to build a kitchen – but the story would almost certainly be about a house that is different from the reader's own. By entering a few data points, the story becomes about the individual's home – and at the end of the process the site could produce a personalized blueprint. It could even send a purchase list to one or more vendors, and the one that delivers the consumer's goods would be the one paying for the content.

Norwegian media house Schibstedt has embraced such services. For years they have been acquiring advertising platforms in Sweden and in Norway, typically seen as competitors to media companies. The company now owns Blocket (similar to Craigslist in the US) and has taken over most of the small ads posted by individuals, which used to be a main revenue source for various newspapers. The role of Shibstedt's newspapers is to drive traffic to the value-generating sites – which may seem like a different model than that of old newspapers, but it's exactly the same. Good content makes people read newspapers, so their owners can display ads – but this time digital makes it possible to complete the transaction.

More up-to-date, accurate information is something people may be willing to pay for.

WILL CONSUMERS PAY?

Many media companies are fighting an uphill battle to make their consumers pay for news and other content the way they did in the old world. On the other hand, we see some media companies experiencing success in subscription revenue generation – for example, the Financial Times. Our report does not take a stand on whether subscription revenue represents a possible way forward, but we note that it is difficult to charge for general, broadly available content – if it's easy to produce, someone else will make it available for free.

To get a better understanding of the willingness to pay for content, we included two questions about pay in our survey. The overall result is not encouraging for companies planning to base their business models on subscription revenue. In general, people are not too happy about paying for content, and definitely not for news.
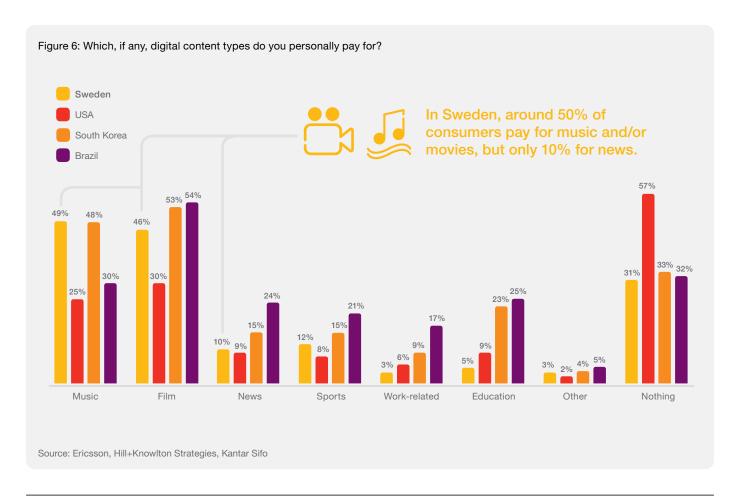
Again, there are huge regional differences. We see the lowest willingness by far to pay for any kind of content in the US, where 57 percent of consumers say they do not pay for anything online. In the other surveyed countries, only around 30 percent say they do not pay for any content.

For all countries in the survey, we see a much higher willingness to pay for entertainment than news. In Sweden,

around 50 percent of consumers pay for music and/or movies, but only 10 percent for news. Americans are even less willing to pay for news, with only 9 percent doing so. The situation for news organizations is much better in Korea and Brazil, where 15 and 24 percent respectively say they pay for news services today.

When we ask what would make people pay for content in future, almost half of Americans say nothing. Only 19 percent of Americans would pay to get more reliable news, compared to 38 percent in Sweden, 48 percent in Brazil, and 44 percent in Korea.

In Sweden, Korea and Brazil, we find no clear differences between age groups. Somewhat encouraging for media

Figure 6: Which, if any, digital content types do you personally pay for?

Legend:
- Sweden
- USA
- South Korea
- Brazil

In Sweden, around 50% of consumers pay for music and/or movies, but only 10% for news.

	Sweden	USA	South Korea	Brazil
Music	49%	25%	48%	30%
Film	46%	30%	53%	54%
News	10%	9%	15%	24%
Sports	12%	8%	15%	21%
Work-related	3%	6%	9%	17%
Education	5%	9%	23%	25%
Other	3%	2%	4%	5%
Nothing	31%	57%	33%	32%

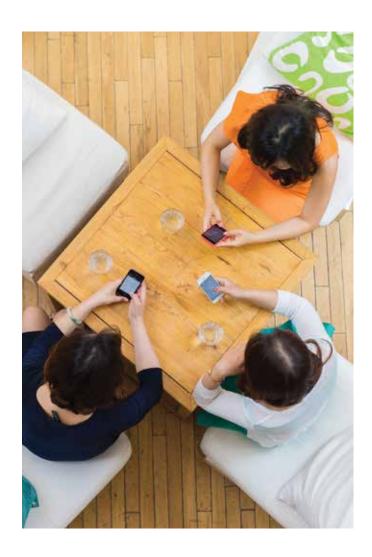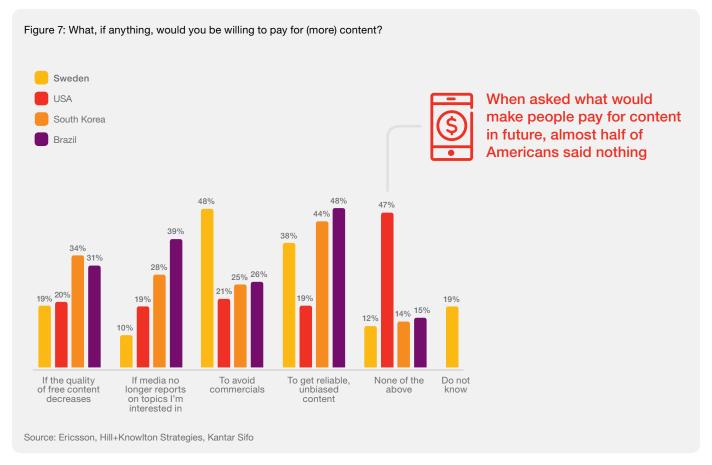Source: Ericsson, Hill+Knowlton Strategies, Kantar Sifo

In Western Europe and North America, subscriptions will not be the main source of revenue for major news media anytime soon

companies is that young people in the US pay more for content and are more open to pay if that would, for example, lead to better quality. This is somewhat counterintuitive, since you might expect that the older consumers that grew up with paid content would be more open to subscriptions.

One factor that needs to be taken into account when asking if people are willing to pay for content is that today they have a free alternative – and the question about a lack of quality becomes hypothetical. If in the future many of the high-quality, free news sites go out of business, people could be more willing to pay. Still, the survey must be seen as an indication that at least in Western Europe and North America, subscriptions will not be the main source of revenue for major news media anytime soon.

Figure 7: What, if anything, would you be willing to pay for (more) content?

Legend:
- Sweden
- USA
- South Korea
- Brazil

When asked what would make people pay for content in future, almost half of Americans said nothing

Category	Sweden	USA	South Korea	Brazil
If the quality of free content decreases	19%	20%	34%	31%
If media no longer reports on topics I'm interested in	10%	19%	28%	39%
To avoid commercials	48%	21%	25%	26%
To get reliable, unbiased content	38%	19%	44%	48%
None of the above	12%	47%	14%	15%
Do not know	19%			

Source: Ericsson, Hill+Knowlton Strategies, Kantar Sifo

10 PREDICTIONS

Based on our research, interviews and a roundtable with media executives, we have made 10 predictions about where media and journalism are heading in a networked society.

1

Faster changing landscape and smaller, more agile media companies

A New York Times paper-edition subscriber gets everything from international news to sports and business in one package, delivered to their doorstep. This model was created out of a necessity.

Digital media allows readers to easily cherry-pick a source for various content types.

We predict more, smaller media companies specializing in a certain topic or content type will emerge.

2

A blurred line between journalist and audience

There has never been a clear definition of a 'real journalist'. In the past, high financial hurdles to enter the media market have meant that relatively few media companies dominate the space, and have huge power over who to hire.

With online, starting a new media company costs close to zero. Anybody with good enough content can get online and reach enough readers to make a living. Who is and who is not a journalist will be decided by readers who choose to follow them, rather than editors at established media companies.

3

Print news is dead

Reading a newspaper can be an enjoyable experience, but using dead trees to present the news is a bad idea. It is slow (it appears a day later rather than within minutes), expensive (60–70 percent of the cost base of a traditional newspaper is print and distribution) and has a negative impact on the environment.

We do not question whether there is a place for paper books or exclusive, printed magazines, but we conclude that the printed newspaper is dead.

4

On-demand replaces linear TV and radio

The 9 o'clock news concept is not driven by a popular wish to wait until a certain time to watch news. In many cases, linear TV has been a necessity but not something viewers actually want.

We predict that TV will eventually migrate to on-demand platforms, with a capability to live stream important events when it makes sense to do so.

5

News becomes more and more mobile

We expect media to be consumed increasingly on the go – as people do not want to wait until they get home to their PC or TV to consume news.

Since consumers are carrying smartphones or tablets, news must be tailored for smaller screens. This also means that consumers demand faster news updates. News organizations will have to find the balance between speed and accuracy when it comes to updates.

6

Even more personalized content

Search engines and aggregators (such as Google News or Omni) tailor content to the individual reader. Less known is that many web publications' landing pages are also personalized – for example, Sweden's Svenska Dagbladet.

The next step will be whole articles customized for the individual reader. While a person unfamiliar with a topic will need background to understand, an expert will want the details.

7

Interactivity, AR and VR as a part of media

Digital media is still largely an online version of the print original. Fully utilized new technologies such as interactive AR and VR will create whole new formats for media.

With VR, media have the opportunity to give consumers the illusion that they are experiencing the news, rather than just observing it.

8

Smarter advertising formats

Everybody knows that media use targeted ads. If you have been searching for a new car, you will see ads for car brands. But these ads are not always very smart – if you book a trip to Brazil, for example, you will still see ads for hotels in São Paulo long after you return.

We predict that sites will develop a much smarter understanding of behavior in order to understand what consumers need and when. For instance, a social media post revealing that someone is back from a holiday would indicate that they no longer need hotels.

9

Journalism becomes a service

Personalization means storytelling can go beyond telling the masses general information. Digital means an awareness of individual needs and, in many cases, an ability to help solve them.

An online travel section could recommend great restaurants in a city, help make reservations, and even pick a satisfactory alternative if that establishment is full. A digital home improvement magazine could describe how to build a deck in step one, while step two produces a blueprint tailored to an individual's home and sends a shopping list to chosen vendors.

10

More journalists will be replaced by software

In this report, we have argued that many of the tasks that will be performed by software would not have been done at all without computers. For instance, media do not have the resources to write thousands of earnings reports each quarter, and most newspapers cannot hire researchers for every task that could be done by software instead.

Yet it would be naïve to believe that media companies will not also use technology to cut costs by reducing staff. In this sense, artificial intelligence is both an opportunity for journalism and a threat to journalists.

Ericsson is a world leader in communications technology
and services with headquarters in Stockholm, Sweden.
Our organization consists of more than 111,000 experts who
provide customers in 180 countries with innovative solutions
and services. Together we are building a more connected
future where anyone and any industry is empowered to reach
their full potential. Net sales in 2016 were SEK 222.6 billion
(USD 24.5 billion). The Ericsson stock is listed on Nasdaq
Stockholm and on NASDAQ in New York.

Read more on www.ericsson.com