FUTURE SHOCK IS NOW

Trends Report 2018

Canada Media Fund
Fonds des médias du Canada

INTRODUCTION

The relentless march of technology, artificial intelligence, and robotics have certainly left their mark on 2017. For some, the conclusions are alarming, but others are optimistic. Regardless of the outlook, the fundamental question is the same: How does the human set itself apart from the machine? Is technology our friend or foe? Should we fear its consequences?

This legitimate concern is even more important for the creative and cultural industries. Is it possible to remain creative and innovative in a world of similarities powered by algorithms? How do we stay competitive in a media sector dominated by technological titans? How do we adapt our business models in a space where automation is clearly taking over? In a generalized context of mistrust, what can the content creation and distribution sectors do in the months ahead?

This report outlines four major trends that have originated from the convergence and interaction of various phenomena developing at great speed; we must be particularly attentive to them in 2018.

The report presents a selection of main indicators of how the Canadian industry is evolving, an overview of the four main trends and 10 attached appendices explaining the phenomena associated with each trend. Each appendix includes an "Attention Barometer" to help Canadian content producers assess how attentive they should be to the phenomena within the scope of their professional activities.

ATTENTION BAROMETER

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

DASHBOARD

ALL DATA REFER TO THE CANADIAN MARKET, UNLESS OTHERWISE INDICATED.

SMART DEVICES PENETRATION RATE

Smartphone

2013	2014	2015	2016	2017
56%	62%	70%	75%	79%

Tablet

2013	2014	2015	2016	2017
31%	42%	51%	54%	56%

Connected TV

2013	2014	2015	2016	2017
21%	28%	36%	40%	45%
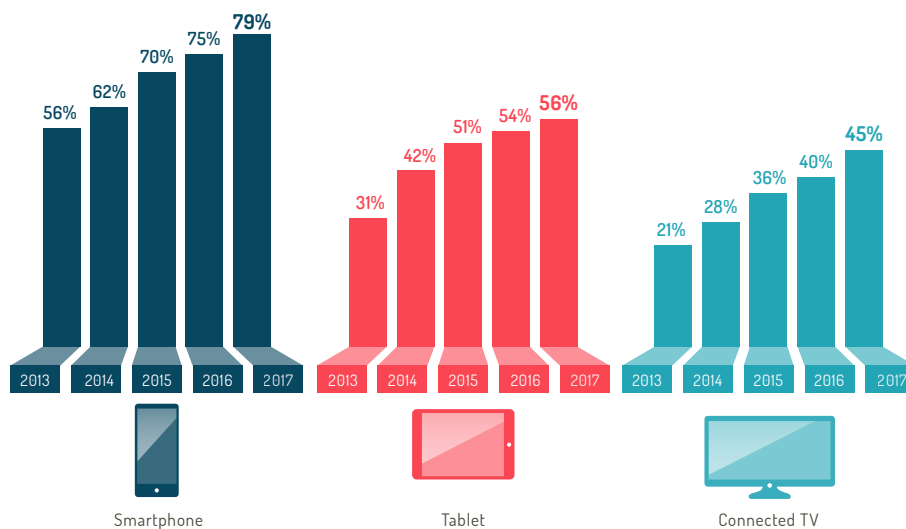
(MTM, Spring 2017)

TV CONSUMPTION BREAKDOWN:
• ON AIR*   VS   • ONLINE**
(average hours per week)

ON AIR

2013	2014	2015	2016
27.9h	27.4h	27.2h	26.6h

VS

ONLINE

| 2013	2014	2015	2016	2017
4.5h	NA***	6.1h	6.6h	6.9h
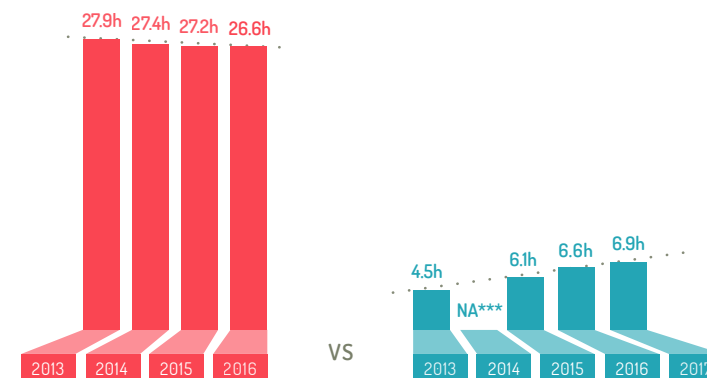
(CRTC, Communications Monitoring Report 2017; MTM Spring 2017)

* On air average calculated on the overall populations, i.e. 2 years and older

** Online average calculated on weekly users 18 years old and older

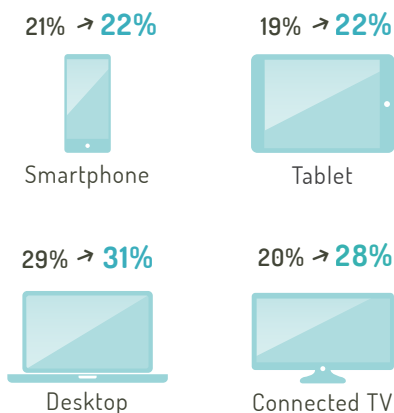*** Information not collected by MTM in 2014

• TV CONSUMPTION   VS   • TIME SPENT ONLINE
(average hours per week)

	2013	2014	2015	2016	2017
TV Consumption	27.9	27.4	27.2	26.6	NA
Time Spent Online	17.5	18.4	19.6	20.8	21.8
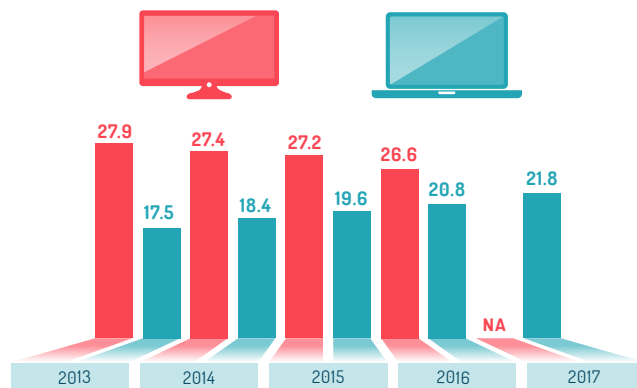
(CRTC, Communications Monitoring Report 2017; MTM Spring 2017)

ONLINE TV CONSUMPTION BREAKDOWN PER DEVICE

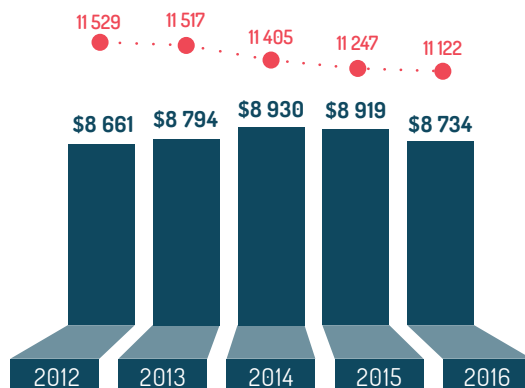(% of population, data from 2016 to **2017**)

Device	2016	→	2017
Smartphone	21%	↗	**22%**
Tablet	19%	↗	**22%**
Desktop	29%	↗	**31%**
Connected TV	20%	↗	**28%**

(MTM, Spring 2017)

DASHBOARD
ALL DATA REFER TO THE CANADIAN MARKET, UNLESS OTHERWISE INDICATED.
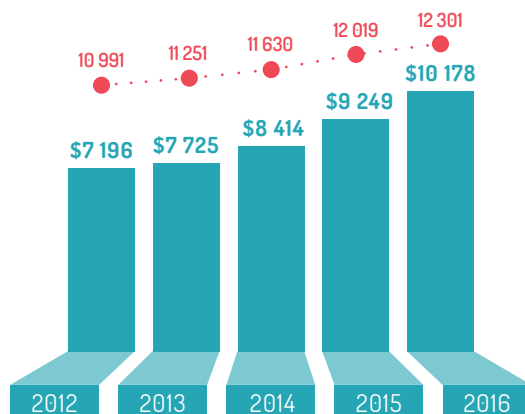
BROADCASTING DISTRIBUTION UNDERTAKINGS
- Subscribers (thousands)
- Revenues ($M)

	2012	2013	2014	2015	2016
Subscribers (thousands)	11 529	11 517	11 405	11 247	11 122
Revenues ($M)	$8 661	$8 794	$8 930	$8 919	$8 734

(CRTC, Communications Monitoring Report 2017)

ADVERTISING SPENDING
$M • TV vs • Internet

Internet:
- 2007: $1 243
- 2008: $1 609
- 2009: $1 845
- 2010: $2 279
- 2011: $2 674
- 2012: $3 085
- 2013: $3 525
- 2014: $3 793
- 2015: $4 604
- 2016: $5 484

TV:
- 2011: $3 467
- 2013: $3 387
- 2014: $3 387
- 2015: $3 220
- 2016: $3 192
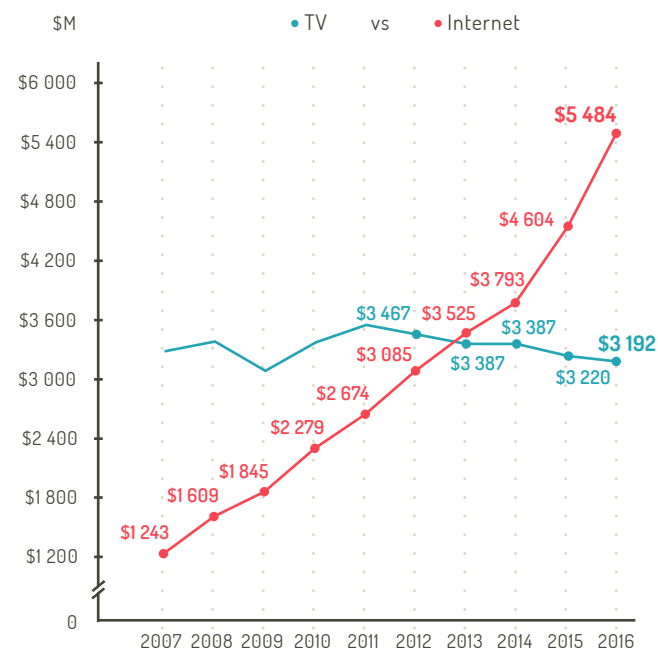
(IAB Canada, Canada Internet Advertising Revenue Survey 2016-2017)

INTERNET SERVICE PROVIDERS
- Subscribers (thousands)
- Revenues ($M)

	2012	2013	2014	2015	2016
Subscribers (thousands)	10 991	11 251	11 630	12 019	12 301
Revenues ($M)	$7 196	$7 725	$8 414	$9 249	$10 178

(CRTC, Communications Monitoring Report 2017)

SIZE OF PRINCIPAL SCREEN-BASED ECONOMIES

$2.6B	$17.9B	$3.7B	$255M
TV Production	TV Broadcast	Games	Cinema
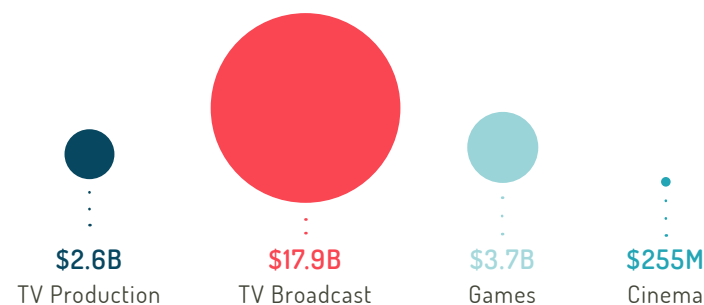
(CMPA, Profile 2016 ; CRTC, Communications Monitoring Report 2017 ;
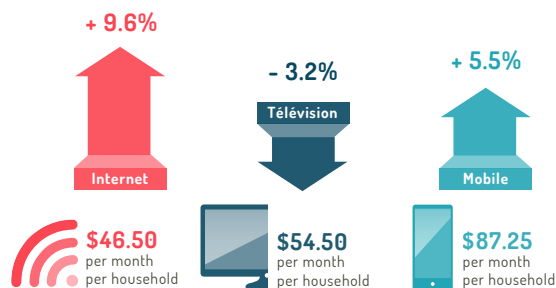ESA Canada, Essential Facts About the Canadian Video Game Industry 2017)

DASHBOARD

COST BREAKDOWN OF TELECOMMUNICATIONS SERVICES IN 2015

(Compared to 2014, excludes wireline telephone services)

In 2015, the amount that Canadian households spent on communications services **increased by 1.71%**, from $214,75 to $218.42 per month, compared to 2014.
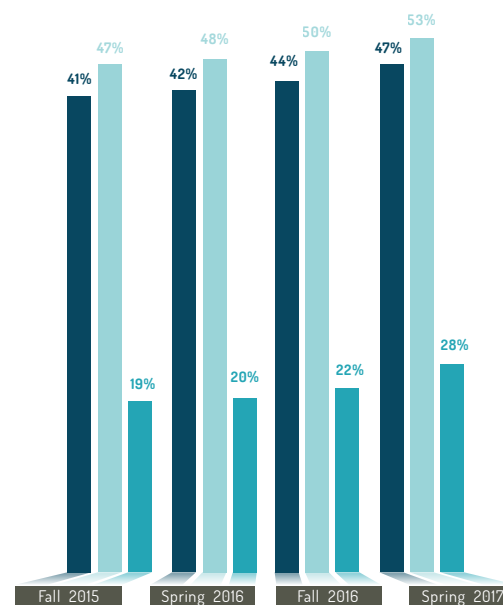
+ 9.6%

Internet

$46.50
per month
per household

– 3.2%

Télévision

$54.50
per month
per household

+ 5.5%

Mobile

$87.25
per month
per household

(CRTC, Communications Monitoring Report 2017)

OVER-THE-TOP TELEVISION SERVICE USERS IN CANADA

NETFLIX

- National average
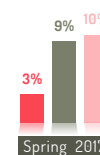- Anglophones
- Francophones

amazon prime video

- Amazon Prime Video (National average)

CraveTV

- CraveTV (Anglophones)

club illico

- Club Illico (Francophones)

	Fall 2015	Spring 2016	Fall 2016	Spring 2017
National average	41%	42%	44%	47%
Anglophones	47%	48%	50%	53%
Francophones	19%	20%	22%	28%

	Spring 2017
Amazon Prime Video	3%
CraveTV	9%
Club Illico	10%

(MTM, Spring 2017)

1. FINDING A COUNTERBALANCE TO ONLINE GIANTS

As already mentioned in our **_Trends Reports_**, the digital revolution has changed business models and given rise to new global giants. While some giants have acquired a stronghold in a specific industry (Netflix for streaming, Steam for video games), others dominate in a wide range of sectors from equipment and software to social media and electronic commerce, and content production and distribution. Google, Apple, Facebook, Amazon, and Microsoft, best known under their acronyms GAFA or GAFAM, are well known in western regions. Other giants are surfacing elsewhere around the world. For instance, Baidu, Alibaba, Tencent, and Xiaomi (BATX) are common in China. The effects are the same as western regions: hyper-concentration and oligopoly.
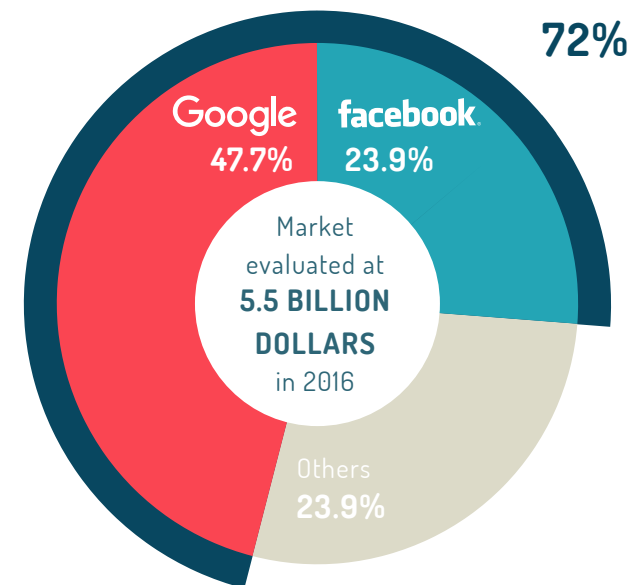
The open and borderless internet has given way to a few digital ecosystems controlled by powerful private businesses some say are similar to "Virtual States" (**see Splinternets appendix**). These businesses control online infrastructures (including cloud computing), browsers, apps stores, operating systems, and search and referral engines. They set technical standards and pricing. In addition, they funnel investments into research and development, especially in artificial intelligence, used extensively to exploit the wealth of data they gather on users.

Does this mean that everyone, users and media professionals alike, is doomed and subject to the whims of today's digital titans? We think not.

We have seen that algorithms have their limits. This year, fake news has multiplied, dodgy content has slipped into once-protected environments (including a major setback to YouTube Kids), and advertisers have been up in arms about their brands being connected to objectionable content on Google's ad networks.

Nobody, however, can deny the benefits of super-platforms. They capture the attention of most worldwide users, disseminate content catalogues globally, and provide publishers with feasible monetization avenues, attracting the lion's share of advertising dollars.

CANADIAN DIGITAL ADVERTISING MARKET SHARE HELD BY GOOGLE AND FACEBOOK IN 2016

Google 47.7%
facebook 23.9%
72%
Others 23.9%

Market evaluated at **5.5 BILLION DOLLARS** in 2016

(Canadian Media Concentration Research Project, 2017)

The year 2017 could be considered our year of awareness, for we noticed the digital giants' strangleholds and many flaws. The year 2018 will be a year of enlightenment, where content creators, producers, and broadcasters must learn to better negotiate their presence on and collaboration with the super-platforms while making better use of the technologies that define our digital landscape.

Reaction has been organized at the user and government level for some time now. Examples include the €2.42 billion fine levied against Google for abusing its dominant position, the €13 billion claim against Apple for unpaid taxes in Europe, measures taken in various countries to control the major platforms even more (among others, **Google v. Equustek Solutions decision** by the Supreme Court of Canada in June 2017 requiring Google to delete information from its search engine), or the growing number of US elected officials claiming that the activities of the online giants should be reviewed in light of antitrust laws (like what was done with AT&T, IBM, and Microsoft in the past). In short, GAFA is being scrutinized by authorities around the world in what many are calling a real 'techlash.'

Business is also taking steps: we see major players in television and film giants such as **Disney**, **HBO**, and **Fox** are regaining control of their catalogues and removing their content from Netflix and Amazon Prime Video. Others are forming or strengthening alliances to better compete against the digital behemoths: **European Media Alliance**; South Korea's **Kocowa** platform; and advertising partnerships such as **Nonio** in Portugal, **Gravity Alliance** in France, **Emetriq** in Germany, and **OpenAP** in the United States.

Emerging technologies promoting decentralization are also becoming popular, as is observed with blockchain, where many media and content creation applications are being assessed and tested (**see Blockchain appendix**). However, many observers are skeptical. Blockchain technology is closely linked to cryptocurrencies like Bitcoin and Ether, which are very volatile and far from being universally accepted. And while the technology has been in development for several years, it has generated few tangible results to date.

Despite these uncertainties, investors remain confident: 2017 investments in the technology reached US$1 billion and the blockchain market itself could be worth trillions in a few years according to some analysts. In terms of the cultural industries, blockchain technology can play a role in optimizing the use of digital cultural products (security, traceability, integrity of data), while cutting out the middleman.

APPENDICES ASSOCIATED WITH THIS TREND

- SPLINTERNETS
- BLOCKCHAIN
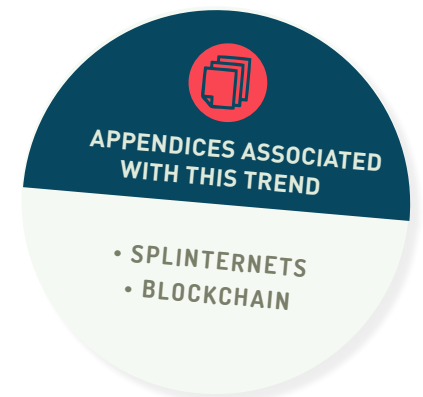
2. APPROPRIATING TECHNOLOGY FOR CREATIVE PURPOSES

Where some see threats, others see opportunities to foster creativity. The ubiquity of social media and the rapid rise of technologies, such as artificial intelligence, are being ingeniously explored by storytellers. Consequently, the grammar of storytelling is evolving rapidly and becoming multi-format. From Twitter stories written in installments of 140 characters or less[1] to hijacking game creation engines for developing narratives for television or virtual reality, there are numerous examples of new technologies playing a role in storytelling.

SOCIAL STORYTELLING

Social media are not a new phenomenon; they have always been testing grounds for creators. American Matt Richtel coined the term *twiller*—a combination of Twitter and thriller. In 2008, he wrote ***It Should Be Snowing***, his first twiller composed of 220 tweets, spread out over a six-month period. As of 2013, fifteen-second serialized fiction episodes appeared on Instagram, the year the platform started to share videos.

In the last few months, social media experiences have increased, giving way to more sophisticated storytelling. One of the keys to understanding this trend is found in the proliferating use of chatbots, offering a possibility for stories to be directly told in messaging apps, blurring the line between conversation and fiction (**see Chatbots appendix**).

A good example of the judicious use of social media in storytelling lies in the Norwegian teen series ***SKAM***. The series did not have a fixed broadcast schedule; instead, it rolled out short online clips in real time when the action takes place. To keep the plot going after the episodes have aired, the characters published content in real time on Facebook and Instagram, encouraging fans

to follow the story and directly interact with characters from their social media news feeds. *SKAM* was a huge success in Norway. The third season averaged 600,000 viewers per episode in a country of just five million people. Broadcasters around the world have bought adaptation rights for the series, but Facebook has put its hand on an English-language adaptation for its Watch platform.

TECHNOLOGY AS AN ALLY

To boost rapid introduction of new technologies, platforms are providing features and application program interfaces (APIs) to explore new genres. Apple made ARKit available, making it easy to develop augmented reality applications. In October 2017, ARKit was the most downloaded iOS app from the App Store. Then in November, Amazon rolled out SUMERIAN, an app used to develop 3D environments for virtual and augmented reality (**see Augmented Reality appendix**).

Many innovative projects get off the ground when connections are made between disciplines that are rarely complementary. Here is one striking example: TFO (Télévision française de l'Ontario) is using the popular and free Unreal Engine to create stunningly realistic virtual sets at much lower cost. The technology opens the door to new possibilities for television virtual sets and tremendous creative freedom for screenwriters.

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[1]   In November 2017, Twitter chose to increase its 140-character tweet limit to 280.

2.   APPROPRIATING TECHNOLOGY FOR CREATIVE PURPOSES (NEXT)

Artificial intelligence can be of use, too. Researchers at the Massachusetts Institute of Technology (MIT) recently developed machine-learning models that can "watch" video clips and establish their emotional arc. Machines can identify the story's strong points, aiding creators to determine and increase the impact of their work on audiences.

DATA-BASED CREATION

Technology developers and big digital platforms help publishers gain a better understanding of their audiences through the use of Big Data, encouraging content creation that is better aligned with the consumers' interests.

The key benefit of making intelligent use of connected technologies and digital distribution is accumulating usage data that can, in turn, influence content creation and increase the creators' and producers' agility. Data can help producers and creators better understand their audiences, ultimately optimizing content and marketing—sometimes in real time.

The clearest example of this quasi-symbiotic relationship between creation and data is illustrated with streamers (**see Streamers appendix**). They are masters in the art of collecting and analyzing data, and reacting to their fans during live broadcasts.

APPENDICES ASSOCIATED WITH THIS TREND

- CHABOT
- AUGMENTED REALITY
- STREAMERS

3. AUDIO'S REVENGE

According to many observers, the online experience is changing because of the quick adoption of mobile use. With voice recognition and voice activation technologies (**see Voice Recognition & Activation appendix**) and the growing popularity of virtual assistants such as Siri, Alexa, and Google, more and more users are moving away from keyboard-and-text-based experiences and turning to voice and audio experiences. Unlike chatbots that respond to text commands, voice robots interpret and execute voice commands.

Statistics show that we have reached a plateau for time spent in front of our screens. According to **Zenith**, media consumption in North America increased by only 1.8% in 2017 and declined slightly on a global scale. So far, time dedicated to online activities has added to time used to consume traditional media in many regions, including Canada. As we reach a point of saturation, online and traditional media now compete to capture users' attention. Media consumption can now increase only if users are not confined to keyboards and screens; instead, they must be given options to consume and interact with content while doing something else.
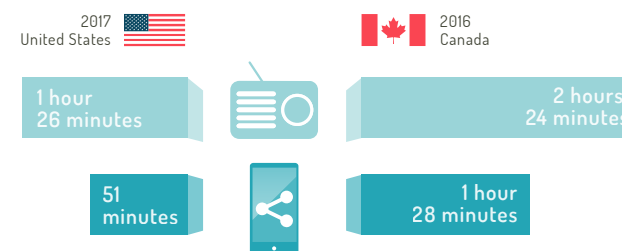
Listening to audio online—especially podcasting (**see Podcasting appendix**)—has grown in popularity in the past two years. According to **Edison Research**, in the United States, listening to audio content online increased from 12 hours and 8 minutes per week on average in 2016 to 14 hours and 39 minutes in 2017. In Canada, the Media Technology Monitor reports that the average listening time increased from about five hours in 2015 to more than six hours in 2017.

The increase in online audio consumption is stimulated by the continued popularity of listening to traditional radio—an activity more popular than some online activities. As surprising as it may seem, people still spend more time with traditional radio than with social media.

Audio is becoming increasingly important in the virtual and augmented reality sectors, too. In 360° immersive experiences, sound is key to maintaining visual continuity and sensory immersion: when users turn away and change their field

of vision, the characters and objects around them continue to exist because of sound. Audio developments in the virtual and augmented reality sphere have been truly spectacular. Many leading content publishers, such as the British Broadcasting Corporation (BBC), have already put the development of binaural sound at the top of their list (**see Binaural Listening appendix**).

• TRADITIONAL RADIO CONSUMPTION VS. • TIME SPENT ON SOCIAL MEDIA
(average number of hours per day)

2017 United States

2016 Canada

1 hour 26 minutes

2 hours 24 minutes

51 minutes

1 hour 28 minutes

(eMarketer, 2018; ThinkTV, 2016; We Are Social, 2017)

APPENDICES ASSOCIATED WITH THIS TREND

• VOICE RECOGNITION & ACTIVATION

• PODCASTING

• BINAURAL LISTENING

4. BUSINESS MODELS: ADVERTISING'S ABOUT-FACE

The advertising business model remains central to the digital content economy. But is it under threat? Some analyses point to that direction further to recent events such as the continued rise of ad-blocking technology (**see Ad Blocking appendix**), the growing mistrust toward programmatic advertising (**see Programmatic appendix**), and the ongoing difficulty of accurately measuring advertising impact and return on investment across all media platforms.

Several analyses from firms such as eMarketer, Zenith, and GroupM are downgrading their growth forecasts in several advertising markets, including Canada's. Deloitte goes so far as to identify an adalergic user type we're seeing more and more of online. To counter this trend, advertisers need to find strategies to circumvent ad blockers. This can be done by promoting advertisements on mobile devices and social media.

Other firms, such as IAB, are less alarmist. There is a consensus, however, that the online advertising model needs to be reviewed to improve transparency, demonstrate more efficiency, and better meet users' needs and expectations. A handful of giants increasingly control the online advertising market more and more these days; this is true in Canada and elsewhere around the world, as already stated in the first chapter. "The top ten internet companies now account for 87% of all revenue, up from 77% in 2009," the **Canadian Media Concentration Research Project** stated, adding, "Google and Facebook dominate the internet advertising market, with nearly three-quarters of the market between them in 2016—up from a little under two-thirds a year earlier."

Content industries have observed that they must find revenue alternatives considering the increased rejection of online advertising. Microdonation is an avenue that is now being explored by bloggers and news media outlets such as *The Guardian*.

The subscription model is yet another alternative. Although the impact of online advertising continues to grow, according to Deloitte, per-user revenue has gone into freefall. As researcher **Leora Kornfeld** explains in an article published on our CMF Trends blog, advertising is no longer sufficient to meet needs. Many content creators are diversifying their income sources, in part turning toward subscription models.

We think that money in advertising will always be available. After all, this is a strong market, costing US$535 billion on a world scale ($11 to $13 billion in Canada according to analyses). The question is, **how will this money be spent in the next few years?** An increasing proportion of ad spending could bypass the content industry's ad inventories altogether, with advertisers choosing to invest in new advertising formats and experiences. Branded entertainment will likely continue to evolve as experiential and influence marketing constantly grow.

APPENDICES ASSOCIATED WITH THIS TREND

- AD BLOCKING
- PROGRAMMATIC
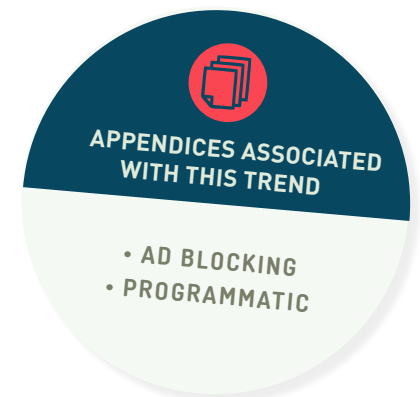
CONCLUSION

Today's trends point to a tomorrow where robotics, algorithms, and artificial intelligence will play an ever-greater role in shaping our world. Additionally, the technosphere is moving toward an economic rationale dominated by the digital ecosystems of a small number of powerful stakeholders. We must prepare for more artificial intelligence, more control, and more consolidation among the greatest stakeholders. At the same time, there will be more interest in alternative offerings, new story formats, and original and diversified niches that take advantage of new technologies and digital uses. Also expect more potential safeguards in advertising, news, and regulation, at least in areas where stakeholders are working to counterbalance internet giants.

The question is not so much whether you play for the optimists or pessimists. Rather, the question to ask at this report's conclusion is:

As content creators, producers, or broadcasters, how do we remain realistic, critical, vigilant, and confident that we will continue to have a viable role to play in the globalized content market?

We have seen that the content market is moving towards a supernova of inventiveness because creativity will always be the best interface between human and machine. It's all about actively participating in the evolving digital landscape and using our smarts to take our rightful place in the process.

Catalina Briceño,
DIRECTOR, INDUSTRY AND MARKET TRENDS, CANADA MEDIA FUND

PHENOMENA TO MONITOR

– IN THE MAKING –

BLOCKCHAIN

– KEEP A CLOSE WATCH –

SPLINTERNETS

AUGMENTED REALITY

VOICE RECOGNITION AND ACTIVATION

BINAURAL LISTENING

– ACT NOW –

CHATBOTS

STREAMERS

PODCASTING

AD BLOCKING

PROGRAMMATIC

SPLINTERNETS

1

HOW ONLINE BALKANIZATION IS CREATING A HEADACHE FOR DIGITAL CONTENT DISTRIBUTION

IN THE MAKING | **KEEP A CLOSE WATCH** | ACT NOW

? WHAT IS IT ABOUT?

Splinternet refers to a **subset of the digital ecosystem** that operates more or less independently from the rest of the internet. The phenomenon, also known as **cyber-balkanization**, was first mentioned more than 20 years ago and has been the subject of major studies, in particular, one by **Harvard University** in 2007. So, despite the ideal of a vast global open network of integrated communications, there are actually **digital barriers**, or borders, limiting the circulation of information and content online.

The causes are numerous, complex, and often interrelated: national regulations and case law related to censorship, doing business, or protecting personal information; business practices and technological developments favouring the development of closed ecosystems or walled gardens; the organic emergence of online communities sharing a culture, language, or common interests; etc. Among the best-known splinternets are the **People's Republic of China**, whose digital ecosystem is tightly controlled by the government and closed to certain platforms like Facebook and Netflix, and the Facebook-driven **Free Basics** program, which provides free access to a limited number of online services in developing countries. Less well-known is **RuNet**, a network of Russian online and app resources. While not the result of any particular regulatory action or concerted business initiative, RuNet has become the main digital convergence point for Russian-speaking communities and is evolving relatively autonomously.

Although it's not new, the splinternet trend is now intensifying under the impetus of digital giants including the American GAFAM (Google, Apple, Facebook, Amazon and Microsoft) and the Chinese BATX (Baidu, Alibaba, Tencent and Xiaomi). These large corporations described by some as "**Net-States**" are expanding their services, apps, features, and content to keep their billions of users from ever leaving their respective digital ecosystems.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

In addition to filter bubbles, covered in our previous *Trends Reports*, the growth of splinternets further complicates **content marketing** and **discoverability**. We must not only understand how the algorithms of a platform work (how to capture its users), but we must also know what its digital boundaries are: the consumers it hits and those it misses.

💡 INTERESTING FACTS

At the technological level, the development of splinternets has been facilitated by the decline of **interoperability**, the ability of one computer system to work with other products or other computer systems. Unlike early web technologies (browsers, websites, HTTP protocol), many of today's devices, apps, and operating systems (such as Android and Mac OS) are not interoperable. Content producers and distributors are familiar with that problem: to distribute content in Google or Apple ecosystems, for example, you need to develop apps for everyone.

📖 GO DEEPER

- For more on the cyber-balkanization debate, coverage in **The Economist**, **Wired**, and **Business Insider** will provide plenty of food for thought.
- An article on our CMF Trends blog will also fill you in on recent developments in **filter bubbles**.
- **China, land of the new digital giants**: discover these new giants and how Canadian content companies have successfully entered the Chinese market.

🔍 WORTH FOLLOWING

In the US, the Federal Communications Commission (FCC) has recently voted in favour of dismantling the regulations related to **net neutrality** (the principles that guarantee equal treatment for all online data flows). This decision could accelerate the splinternet trend by allowing digital platforms and internet service providers to favour certain types of content over others (like Facebook does with its Free Basics service outside the US). For Canadian content companies counting on business in the US market, the ramifications could be significant.

BLOCKCHAIN

2

A TECHNOLOGY ON THE RISE THAT IS GENERATING A LOT OF INTEREST IN THE MEDIA SECTOR

KEEP A CLOSE WATCH · ACT NOW · IN THE MAKING

? WHAT IS IT ABOUT?

Well known yet poorly understood at the same time, here's how **Blockchain France** explains the concept:

"*Blockchain is a **transparent and secure information storage and transmission technology that operates without a centralized control mechanism**. By extension, a blockchain is a database that contains the history of all the exchanges made between its users from the time it was created. (…) There are public blockchains open to all, and private blockchains, whose access and use are limited to a certain number of players. A public blockchain is like a large public ledger, anonymous and tamperproof. As the mathematician Jean-Paul Delahaye wrote, one must imagine "a very large ledger everyone can freely read and freely write in, but one that is indestructible and impossible to erase."*

The ledger comparison is especially apt since blockchain was originally designed to control the issuance and circulation of Bitcoin digital currency. But blockchain technology extends far beyond currency and into industries where it could, for example, be used to frame transactions, generate records, and manage smart contracts (programs that execute the terms of a contract without human intervention). In short, blockchain may replace some current processes and intermediaries with reliable, autonomous, and more efficient information technology. Though challenges remain (technological and legal, among others), blockchain is set to become an established technology. Investments in the sector reached US$545 million in 2016 and may hit more than US$830 million in 2017 according to **CB Insights**.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

Blockchain made its impressive breakthrough in the content industries through music. In 2015, artist Imogen Heap teamed up with the **Ujo Music** platform to distribute a song using blockchain technology and Ether digital currency. One of their basic aims was to ensure fair remuneration for creators and rightsholders.

Now blockchain applications range into television and film: studios with blockchain tools for creators and producers (**SingularDTV**), distribution platforms (**Stream, Viewly, Livepeer, Flixxo**), records to protect rightsholders (**Po.et, Veredictum**), and the sale of advertising inventories for traditional and OTT television (**Blockchain Insights Platform** from Comcast, **MadHive**). **Videogames** have adopted it, too. They include games developed on blockchain infrastructure (**Spells of Genesis** from Everdreamsoft), marketplaces for in-game items (**Gameflip**), and eSports platforms (**FirstBlood**). While blockchain technology has yet to gain wide traction in these sectors, pilot projects and proofs-of-concept are proliferating.

💡 INTERESTING FACTS

- Blockchain is also known as **distributed ledger technology**.

- The programmer behind one of the most famous blockchain platforms, Ethereum (which includes Ether cryptocurrency), is Canadian Vitalik Buterin.
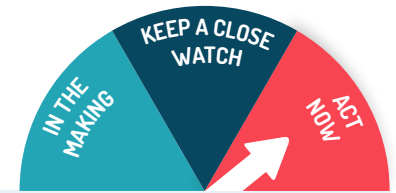
📖 GO DEEPER

- For a creator's perspective on blockchain and what it could mean, read about singer-songwriter Imogen Heap's first-hand experience in the **Harvard Business Review**.

- **CMF Trends** features 3 examples of how blockchain could develop in the cultural industry. Subscribe to our **newsletter**, if you have not already done so: we will publish a detailed report on blockchain and the Canadian media industry next spring.

🔍 WORTH FOLLOWING

Ontario French-language public broadcaster, Groupe Média TFO, announced a **new blockchain prototype** in August 2017 – a "first" in the Canadian television sector that's worth watching.

CHATBOT

INTERACTIVE EXPERIENCES ARE POPPING UP IN INSTANT MESSAGING APPS

3

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

? WHAT IS IT ABOUT?

A bot is a **computer program** that automates and performs a task for users. Unlike **voice-activated virtual assistants**, chatbots simulate conversation from **text commands** sent through a chat interface, app, or online.

Software interacting with users from a set of predetermined responses is nothing new by itself. Launched in 2001 and downloaded 30 million times, the **SmarterChild** chatbot, integrated with AOL Instant Messaging and MSN Messenger, allowed users to send text questions about the weather, sports results, the stock market, or other topics. What's different today is how rapid advances in artificial intelligence (AI) are producing increasingly intelligent chatbots that are actually able to teach themselves as they go along. Also, chatbots are being deployed on major messaging services along with easy application program interfaces (APIs) for developers to create chatbots.

THE TECHNOLOGY BEHIND TODAY'S INTELLIGENT CHATBOTS

- **Natural language processing (NLP):** Interacts with humans by speaking their language. NLP uses a system of natural language understanding (to derive the meaning of human language) and generates a natural language response (to translate the computer response into human language).

- Chatbots can improve their performance with **machine learning**, mastering their bot skills with human assistance, or through **deep learning**, where they evolve without human intervention.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

There are more than 5 billion active messaging users out there. With chatbots, content creators can now connect with this massive global audience through **personalized interactive experiences**. And the moment you start experimenting with chatbots, all kinds of narrative possibilities will arise. Like the experience of talking with a fictional character in the chatbot created to promote the latest *Teenage Mutant Ninja Turtles* release. Others invite users to decide how a story actually unfolds, like in *Game of Thrones Survival*.

💡 INTERESTING FACTS

Tools for creating a chatbot of your very own: **PullString** and **Chatfuel**

📖 GO DEEPER

- For an overview of chatbots as a storytelling interface: *How chatbots can be used to tell stories?*
- **Examples** of chatbots created by players in the audiovisual sector.

🔍 WORTH FOLLOWING

In February 2017, the Canadian self-publishing platform **Wattpad** launched **Tap**, an app for telling stories as instant messaging conversations. Their 'Tap Originals' category goes beyond text messages by integrating videos, images, voice memos, and even 'choose your own adventure' elements that allow users to play a role in how the action develops.

AUGMENTED REALITY

ONLINE GIANTS HOPE TO DRIVE CONSUMER ADOPTION OF AR BY GIVING TOOLS TO MOBILE DEVELOPERS

4

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

? WHAT IS IT ABOUT?

Pokémon Go revealed the immense potential of mobile augmented reality (AR) in 2016. The use of a smartphone to **superimpose digital content onto the real world** led to a quick reaction from online giants moving to establish themselves as leading AR ecosystems. Apple, Facebook, and Google launched tools last year to make it easier for outside developers to create AR content and apps.

Facebook's **Camera Effects** platform, which launched in April, helps developers create AR image filters and interactive experiences. Apple's **ARKit** which developers can use to feature AR content within their own iPhone and iPad apps was announced in June and officially launched in September. Google has a rival mobile AR creation tool for the Android operating system, **ARCore**. At the time of writing, it's only available to developers, but Google hopes to publicly launch ARCore in the coming months. Digi-Capital looked at unique users for Camera Effects and the installed base of devices for ARKit/ARCore. It predicts that ARKit will come first in 2018, before being overtaken by ARCore in 2019 – even though Camera Effects led the AR race in 2017.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

As it doesn't require a headset or any additional device other than a recent smartphone, mobile AR could easily become the dominant technology in the AR/VR market in the foreseeable future. Indeed, investments are now shifting from VR to AR. Digi-Capital says mobile AR could have over twice the installed base in 2017 of the entire AR/VR headset market by 2021. Sensor Tower calculated that only one month after ARKit's official launch, iPhone and iPad AR apps had been installed more than 3 million times worldwide.

The leading ARKit apps categories are games, utilities and entertainment (in that order). That's led many studios and start-ups to release or announce new games and apps tied to established IPs, such as *Star Wars, The Walking Dead, Transformers,* and *Harry Potter*. AR is also increasingly used in marketing with apps such as **IKEA Place** that let customers preview how the retailer's products fit in their home.

💡 INTERESTING FACTS

Many analysts see AR on smartphones as a bridge to consumer-centric AR glasses or headsets. Apple is thought to be working on an AR headset that could ship as early as 2020.

📖 GO DEEPER

This **analysis** of the mobile AR market by Digi-Capital's founder Tim Merel offers a good overview of what to expect in the coming months.

🔍 WORTH FOLLOWING

AR is often associated with extremely large corporations, among them Apple (ARKit), Google (ARCore), and Microsoft (Hololens). Nonetheless, many smaller companies are very active, too. These include **Blippar**, the first mobile AR advertising unicorn. It recently launched a facial recognition feature and an AR navigation map. There's also **Magic Leap** which announced it will ship its first AR glasses this year, **Catchoom**, an image recognition and AR platform, as well as **Daqri**, which started shipping AR smart glasses for professionals in November 2017.

STREAMERS

HOW MANAGING DATA CAN MAKE YOUR CHANNEL GROW

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

? WHAT IS IT ABOUT?

Streamers are creators specializing in live video broadcasts on digital platforms. Live streaming often allows the audience to interact directly with the streamer via instant messaging. Streamers cover a wide range of topics but one of the most popular is live video game broadcasts where the streamer simultaneously narrates the gameplay.

With the dramatic rise in eSports, demand for video game content is booming. Worldwide revenues for 2017 are estimated at $US4.6 billion and the user base (currently at 665 million followers) is expected to grow by 21% by 2021. Video game content platform **Twitch** has 100 million active users, with 15 million of them spending an average of 106 minutes on a daily basis. To capitalize on this trend and capture the attention of such a huge audience, digital platforms are competing fiercely to entice streamers with analytical tools and various revenue sources.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

Unlike conventional methods of distributing film, radio, or television, online distribution can provide a direct connection between content and consumer, so you can collect accurate data on the composition of your audience as well as on how and when they interact with your content. Analytics can help producers and creators better understand their audience to optimize their content and marketing. The direct connection also allows you to modify content in real time based on those actually consuming it. In addition to collecting data about their own content, producers and creators can also use publicly available data (through services like Google Trends, social media platforms, or private analytics companies) to better understand current trends and the improvements that will make a given project more attractive to a given audience.

The case of streamers is especially noteworthy. They have become masters at the art of analyzing user data to the point where they can actually adapt their performance in real time. Access to data puts creators in control, allowing them to make changes based on how the audience interacts with their content. So, there is something here to learn for all those who produce digital content for direct distribution to users.

💡 INTERESTING FACTS

It's not just video game content broadcasters that are popular in the world of live streaming. In South Korea, the trend of live-streaming *mukbang* artists eating large meals can earn their creators US$10,000 a month for their efforts.

📖 GO DEEPER

- Take a **guided tour** of the Twitch dashboard with tips on using statistics to grow your channel.
- Take an interactive NFB tour into the world of *Streamers talks*

🔍 WORTH FOLLOWING

Twitch is diversifying its business by offering free live marathons of traditional television shows where viewers are invited to participate through a group instant messaging window. Something for everyone on the menu: *The Joy of Painting, Mister Rogers' Neighborhood*, or all 831 episodes from the 23 seasons of *Power Rangers*.

VOICE RECOGNITION AND ACTIVATION
VOICE TECHNOLOGY SIMPLIFIES SEARCH AND IMPROVES ACCESSIBILITY

6

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

? WHAT IS IT ABOUT?

Devices that use **voice for primary input and output** have become more available and popular. Unlike **chatbots**, voice bots can interpret spoken words and carry out commands without the need to use text. Many voice bots take the form of intelligent personal assistants, such as Amazon's Alexa, Apple's Siri, Google Assistant and Microsoft's Cortana, but there are many more devices using voice search such as streaming media players (Apple TV, Chromecast, Fire TV Stick, Roku), smart televisions, and game consoles. From 2015 to 2016, the number of shipped devices using voice for primary input and output jumped from 1.7 to 6.5 million.

Content creators are experimenting with **voice applications** they call "skills." For example, the BBC created an interactive audio drama called *The Inspection Chamber*. Debuting as an Amazon Alexa skill in October 2017, it gives listeners a way to interact with the story and change its outcome. Hollywood has also released skills to accompany movies such as *Dunkirk* and *Spider-Man: Homecoming*. They let you play a game set in the stories' universe or learn more about the movie and its cast.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

Voice technology does away with clumsy text searches via TV remotes, computers and so on. According to TiVo's *Q3 2017 Video Trends Report* on American and Canadian markets, a third of respondents who own a home assistant device use it to stream and watch video content on a TV.

It also **democratizes online accessibility and technology in general**. You don't need to read or write, just speak. In India, for example, many users rely on voice activation and imagery instead of typed searches and emails. Google now showcases photos and videos before text links at the top of certain searches. Indeed, it's likely the next billion online users will access content vocally and with images over typing and text.

While consumer interest is obvious, there are still barriers to widespread adoption of voice search. Personalization (knowing who is asking the question), intent (understanding the context), and privacy (easing consumer concerns about the storage and use of personal data) stand out as areas that need improvement.

💡 INTERESTING FACTS

TiVo's Data Science team reviewed 10 months of voice search data from a major pay-TV provider. It found that close to 92% of all voice searches were for a particular title or channel.
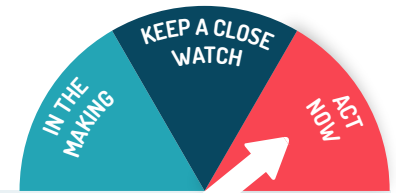
📖 GO DEEPER

More voice technology information appears in the substantial analysis: *Talk show – the rise of voice-based discovery* published on Digital TV Europe.

🔍 WORTH FOLLOWING

Several major voice-activated devices have just reached the Canadian market: while both Google Home (June 2017) and Amazon's Fire TV Stick (November 2017) supports English and French, Amazon's Echo (December 2017) only supports English. The adoption rate and use of these devices in Canada over the coming year will be of great interest, especially when it comes to **discovering content**.

PODCASTING

ONLINE AUDIO IS THRIVING AND IT PLAYS AN INCREASINGLY IMPORTANT ROLE IN THE AUDIOVISUAL SECTOR

7

WHAT IS IT ABOUT?

The term podcasting was first coined in 2004, but it took 10 more years for podcasts to start building big audiences. That's when the launch of popular shows, such as *Welcome to Night Vale* and *Serial*, made the **downloading of audio files to personal computers or mobile devices** a sensation. Today, the ratio of people who listen to podcasts is one in five for Canadians (Media Technology Monitor, Spring 2016) and one in four for Americans (The infinite Dial, Winter 2017). Online audio is booming as entertainment offerings have moved beyond traditional radio: there are now several digital music services such as Spotify and Apple Music along with a wide offering of audio dramas and documentaries targeted at niche audiences scattered across the globe. In Canada, sports followed by investigative and editorial are the two most preferred types of podcasts.

Their popularity attracts ad revenues. The Interactive Advertising Bureau (IAB) has analyzed the US podcasting market and expects an 85% sales increase from 2016 to 2017. That's a jump from $119 million to $220 million. Even so, many creators still struggle to bring advertisers on board. Apple has been a big factor because it handles most podcasts and, until recently, did not offer in-episode analytics. Until December 2017, creators and advertisers had to rely mainly on download totals to measure success. Deeper analytics should help all sides make better decisions.

WHY IS IT IMPORTANT TO OUR INDUSTRIES?

The **serialization** aspect of podcasts makes them easily adapted for television. Some popular podcasts are transitioning already. In 2017, Amazon Studio produced the TV version of *Lore,* a horror podcast, and ordered two seasons of *Homecoming*, a political thriller based on the podcast of the same name. In 2018, ABC will air *Alex, Inc.*, a sitcom inspired by the podcast documentary *StartUp*. FX has also struck a development deal with Sony Pictures Television for a series based on *Welcome to Night Vale* – a podcast which has also led to live shows, novels, and script books. It could work both ways, as well, so that we might anticipate podcasts created from TV shows.

INTERESTING FACTS

- In Canada, half the audience listens to podcasts on their smartphones, according to a survey by the Media Technology Monitor.

- 65% of listeners are willing to buy products and services advertised on podcasts, according to the IAB. Direct response ads, read by the podcast hosts, are most effective.

GO DEEPER

Look into the origins of podcasting and its potential use in VR and 360° experiences at *Podcasting is conquering transmedia and virtual reality*. Also, *The New Podcast Economy* analyzes business models at the core of this flourishing industry.

WORTH FOLLOWING

More brands and organizations are creating their own audio shows. General Electric, eBay, Lenovo, Shopify, Tinder – even the UK Parliament – have launched podcasts. While they gain little, if any, advertising revenue here, podcasts are seen as a valuable way to connect with attentive audiences and promote a brand.

BINAURAL LISTENING
AN ESSENTIAL TECHNOLOGY FOR DIRECTING ATTENTION AND ENHANCING IMMERSION

8

❓ WHAT IS IT ABOUT?

Binaural listening uses headphones to **reproduce in 3D how we naturally hear the sounds** that surround us. To produce this effect, a slight shift is created between the sounds perceived in each ear. The technology has been around for more than a century, but is now back in the headlines thanks to the growing popularity of one-to-one media experiences (including virtual reality (VR) and mobile content). There are 2 types of binaural recordings: **native** (a soundtrack captured directly in binaural) and **dynamic** (created from a mono track and modified through an algorithm). Dynamic binaural audio is the game changer, since it lets you create a **spatial sound field that changes in real time** according to whatever the viewer is watching.

ADVANTAGES	DISADVANTAGES
Emphasizes the sense of immersion by stimulating both sight and hearing to increase the feeling of being there.	Binaural lends itself more to certain types of content (including long shots, 360° experiences, VR, and reproduction of specific acoustics and horror scenes).
For directing and maintaining the spectator's attention in 360° and VR productions.	To create a binaural synthesized sound, it's best to record dialogue and ambient sounds separately.
Produces an extremely clear and precise sound (like a sound from another room, or a whisper in the ear).	The effectiveness of sound spatialization is based on the individual shape of each user's head. We don't all perceive binaural sound in the same way.
No specialized equipment is required for a binaural experience.	Headphones are required for optimal binaural listening. The technology is best suited to individual experiences.

❗ WHY IS IT IMPORTANT TO OUR INDUSTRIES?

Sound occupies a major place in 360° and VR productions as a continuity vehicle that allows users to look in all directions. Creators were quick to understand the importance of binaural to accompany this type of experience (eg. *Strangers with Patrick Watson* by the Montreal studio Felix & Paul in 2014, and *Notes on Blindness* in 2016).

Another important binaural benefit is its ability to render in three dimensions a sound heard through headphones, at a time when 43% of North American 18-to-35-year-olds are watching movies or series on their smartphones at least several times a week. Binaural sound is also increasingly used in **podcasting** as well as in in television. The BBC has, among other things, created a binaural track for an episode of *Doctor Who* and for a several *Planet Earth II* episodes produced for Snapchat social media.

💡 INTERESTING FACTS

Binaural sound was born in France in 1881 when Clément Ader's Théâtrophone made it possible to listen to an opera performance by holding a telephone handset to each ear.

📖 GO DEEPER

In this **interview**, Audiogaming founder Amaury La Burthe explains the process of creating the binaural soundtrack for the *Notes on Blindness* VR experience.

🔍 WORTH FOLLOWING

Binaural is a priority at the BBC research and development division, with the hope of producing more and more programs with spatial sound. The ultimate goal is to offer 3D sound scenes that automatically adapt to the playback system of the listener (binaural sound when headphones are used, surround sound when a home theatre system is used, etc.).

9 AD BLOCKING
ADVERTISERS SEEK THE PATH OF LEAST RESISTANCE

KEEP A CLOSE WATCH

IN THE MAKING

ACT NOW

WHAT IS IT ABOUT?

Ad blocking software **modifies or removes display** ads on computers, tablets, or mobile phones. The programs are downloaded by users or, in some cases, pre-installed on operating systems (Apple iOS) or in browsers (Google Chrome).

Pre-installation is an accelerating trend, leading to rapid growth worldwide. A recent report by **PageFair** pegs ad-block use at 11% of the world's online population. That's more than 600 million devices, 62% of them mobile. In 2016 alone, blockers were installed on 140 million of that 600 million. The incidence of blocked advertising in Canada is high, according to recent studies: between 17% and 25%.

PageFair found that users mainly wanted to reduce interruptions (29%) and protect against viruses and malware (30%). The second point is no surprise since **malvertising** (malware spread through online ads) is in **full growth mode**. Personal data and privacy count as concerns too, but are less troubling than slow browsing speeds and the glut of online ads.

WHY IS IT IMPORTANT TO OUR INDUSTRIES?

It's hard to judge how much revenue is lost to ad blockers. **Ovum**'s figures range from US$16 billion to US$78 billion by 2020. What can't be predicted are the strategies media companies will develop to counter the phenomenon. In Canada, the problem has hit entertainment content, sports, and video games especially hard. A **study** by IAB Canada and comScore reveals that.

The study also found that 78% of Canadians prefer free online content with ads over paid options – which means advertising retains its allure for monetization. What's needed is a better alignment with consumer preferences: less disruption and shorter formats for both digital and traditional media. FOX, for example, now offers **6-second advertising spots** during football and baseball – a short format that is also working for Google on **YouTube**.

INTERESTING FACTS

One type of ad stands out as the most hated on both PC and mobile: the pop-up! Get all the details **here** about a recent North American and European survey that gave 25,000 online users a chance to vent.

GO DEEPER

Keep up with the latest in research at the Turner **AdLab**, whose mission is to "create and deliver an enhanced, less disruptive advertising experience for consumers."

WORTH FOLLOWING

In 2016, media and advertising organizations (including Google, IAB, GroupM, Procter & Gamble, and *The Washington Post*) formed the Coalition for Better Ads. It aims to develop products and ad experiences that counter the upsurge in blocking. The Coalition published its *Better Ad Standards* in June 2017, a rundown of practices most likely to make consumers block advertisements. Google has also developed its own tool, the **Ad Experience Report**, which lets platforms analyze the advertising experience offered on their sites.

PROGRAMMATIC

10   PROGRAMMATIC HITS PRIME TIME
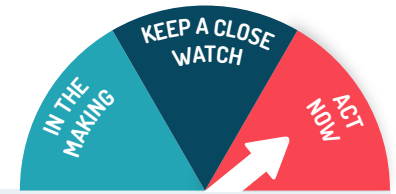
? WHAT IS IT ABOUT?

Programmatic refers to an **automated technology** for selling, buying, and delivering advertising impressions in real time. Ad inventories are linked to ad exchanges where advertisers participate in real-time bidding for impressions. Programmatic allows advertisers to access huge inventories, benefit from efficiencies, and improve targeting. It also offers media an automated solution to optimize the monetization of their growing inventories.

Although it has been widely criticized recently for the controversial placement of advertising next to offensive content as well as questions about the reliability of its audience measurement, programmatic still seems on target for strong growth in the years to come:

- By 2019, 67.5% of global online advertising will be sold programmatically, compared to 59% in 2017. In Canada, 81% of online advertising was programmatic in 2017.

- The value of programmatic advertising worldwide is expected to increase from US$57.5 billion in 2017 to US$84.9 billion in 2019.

! WHY IS IT IMPORTANT TO OUR INDUSTRIES?

While most programmatic revenue is now generated in the online advertising market, this could change. Although several issues still need to be addressed – setting common guidelines and standards for data collection – programmatic is likely to be extended to mainstream media. The shift in audience (and advertising dollars) from television to digital will encourage broadcasters to shift to programmatic technology to maintain their dominant position in the advertising market. Still in its infancy in most markets, Zenith already sees a mainstream migration in the US, where it estimates that 6% of programmatic spending was generated in television, radio, outdoor, and cinema in 2017, a percentage that could reach 13.6% by 2019.

💡 INTERESTING FACTS

A working group of major players like Hulu, Adobe, CBS, FOX, and DataXu has developed **ABCD** (Automated Linear Broadcast Cross Device) standards for best practices in buying linear TV inventory and for measurement systems on multiple devices. It's definitely a step in the right direction towards establishing common technical standards for the advertising and audiovisual sectors.

📖 GO DEEPER

- Read all about it in CMF Trends: *How programmatic technologies can automate and personalize the distribution of cultural and editorial content.*

- Dig into this **Digiday Report** for even more details on programmatic television

🔍 WORTH FOLLOWING

Blockchain can be used to fight fraud and ensure brand security in programmatic. Start-ups **Blockchain Programmatic Corporation** and **MadHive** are already betting on it.