



FLEISHMANHILLARD
HIGHROAD

TECH TRENDS 2019

*The Fads.
The Fears.
The Future.*



SOPHIE SCOTT
Global Managing
Director Technology,
and Senior Partner,
FleishmanHillard



If technology is constantly changing, it's inevitable that people are constantly changing how they feel about it too. What people once feared, they now embrace. What they once barely even imagined, they now barely even notice.

To truly understand these feelings – and with that, to truly understand how brands must respond to them – we analysed more than one billion conversations on Twitter from the past year*. While the world talked about everything from Blockchain to AI ethics to augmented reality, we listened.

That said, we did our own share of talking too, asking a panel of over 25 global technology leaders about the fads, fears and opportunities we will face throughout 2019.

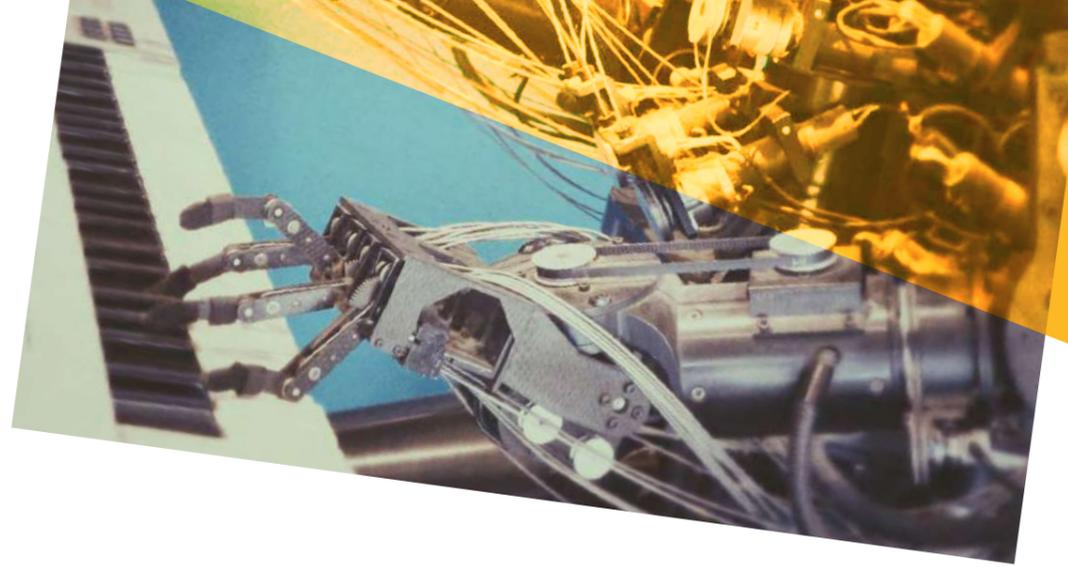
This report provides a synopsis of that listening and talking. It highlights some of the major trends we foresee for 2019, and helps brands understand how they might join, participate in and influence the debate around them. From a surge in interest around edge computing, to a continued focus on the need for brands to ensure they are delivering technology for good, the responses are much like technology itself – sometimes surprising, sometimes challenging, and always thought-provoking.

*This report highlights some of those trends and opportunities.

METHODOLOGY

Consumers regularly share their thoughts about brands, products and experiences on social media. To prepare the data for this trends report, FleishmanHillard analysts created keyword strings representative of Gartner's 2017 and 2018 trends analyses. Searches were then optimized using a stream of Twitter data for the past two years – between January 2017 and October 2018 – to capture topics as they were being discussed. We sorted and filtered billions of tweets, which were classified through a series of monitoring exercises, to extract the backbone of this report.

Using aggregated results, we began to uncover trends in volume, topics and sub-topics that informed our analysis of technology as a sector, and innovation more broadly. This report reflects global, English-language conversations. All data falls within the public domain and was aggregated to ensure that personally identifiable elements were removed from the analysis and methodology.

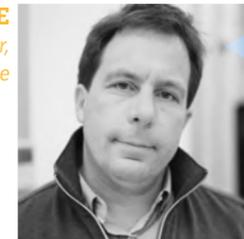


ARTIFICIAL INTELLIGENCE

Expect the conversation around AI to narrow in 2019; shifting from broad definition to nuance and detail.

Our social listening reveals people now demand in-depth information on specific areas such as smart robotics and machine learning. Conversational AI (computers that people can interact with simply by having a conversation), for example, increased 54% in Twitter topic volume from 2017 to 2018. Based on this, brands that engage in detailed and explanatory conversations, who seek to place AI in real-life contexts, will be 2019's big winners.

STEPHEN UPSTONE
CEO & Co-Founder,
LoopMe



Advanced AI technologies will enable marketers to understand their audience and consumers better, as AI can spot relationships between variables that a human analyst just can't. This will lead to more effective and personalised experiences, not just in Creative, but also in ad delivery, driving results for brands.

Our research found that one third of marketers surveyed couldn't measure the impact of AI investment – something we would expect to see decrease moving into 2019.

PROFESSOR SEEN-MENG CHEW
Associate Professor
of Practice in Finance,
Department of Finance,
the Chinese University of Hong
Kong Business School



Companies are developing the next generation of electric cars that employ AI and facial recognition technologies. Some of the new models are priced at levels targeting middle-income populations, thus making broad usage possible. Equipped with self-driving and data-storage capabilities, as well as other intelligent interactive features, these smart cars also enable the development of ancillary products such as personalized insurance.



PROFESSOR MICHAEL ZHANG
Associate Dean, the Chinese University of Hong Kong Business School



Practitioners have picked the low-hanging fruit already. So 2019 is unlikely to see any significant new applications of AI. We are likely to see some consolidation of solutions. Winners in each field will become more dominant.

KARUN BUDHRAJA
Vice President, Corporate Marketing and Communications, Amadeus Asia Pacific



AI has the power to dramatically change the travel industry - from chatbots, to autonomous vehicles and biometric identification - but for the most part, its application is still in its infancy...

HELEN FARRIER
Global Communications Director, Seagate



The exponential growth of data will be one of the key challenges and opportunities facing businesses in 2019. The global datasphere is forecast to reach 175 zettabytes in size by 2025, according to IDC research sponsored by Seagate, growth mainly driven by enterprise businesses increasingly storing their data in the public cloud. Technologies like artificial intelligence, machine learning and advanced analytics all rely on ubiquitous, secure and fast access to data to be effective, and in 2019 we expect to see more businesses in a variety of industries invest more time and money in practical steps to take control of their data.

AMY MACLEOD
Corporate Diversity Officer, Mitel



The impact of AI is having a massive disruptive impact on historic job categories and business needs, with research suggesting that approximately 65% of the jobs that today's middle school students will hold as adults don't exist today. That cohort will enter the workplace in less than a decade which will have huge implications for the development of post-secondary curriculums, skills training and corporate talent planning. Human skills like critical thinking, communication, ability to build consensus and to develop policy become more important in an AI business environment where business processes become automated.

AUGMENTED ANALYTICS

Augmented analytics focuses on AI's potential to enhance human intelligence rather than replace it. Essentially, by automating the process of data preparation, insight generation and visualisation, non-experts can have greater access to big data insights than ever before.

Our social listening points to this hitting the mainstream in 2019. In a conversation driven by brands, but steered by the consumer, people want to understand both what augmented analytics means by itself, and what it means against other big trends.

BRIAN DUFFY
President EMEA North, SAP



2019 will be the year when we really start to appreciate that data and robots aren't going to take our jobs. They're going to make us more human and create jobs we never knew existed. We've already made huge amounts of progress working out how to make what we do 'smarter'. By that I mean more efficient, less labour intensive and more creative.

GIORDANO ALBERTAZZI
President EMEA, Vertiv



Organisations will increasingly turn to intelligent systems and machine learning to simplify operations, preserve institutional knowledge and enable more predictive and efficient service and maintenance, particularly within the data centre industry.

MARK YOUNG
Chief technology Office,
The Climate Corporation



One of the most obvious benefits of data transparency in agriculture will be understanding the performance of different products and practices. As datasets grow, farmers will be able to quantify and understand the performance of each of their decisions in a way they have never been able to do before. This will change how they select their products, as well as the practices they employ to use those products.

PROFESSOR KEVYN YONG
Associate Professor of
Management and Associate
Dean of Corporate
Programs, ESSEC Business
School, Asia Pacific



There will be an increasing focus on leveraging AI for innovation—I think of it as moving from artificial intelligence to augmented innovation. I think that AI will change how organizations think strategically about innovation, in that AI will foster a greater human-centric focus on gaining insights into how we might create value for the user or customer. In other words, as we develop better approaches to developing and leveraging AI for innovation, AI will augment our ability to do good work – work that is both technically excellent and creates a positive impact on society at large.

DR. LUC JULIA
Chief Technology Officer,
Samsung Strategy and
Innovation Center



AI is still in its infancy. In order to reach its full potential, we need to focus on the multimodal aspects of data. For example, with speech recognition, we should also be looking at a person's gestures, lip movements, and other senses. The need for interoperability between these multi-dimensional signals increases exponentially when we talk about more complex use cases, like autonomous driving.

“There will be an increasing focus on leveraging AI for innovation—I think of it as moving from artificial intelligence to augmented innovation.”

— Professor Kevyn Yong, ESSEC Business School

EDGE COMPUTING

Edge computing refers to data processing that's done at, or near to, the source of the data. Instead of relying on the cloud at one of a dozen remote data centers, it streamlines the flow of traffic from IoT devices and provides real-time local data analysis.

Our social listening showed that although there were no real trending or surging topics in this space, the most prolific edge conversations were about cloud computing, big data, IoT/IoT, edge devices, and machine learning.

In 2019, these conversations will only increase – watch out for cloud and edge working together rather than competing for investment, as well as AI providing greater compute capabilities at the edge. Spurring all this on is the continued hype and interest in 5G networks; our analysis shows the 5G conversation increased in volume share from 42% in 2017 to 58% in 2018.

MO KATIBEH
Chief Marketing Officer,
AT&T Business



5G is the next big leap in mobile technology. It will revolutionize how people interact with each other and how businesses interact with their customers. Communication between devices and edge compute servers could potentially be faster than the human brain can process information. Think about what that can do. Augmented and virtual reality are going to leap ahead like we've never seen before by eliminating the lag time that typically comes with AR/VR glasses. And in the near future, doctors could perform surgery by robotic proxy across the globe. Manufacturers could see and fix problems on a production floor before they go to market. Stores could offer virtual 'storefronts' for people to shop in. The only thing limiting businesses is their imagination.

GIORDANO ALBERTAZZI
President EMEA,
Vertiv



With IoT and the looming rollout of 5G set to feature heavily in the next few years, edge computing will play an important role in network operations and the delivery of these important consumer services. To add to this, intelligent infrastructure systems with machine learning capabilities working in tandem with cloud-based analytics will fundamentally change the way we think about edge computing.



MICHELLE CHAN
AI Committee Co-chair,
Fintech Association of
Hong Kong



The deployment of sensors in industrial settings has become more common. Connected consumer devices are expected to achieve tremendous growth in the coming years, and they are radically changing the ways in which humans interact. Robotics, drones and self-driving cars will become more prevalent and commercially available in our daily life. This would in return further strengthen the exponential growth of data.

JENNIFER CANALE
Director, Mozaik



Connectivity across industries will evolve from the demand for IoT services and device providers opening up their APIs via shared marketplaces. The IoT companies to watch in 2019 are those that offer collaborative marketplaces, partner matchmaking and use case ideation to accelerate interoperability between businesses.

THOMAS KO
Vice President, Head of
Service Management Group,
Mobile Communications
Business, Samsung
Electronics



As the computing and graphics capability of smartphones continue to improve, the experience of gaming on mobile devices can now rival traditional platforms.

ANDY MILLER
SVP, Innovation and Product
Development, AARP



Connected homes using IoT sensors, enabled devices and appliances will continue to hold great promise. In 2019, we will make needed progress in turning this vision into a more user-friendly reality. From beds to bathtubs, more components of the home will be built with integrated IoT sensors. Home hub systems will become command central, enabling consumers to enjoy the safety/benefits of their connected home without first needing an engineering degree. The aging of the global population will drive emerging applications focused on health and wellness, helping people and their caregivers with everything from preventing and detecting falls to staying connected to friends and family.

IMMERSIVE REALITY

Virtual reality (VR), augmented reality (AR), mixed reality (MR) – new and enhanced solutions are working to replace the ‘computer as a device’ with ‘the computer as an environment’.

Our social listening certainly identifies a number of emerging trends here. Volumetric Display (holographic and highly multiview displays, like in Star Wars) saw a couple of spikes of interest on Twitter in 2018, particularly around aerial and mechanical displays. Similarly, entertainment-driven VR and AR will continue to rise, while we predict increasing demand from new sectors like retail, manufacturing and healthcare.

NICK KNUPFFER
Head of Brand & Creative,
AMD



While virtual and augmented reality have been a ‘thing’ for some time now, new developments are creating huge leaps in the performance, affordability and mobility of these technologies. As a result, we will continue to see fast-growing development for both these solutions as they move towards their market potential.

For VR, what will be different in 2019 is that this demand will come from new sectors. For example, while gaming and entertainment will continue to fuel sales, industries like manufacturing, healthcare and retail will increasingly use immersive technologies to help with training and education. AR is in a different phase of its adoption journey and, as a newer-to-market technology, we will likely see strongest growth in the entertainment sector as consumers get to grips with more feature-rich AR technologies.

“AR is in a different phase of its adoption journey and, as a newer-to-market technology, we will likely see strongest growth in the entertainment sector as consumers get to grips with more feature-rich AR technologies.”

— Nick Knupffer, AMD

80%
OF CONSUMERS RATE DATA
SECURITY AND PROTECTION
AS 'VERY IMPORTANT'

TECH FOR GOOD: ETHICS, PRIVACY AND REGULATION

Business and government have finally agreed that ethical and privacy frameworks are necessary both to bolster public trust in emerging technology and to ensure this technology can reach its full potential.

FleishmanHillard's Authentic Insights report reveals that more than 80% of consumers rate data security and protection as 'very important' – ahead of healthcare and education in the UK and healthcare and freedom of speech in the US. Against all this, responsible data protection measures will surely – and rightly – continue to be the major trend of 2019.

BRIAN DUFFY
President EMEA North,
SAP



Data is changing us, we need to make sure it's for the better. In 2019 we'll embrace data to help us be more accountable, more strategic and less repetitive. We'll find new uses for the data we have and make better sense of it faster and with added empathy, not a siloed robotic view. We must think open – open models, open source, open culture – it builds trust, reduces costs and fosters an evolving circle of value with the more people that use, contribute and maintain it.

The pace of change has never been so fast, yet it will never be this slow again. If Instagram is already changing how we eat and Uber how we travel, 2019 will be the year we use data to change how we work, what we measure and how we can make organisations be more intelligent.

MICHELLE CHAN
AI Committee Co-chair,
Fintech Association
of Hong Kong



Open-source protocols will be required to ensure data is sharable and usable across industries as a result of ubiquitous data emergence. Public and private entities may create ecosystems together in order to share data for multiple use cases under a common regulatory framework.

FILIPPO RIZZANTE
CTO, Reply



The trend of using virtual, augmented and mixed reality in production environments will continue. For manufacturing companies, AR is a useful tool to support personnel on-field, improving the quality of maintenance activities and safety at work. Plus, AR represents an evolution of the human-machine interface. Humans have been accustomed to interfacing with machines solely through the use of their hands. Now it is possible to create other types, in particular using the movement of the body, face or eyes, as well as the use of voice.

MIKE KONZEN
Chairman, PGAV



When we work with our clients during the design process, we want them to feel empowered to design-think with us. It's a social experience in which we share ideas and explore a virtual world of their project. For this reason, the future of visualization won't be VR goggles or any other individual device – it will be innovative visualization studios where we and our clients are literally surrounded by the virtual environment.

PATRICK CHOMET
Executive Vice President,
Head of Product
Strategy Team, Mobile
Communications Business,
Samsung Electronics



We live in a time where consumers are continually looking for new experiences. It's no exaggeration to say that voice is going mainstream. This novel technology has become a disruptive force and is redefining how people interact with their devices. Some project that half of all searches will be made by voice by 2020, and already nearly 40% of adults are said to use voice search once a day.

ANDY MILLER
SVP, Innovation and Product
Development, AARP



The aging of the global population will propel AR deeper into the worlds of health, wellness and caregiver support, and innovators will use AR to uncover hidden gems like nutrition applications. In 2019, AR becomes the platform for a virtual in-home medical assistant that a caregiver will rely on to learn simple tasks like wound care for their loved one. Leveraging its considerable success in gaming, AR will make gamification the force that drives greater engagement with these important societal applications, leading to explosive adoption rates that set the stage for ubiquitous use of AR heading into 2020.

65%
OF TODAY'S SCHOOL KIDS
WILL HOLD JOBS THAT
DON'T EXIST TODAY



MATTHEW HEAP
Head of Solution
Architecture,
Rackspace Asia



In the midst of digital transformation, organizations are adapting to disruptive change, but the path to innovation can also introduce security threats. Even with stringent security controls in place, cyber criminals persist.

HIREN PAREKH
Worldwide Director of
Cloud and Hosting, OVH



While being green was once a nice-to-have, it will be deemed highly important in 2019. At the same time, as infrastructure and apps become more ubiquitous, and consequently data centres become more powerful, businesses are beginning to wake up to the importance of ensuring all data centre usage is as carbon efficient as possible.

CINDY PROVIN
CEO, Thales eSecurity



In 2019, State Attorney Generals across the US and regulators around the world will collect over \$1bn in fines and settlements from companies that have had data breaches and data leaks of unencrypted data between 2015-2018.

We're also going to see more security experts being headhunted. CISOs and equivalent roles will continue to be in extremely high demand as organizations work to improve their ability to track and manage information risk.

JEROEN TAS
Chief Innovation & Strategy
Officer, Philips



We now have an 'always on' society - it can be, quite literally, hard to switch off. Technologies that proactively improve our sleep will become much more prominent in 2019. These innovations will be used to give really solid insights as to how we can gain some well needed rest and boost our sleep quality, thus supporting health behaviors like sleep, exercise, nutrition and meditation.

**PROFESSOR
MICHAEL ZHANG**
Associate Dean (Innovation
and Impact), the Chinese
University of Hong Kong
Business School



Use of IoT and robots/drones will continue to grow, creating brand new issues related to privacy and safety.

MOU MUKHERJEE
Head of Registry, .Cloud



We will see more of the younger generation building micro businesses from scratch in the cloud, and in doing so, they will continue to modernise age-old practices in their industries.

**PROFESSOR
KEVYN YONG**
Associate Professor of
Management and Associate
Dean of Corporate
Programs, ESSEC Business
School, Asia Pacific



It will become increasingly important to not only deepen our skills and knowledge for handling ever increasing amounts of data, but also how we handle this data in an ethical and responsible way.

DAVID MASSON
Canada Country Manager,
Darktrace



As consumers continue to bring more smart devices into their lives and homes, attackers are presented with an easy target. By using default passwords to easily gain access to IoT devices, they can infiltrate home networks and access sensitive personal data. The connected home isn't yet a secure home as well.

BLOCKCHAIN

The social conversation around Blockchain has been driven by cryptocurrency and led by consumers, but things are set to change in 2019.

Our listening shows that discussion volume share for Blockchain has increased dramatically year-on-year - 24% in 2017 vs 76% in 2018 - and the opportunity for deeper, more forward-looking conversation is growing apace. Debate is already starting to move beyond mining and investment, towards Blockchain's potential impact on issues like smart cities and digital transformation.

The narrative online will also likely evolve from being hyper-focused on what's happening today, towards thought leadership that gives a better sense of the technology's medium- to long-term potential. The brands who give the mainstream audience much-needed clarity on all this will be the ones who gain a march on the competition.

BONNIE CHEUNG
Venture Partner, 500
Startups



Winners in the blockchain world will start to emerge, characterized by: 1. A laser focus on development and the delivery of tangible products; 2. Active partnering with other projects that have complementary strengths and weaknesses. The future will be a world of many chains and platforms; 3. Deep dives into key industries, where the team's solution can alleviate the most pain points and start engaging stakeholders through education.

ANDREW YOUNG
CEO, NextGen Blockchain
Technologies



2019 will be the year that governments formalise their regulatory frameworks around blockchain and cryptocurrencies. Alongside investors and entrepreneurs, legislators are now starting to recognize the potential of these technologies and are proactively working to help facilitate and build the next generation of digital infrastructure.

QUANTUM COMPUTING

When they arrive, large-scale quantum computers will (in theory) be able to solve complex calculations much more quickly, with major implications for business, government and academia.

While the development of an actual quantum computer is still in its infancy, our Twitter conversation analysis shows that its planning is not - there was a major shift in debate towards the talent shortage in driving quantum technology forward. Expect this discussion to come to the fore throughout 2019.

FILIPPO RIZZANTE
CTO, Reply



With tremendous amounts of funding and some of the brightest minds in the world in the race for so called "quantum supremacy", we will see innovations in classical IT inspired by quantum computing. Enterprises are beginning to evaluate the potential and to create quantum computing algorithms to tackle currently unsolvable problems. Hybrid systems that add quantum computing capabilities to existing IT for certain sets of problems will arise. Companies will rethink their risk management, as quantum computing puts an end to state-of-the-art encryption and leads to an unprecedented rise of AI.

CINDY PROVIN
CEO, Thales eSecurity



We will continue to see a growth in the appetite to engage with, and address, the skills gap. In 2019, we're going to see a huge amount of investment into the recruitment and retention of talent, both strategic and technical.

"Companies will rethink their risk management, as quantum computing puts an end to state-of-the-art encryption and leads to an unprecedented rise of AI."

— Filippo Rizzante, Reply

WEARABLE TECH

For the 2019 fashion season, say hello to smart fabrics and e-textiles - the smart fabrics conversation has already increased 11% over the past 12 months and audiences should expect even more next year as brands experiment with what the term 'wearable' really means.

From the outside in; conversation around exoskeletons rose 13% from 2017 to 2018, and in 2019, the discussion will take the final step away from science fiction and towards potential implementations. Brands can gain real share by showing audiences what this means in real life, particularly in the enhanced productivity of logistics, warehousing and manufacturing.

ANDY MILLER
SVP, Innovation and Product
Development, AARP



In 2019, Smart Fabrics will begin to live up to their name. Established companies as well as start-ups will introduce technology ecosystems for smart fabrics, and the health and fitness industry will unlock the potential of embedded sensors to add valuable benefits like baseline measurements and monitoring. At the same time, thanks to the demands from professional athletes, Smart Fabric fitness apparel for everyday wear will finally feel like fabric the masses actually want to wear, moving from stiff and scratchy to comfortable and breathable.



DIGITAL TWINS

Manufacturers are already using the concept of the digital twin - a digital representation of a real-world item - to monitor vital assets and gain efficiencies on maintenance, repairs and operations. Gartner predicts this will be a big trend in 2019, as organisations start to link the digital twins of various business processes to support connected initiatives like smart cities.

Our social listening shows that the concept has yet to reach the mainstream; it hasn't really trended yet on Twitter, and the debate has been driven solely by key moments such as industry studies, predictive articles and corporate announcements. But as the technology starts to be applied in more sophisticated and varied ways, there will be a strong opportunity for brands to take a leadership position - make sure you're ready.





FLEISHMANHILLARD
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