311 INSTITUTE

ANNUAL TRENDS CODEX

3RD ANNUAL EDITION . BOOKLET 6 OF 7

UNIVERSAL LINE OF BUSINESS TRENDS

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ECONOMIC TRENDS	**ENVIRONMENTAL** TRENDS	**POLITICAL** TRENDS	**SOCIETAL** TRENDS	**TECHNOLOGICAL** TRENDS
UNIVERSAL TRENDS	BUSINESS MODELS	MARKETING	SUSTAINABILITY	
	CONSUMER BEHAVIOURS	OPERATING MODEL	WORKFORCE	
	CUSTOMER EXPERIENCE	R&D	WORKPLACE	
	HR AND TRAINING	SECURITY		
	ICT	SUPPLY CHAIN		
SECTOR TRENDS	AEROSPACE	EDUCATION	INSURANCE	SPORTS
	AGRICULTURE	ENERGY	LOGISTICS	TELECOMS
	AVIATION	FINANCIAL SERVICES	MANUFACTURING	TRANSPORT
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BE BOLD . EXPLORE .

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311 ANNUAL TRENDS CODEX

ABOUT THE AUTHOR

Matthew Griffin, multi-award winning geopolitical advisor, leadership coach, and Futurist, and 15 times author of the smash Codex of the Future series, is described by his clients as a "Walking encyclopedia of the future" and a "Futurist polymath." Matthew is the Founder and Futurist in Chief of the 311 Institute, a global Futures and Deep Futures advisory looking up to 50 years out, as well as the World Futures Forum and XPotential University - two philanthropic organisations whose mission it is to solve global inequality and the world's greatest challenges.

Regularly featured in the global media including the AP, BBC, Bloomberg, CNBC, Discovery, Forbes, Khaleej Times, RT, the Telegraph, ViacomCBS, WIRED, and the WSJ, Matthew's ability to identify, track, and explain the impacts of hundreds of exponential emerging technologies and trends on global business, culture, and society is unparalleled.

Recognised as one of the world's most reknowned futurists, disruption, foresight, and strategy experts Matthew is an international advisor and keynote speaker who helps the world's most respected brands, governments, investors, NGO's, and royal households, explore, envision, and shape our collective future.

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Coca-Cola

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PEPSICO

Microsoft

Qualcomm

SAMSUNG

T Mobile

UBS

VISA

WPP

WELCOME
FROM THE AUTHOR

PEOPLE . PLANET . PURPOSE . PROSPERITY

THE SKELETON COAST . NAMIBIA . 19.9873° S, 13.2605° E

I chose this striking image to represent this section because in many ways it's representative of many of today's realities: The Skeleton Coast is complex and unpredictable, but home to an amazingly adaptable ecosystem, yet it's also representative of the stark contrast between the have and have nots, those with water and other resources and those without, our increasingly polarised society, and even the contrast between our habitable blue planet and the desolation of space. The desert and the sea are also relentless, just like the human spirit, and given the right conditions they can overcome everything in their path, just as humanity can when we work together for the benefit of everyone to create a brighter future for all of us.

THE **311 Annual Trends Codex** contains explicit details about hundreds of trends that affect everything you care about - whether that's you, your business, your industry, your country, our planet, or all of them. Designed to be a one stop shop for everything that's trendy and trending it also contains everything you need to run your very own strategic foresight programs, model scenarios, and develop actionable initiatives and strategies to help you rule the future like a boss.

Furthermore, as our main trends Codex grows exponentially larger I've taken the liberty of splitting it into separate **Minibooks**, like this one, that make it easier for you zero in and focus on only the categories of trends that matter to you.

Most trends are like tides - relentless forces that are hard to control or influence. And, just like tides they can impact a great many things - both directly and indirectly. Having written Codexes that cover the latest emerging technologies and the latest disruptive business thinking, innovation, and strategy, I felt that creating the trends Codex was a natural next step to compliment them, and ergo provide you with a valuable expert set of resources that contain everything you need to design, debate, create, and shape your own future.

This Codex, like all my others, is a living book, it's always being updated with the latest trends and information so that you always have access to the latest insights and research, but perhaps its biggest benefit is that you can see every trend for everything in one place. This is important because since everything in our world is connected, as I've shared many times during my keynotes, this convenience allows you to easily stay abreast of changes in individual regions or sectors, technologies or trends - any one of which could impact the things you care about, even if the changes occur in areas that at first you don't think are relevant to you.

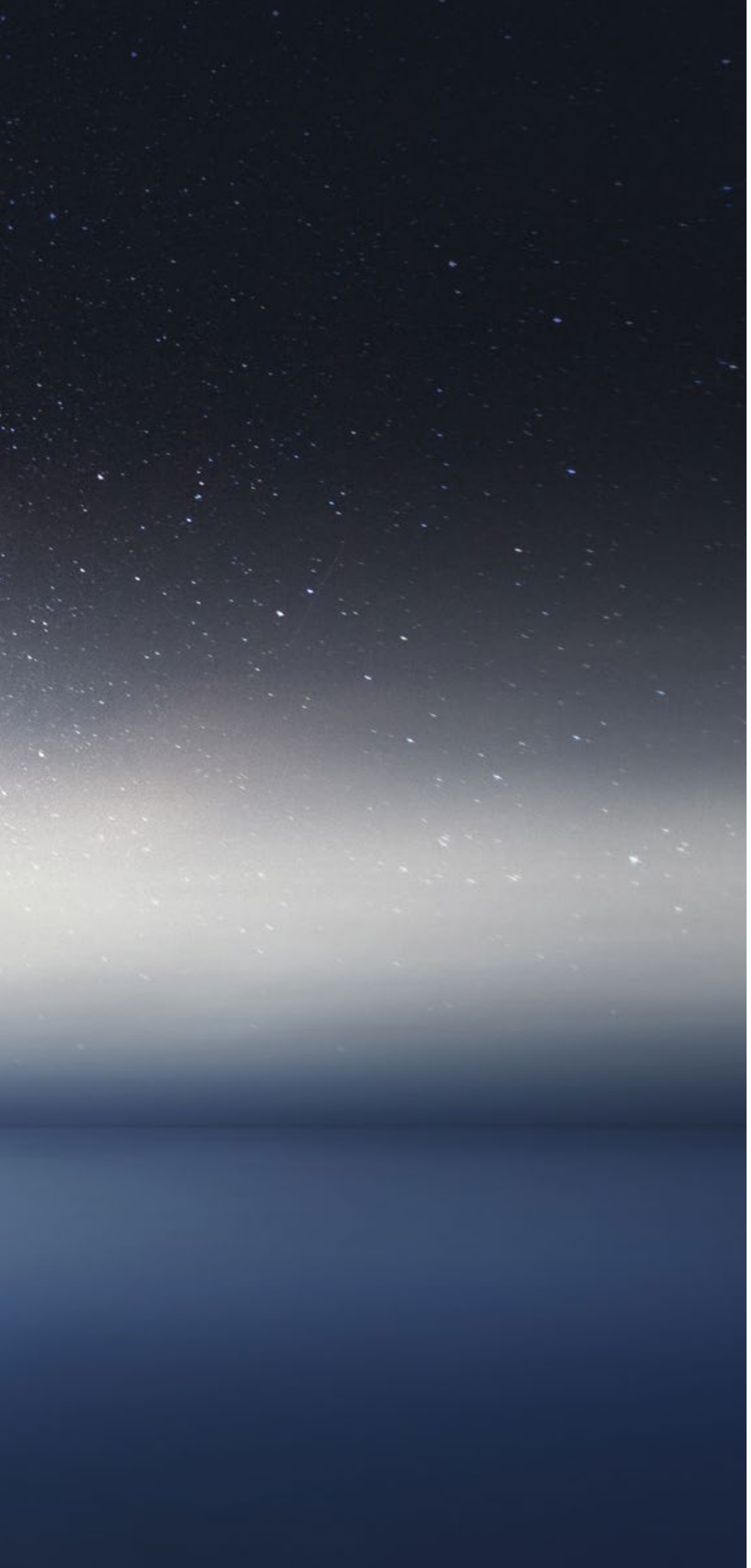
A simple but powerful example of this are the changes we see in the Energy sector where new energy generation and distribution technologies and trends are impacting everything from the business models and product development in the Transport sector, corporate ESG initiatives and Government policy making, climate change and other environmental trends, as well as the multi-trillion dollar investment portfolios of the global Financial Services sector - and far beyond.

No other trends book puts so many trends across so many categories, lines of business, and sectors in one place, or makes them so accessible, and that you might say is this books USP. That is, of course, if tens of thousands of insights and statistics at your fingertips aren't enough already!

Explore More,

Matthew Griffin
Founder and Futurist in Chief

USING THIS TRENDS MINIBOOK



WITH SO many trends shaping our world and with more emerging all the time it's easy to get overwhelmed and fail to grasp their individual and collective impact on the things you care about. As a result I've done my utmost to make this Minibook, which is a verbatim extract from my main **311 Institute Annual Trends and Foresight Codex** and that you can download in full from our company website, as easy to use as possible.

In this section you can learn more about how to use the Trend Sheets to get the information you need, and can see the complete list of trends included in this minibook - with more being added all the time.

EXPLORE STARTUPS & MORE

CLIMATE CHANGE

2ND YEAR ON THE LIST

QUICK TAKE

Scientists saw it coming in the 1950's. They called it out and made films about it in the 1980's. And now, over forty years later individuals, governments, and organisations are starting to take unilateral global action to tackle Climate Change with many scientist arguing that we are now too late to avoid a "life altering" 1.5C increase in average global temperatures, and that we are within years of crossing a climate tipping point which will see its devastating global effects accelerate and create a run away cascade of **Extreme Weather** and devastation.

Data sources: IPCC, National Geographic, WWF, and various.

IMPACT

The impact of Climate Change can be seen everywhere - from the changes of the seasons, and the subtle changes in the flora and fauna in peoples gardens, to the tree covered mountain slopes that used to be buried by glaciers and snow, to the expanding deserts of the Sahara, and the deep of the oceans. It impacts every living thing and every natural system on Earth.

From longer frost free growing seasons, to changes in global rain patterns, longer droughts and more intense heat waves, and more extreme weather, to more powerful hurricanes and higher sea levels, the consequences are as varied as they are acute.

If the world warms by 1.5C then the Arctic Ocean will become ice free once every 100 years, with extreme hot days in the mid-latitudes being at least 3C hotter than pre-industrial levels, and sea levels could rise by up to 0.77m, with a further decrease in global bio-diversity of between 5% and 8%. Meanwhile corals could decline by at least 70% with marine fisheries annual productivity declining by at least 1.5 Million tons. And a 2C rise would be exponentially worse for people and planet.

EXAMPLES

Earth is mission critical for humanity and all life on Earth. And as the rate of Climate Change accelerates we continue to see a variety of records being set and smashed with climactic events that used to be once in a century becoming once a decade, and then the norm. And examples of these are plentiful.

Greenland's ice sheet, the world's second largest after Antarctica, is now melting 12 times faster than in the past 12,000 years and loosing over 532 Billion tons of ice a year - and that rate is accelerating. Not only does this melt account for almost 25% of today's sea level rise, but in 2021 the melt rate accelerated even further when, during a time when temperatures in the region were already 18C higher than average, three days worth of rain - where the rain itself was a first for the region - dumped over 7 Billion tons of rain water onto the ice sheet.

And, from the world's biggest, deadliest, and most damaging floods, to the world's biggest, deadliest, and most damaging droughts, heatwaves, hurricanes, and wildfires almost every country on the planet is now feeing the damaging impacts of climate change.

ACT NOW

As we see elsewhere in our universe, from the dust dunes of Mars to the acidic oceans of Venus, our planet will always be able to adapt to new climactic conditions. But life on Earth will find it increasingly difficult as Climate Change accelerates and its effects become more extreme and pronounced. Therefore, ironically, tackling this trend is more about saving humanity's future than the planets.

EXPLORE:

- Carbon Capture and Storage
- Emerging technologies and technology roadmaps
- Future of Agriculture, Energy, Government, Manufacturing, Sustainability, Transportation, and Work
- Net Zero Pledges
- Unilateral global accords and coordinated global action

USING THE TREND SHEETS

IN THIS codex we've gone to great lengths to document the major trends affecting all sectors and line of business operations and simplify them for you. Furthermore, we're always surfacing more trends which is why this codex is regularly updated. As a result each trend contains all manner of action points, details, insights, and stats that you can use to your advantage, whether it's developing scenarios and strategies using the frameworks in this and our **other codexes**, or whether it's just exploring the art of the possible. This is the key to the sheets:

1 / UNITED NATIONS SDG NUMBER

The UN SDG most impacted if you act on the trend.

2 / TREND NAME

The most appropriate name for the trend.

3 / YEARS IN THE CODEX

How many years the trend has been listed in our codex since the first edition.

4 / TREND LONGEVITY

LONG MEDIUM SHORT

The trends longevity and how long it is expected to have an impact for.

5 / TREND PRIORITY

The higher the number the more attention and weight you should give the trend.

6 / TREND MOMENTUM

ASCENDING FLAT DESCENDING

The overall momentum of the trend.

7 / TIMING OF THE TREND

HERE NOW EMERGING DISTANT

When the trend is expected to have a measurable and pronounced impact.

8 / RELATED TRENDS

Other trends that either impact the trend or are impacted by it.

9 / DATA SOURCES

A list of our data sources for the trend.

10 / IMAGE

An image to portray the trend.

11 / ACTION

The action we suggest organisations take now based on the available data.

12 / EXPLORE

Other things you can or should explore to better understand the trend and how to solve or use it to your advantage.

13 / DISCOVER MORE

Click or scan the QR code to access more website resources related to the trend.

TRENDS CONTENTS

SECTION CONTENTS

" FOLLOW THE TRENDLINES NOT THE HEADLINES . "

- William B. Clinton, 42nd US President

BUSINESS MODEL TRENDS

CONTENTS

AUTONOMOUS ORGANISATIONS

2ND YEAR ON THE LIST

QUICK TAKE

Complimentary to **Decentralised Autonomous Organisations** Autonomous Organisations that operate with no human employees, and in some cases no human oversight, emerged in 2015 and almost any company that offers highly transactional highly repetitive services, such as Amazon and Uber, and others, are ideal candidates.

Enabled by technologies such as **Artificial Intelligence**, **Blockchain** and **Robotics**, this trend represents a paradigm shift in business operations and thinking and will be highly commercially and socially disruptive.

Data sources: Various.

IMPACT

While the majority of governments, individuals, and organisations talk about the impact of automation on their respective workforces almost none of them are talking about what happens when entire organisations are able to operate and scale autonomously without the need for any human involvement - including the CEO.

However, while these organisations might not have any human employees in the near to medium term it is highly recommended that they have some form of rigorous human oversight. Which, again, isn't being discussed.

Needless to say fully autonomous organisations will be able to operate at magnitudes of cost smaller than traditional organisations that employ people, and this will ultimately create a dilemma for business leaders and governments who will be tempted to embrace the concept or risk being disrupted by it. Shareholders will also face their own dilemmas, including the ethics of the concept as well as, more practically, how to assess and quantify the investment opportunity.

EXAMPLES

Autonomous organisations are essentially software based organisations that incorporate governance and decision making rules which can be programmed to operate autonomously without human involvement. The earliest examples were community organisation experiments which replaced traditional organisational governance and other operational processes with pre-agreed, compliant computer code.

As the concept gained traction new technologies were leveraged, including Artificial Intelligence, Blockchain, Smart Contracts, and others, and one of the first examples of a fully autonomous organisation was Aidyia, a hedge fund based out of Hong Kong which, even though it was created by a human would, to quote the founder, "Continue to operate even if we all die."

Meanwhile, Amazon and Uber are ideal candidates to become autonomous organisations due to their highly transactional nature. Amazon is using AI to design fashion lines, and is increasingly zeroing in on fully automated on demand manufacturing, fulfilment, and delivery capabilities.

ACT NOW

While Autonomous Organisations are still a nascent concept it is easy to see value in their model and, in some cases their simplicity. Furthermore, as new technologies become increasingly autonomous and intelligent, and become increasingly adept at acting on, and making decisions, this is a trend that is only going to accelerate. But, given the paradigm shift it represents there will be many challenges to overcome.

EXPLORE:

- Auditing, governance, and transparency reforms
- Competitive and economic impact assessments
- Government monetary, regulatory, and tax reform
- Safety, security, and regulatory implications

DECENTRALISED AUTONOMOUS ORGANISATIONS

2ND YEAR ON THE LIST

QUICK TAKE

Decentralised Autonomous Organisations (DAO) are Blockchain based organisations governed by rules encoded in computer code and Smart Contracts that are not controlled by a single entity or institution.

Such organisations can be thought of as a loose co-operative of pseudo-anonymous individuals and digital entities that are able to bid for, generate, and assign tasks, collaborate with one another to complete them, and be automatically rewarded accordingly.

IMPACT

The DAO model, that lets people set their own their salary, as well as what they work on and when at their own discretion and speed, is an increasingly attractive proposition in a world where flexible working and the Gig Economy are both becoming more popular.

As self-governing organisations where everyone has a common goal and where everyone's behaviours are steered by the lure of incentives, which often take the form of network tokens, and where rules are enforced by machine consensus and Smart Contracts, there's alot to like about them.

Over time DAO's, which are becoming increasingly popular, will force traditional organisations to adapt their hiring and working practises as they compete to hire and retain talent.

Also, given the fact that DAO's operating models are both amorphous and autonomous, essentially being based on little more than Blockchain and compute resources, once they become established within an industry they could change its economics forever - thereby putting incumbents at a serious economic disadvantage.

EXAMPLES

If you aren't looking for them DAO's at the moment are quite easy to overlook because their operating model all too often lets them operate under the radar. Nevertheless though they offer an intriguing look into the future of "Trustless" corporate governance and it seems inevitable that as the technologies that enable them improve in cost, capability, and performance, that this trend will continue to be one to watch and be wary of.

Championed by blockchain, crypto, and developer communities who are using DAO's to experiment with new ways of organising and working it shouldn't come as any surprise that the industries being infiltrated first are those with the strongest collective communities. As a consequence DAO's are gaining a notable foothold in the Financial Services industry where they are fuelling the Decentralised Finance (DeFi) trend.

Furthermore, as DAO's increase in popularity more US states, such as Wyoming, are actively discussing and passing legislation that permit them to become Limited Liability Partnerships (LLP) and incorporate under state law.

ACT NOW

By their very nature DAO's operate in a legal grey area because unlike their traditional peers they have no head offices and no hierarchy to speak of, and as a result it is difficult to attribute liability. It's also almost impossible to find a "single throat to choke" in the event of issues.

EXPLORE:

- Company incorporation reform
- Competitive and economic impact assessments
- Future of Work
- Hybrid business and workforce models

Data sources: Various.

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

DIRECT TO CONSUMER

2ND YEAR ON THE LIST

QUICK TAKE

The he internet and other digital channels, as well as new logistics and manufacturing trends, have given all organisations a simple and effective way to produce products and sell them directly to customers, crucially with no middlemen unlike the standard B2C play, with the net result being that today this trend is increasingly becoming the standard. Furthermore, not only does the Direct To Consumer (D2C) trend help organisations disintermediate their traditional routes to market and partners but it also lets them commercially benefit from the **Know Your Customer** and **Single Customer View** trends.

Data sources: CB Insights, Invesp, and various.

IMPACT

D2C helps organisations reduce costs and increase profits by eliminating multiple steps between themselves and their customers, It also helps them gain more insights into their customers and their behaviours - both of which can be used to help them create better products and better customer experiences.

Today over a third of consumers say they've bought products from D2C brands, with people aged 13 to 44 making 68% of those purchases - a statistic that shows how this trend is heavily skewing towards younger audiences. When we drill into the figures we then find that 77% of all those purchases are in the apparel and accessory market, with 19% in the beauty and cosmetics market, neither of which should be particularly surprising

As a result of this last year 78% of DTC brands increased their marketing budgets compared with just 60% of traditional retailers, and recent have shown that 55% of consumers say they prefer to buy directly from brands rather than multi-brand retailers - with more than 40% saying that more of their spending will go towards these brands in the next five years.

EXAMPLES

While organisations have always been able to sell DTC new technologies and trends, such as **E-Commerce** and so forth, have made it easier than ever before. So easy in fact that today anyone can literally set up shop for next to nothing and create their own global DTC brand.

Arguably one of this trends biggest impacts has been on global culture and entrepreneurship, and it's now helping create more **Solopreneurs** than ever before. Also, as anyone who watches the US hit show Shark Tank will know its also now why almost all of the Sharks don't think startups should bother spending too much effort trying to get into big box retailers ... but that's another story.

Of all the millions of D2C brands, ourselves included by the way, some of the most notable include organisations like Casper a "Bed-in-a-Box" company who now has nine figures in sales, Dollar Shave Club who started from literally nothing and were bought by Unilever in 2016 for over $1 Billion, and of course Warby Parker the "DTC Darling" who now has a market valuation of over $3 Billion and rising.

ACT NOW

Today it's cheaper and easier than ever before to have a product idea, produce it, market sell and ship it, and it's only going to get easier from here as different business models and processes, technologies, and trends continue to be automated and commercialised. The net result of which increasingly means that organisations across sectors have faster routes to market than ever before - if they want to use them that is. That said though, despite this trends significant advantages when it comes to starting, growing, and scaling your business organisations should still think carefully about their GTM strategy.

EXPLORE:

- Benefits and impact assessments
- Future of Artificial Intelligence, Computing, Creativity and Innovation, Financial Services, Logistics, Manufacturing, Retail, and Work
- Partner ecosystems and solutions
- New business and operating models

ETHICAL CAPITALISM

2ND YEAR ON THE LIST

QUICK TAKE

It is increasingly clear that traditional capitalism - that puts organisations and shareholders first at the expense of almost all else including consumers, nature, society, and workers - is unsustainable. And as more leaders realise the harm of traditional capitalism they're seeking ethical alternatives.

The Economics of Mutuality (EoM) is one such alternative that moves organisations from an organisation-centric business strategy to a purpose-centric one, and maximises financial capital by balancing financial, human, natural, and social capital alike.

IMPACT

When we look at the world we live in and the challenges we face there are an increasingly vocal number of people who accuse so called traditional capitalists and capitalist business models of being inherently alienating, exploitative, unstable, unsustainable. Furthermore, they also level accusations that they're directly responsible for creating massive economic inequality by commoditising consumers and workers and eroding human rights, while at the same time incentivising almost imperialism like expansion and competition.

Naturally, we can see the impact and results of traditional capitalism everywhere - from consumers who are the product, through to increasing **Wealth Inequality**, and union law suits against corporations who treat their workers as commodities, and in some cases even have Artificial Intelligences (AI) monitor and automatically fire them - as was the case with Amazon and Uber - to the unsustainable pollution and ravaging of Earth's natural resources and environments which are fuelling everything from **Climate Change** and **Extreme Weather** to **Bio-Diversity Collapse** and **Resource Scarcity**.

EXAMPLES

Productive relationships are fundamental to all aspects of business - whether they are within organisations or whether they're with consumers, society, or suppliers via the organisations influence on the environment, health, labour, or markets. And while some organisations focus, rightly, on **Corporate Social Responsibility** (CSR) and **Environmental, Social, and Governance** (ESG) initiatives these are only part of the solution.

Perhaps the best example of an organisation making a difference and embracing ethical capitalism is Mars who in 2011 kick started a 2 year long pilot which included "people, performance, and planet" initiatives.

First Mars created new measurement systems and developed what they called "Shared Economic Benefit" KPI scoreboards which allowed them to directly measure and connect their own financial performance to their consumer, human, natural, and social capital initiatives which all sought to improve how the organisation shared the benefits of its own economic performance across all of its different stakeholders - rather than just shareholders.

ACT NOW

It is clear today that traditional capitalism, as a model, is flawed and that in many cases it's accelerating and exacerbating global problems which is why in surveys, depending on the country, just 6% to 42% of 18 to 29 year olds support it. In addition, the competitiveness and global prominence of nations increasingly depends on the moral fibre of their organisations and mutuality in business is key to helping them access and unlock it for the mutual benefit of all - as I often say: People, planet, purpose.

EXPLORE:

- Ecosystem mapping
- Holistic value creation
- Interventions design
- KPI and measurement systems
- Mutual P&L statements
- Purpose initiatives and statements

Data sources: Harvard University, JSTOR, Oxford University, and various.

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EXPLORE STARTUPS & MORE

MULTI-SIDED PLATFORMS

2ND YEAR ON THE LIST

QUICK TAKE

Although sometimes thought of as a recent phenomenon Multi-Sided Platforms (MSPs) have been around for centuries, but in the past few decades they've been turbo charged by the internet and the digital world.

At their most basic level MSPs connect two or more groups together - such as customers and suppliers - by playing an intermediary role. However, as many MSPs scale in time we see more of them disintermediating suppliers and taking on that role for themselves as they try to find new ways to grow their customer base, influence, and revenues.

Data sources: Deloitte, Forbes, MITSloan, ResearchGate, and various.

IMPACT

Even though our world seems full of MSPs the fact of the matter is that there aren't as many as people think, and that those that do exist are larger than many people think - much larger.

Today our world is dominated by all kinds of MSPs, some of which we now simply refer to as simply the "Tech Giants" which rely on strong network effects to connect everyone to this product or that service, and in some cases their size and power - which is cumulatively in the tens of trillions of dollars in revenues and global - means they are capable of influencing and shaping the future of global business, culture, and society at a speed and scale we've never seen before. In some cases, they are now big enough to be called **Virtual Nations** and arguably have more impact, influence, and resources than many actual nations.

However, while MSPs can help sellers and buyers alike reduce search and transaction costs, today organisations on the supply side need to be careful they don't get disintermediated by MSPs and become little more than a commoditised transactional supplier to their downstream customers.

EXAMPLES

Billions of people use MSPs on a daily basis and it's plain to see that some of them have dominant roles in our lives. They have also come to epitomise the business benefits of being able to leverage modern technology to connect different groups together for pure business advantage.

It's also plain to see that there's money to be made in the MSP model and that there are significant advantages to being able to play the role of the middle man. As the old saying goes: Airbnb the world's largest hotel chain owns no hotel rooms, Alibaba the world's largest retailer holds no stock, Facebook the world's largest media company creates no content, and Uber the world's largest taxi company owns no cars.

However, while some MSPs are happy to remain "mere" intermediaries others like Amazon and YouTube are busy using their platforms to nurture direct relationships with customers, with programs such as Amazon Prime and YouTube Premium, and disintermediate sellers and advertisers alike by promoting and selling their own branded products. And this evolution is dangerous for sellers who rely on them.

ACT NOW

Traditionally MSPs have connected sellers and buyers with one another but increasingly sellers need to be prepared to defend against disintermediation plays if and when it happens. Despite this though there's no denying that there are clear benefits in being or becoming an MSP.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Connectivity, Creativity and Innovation, Disruption, and Manufacturing
- New business and operating models
- Product innovation initiatives

SURVEILLANCE CAPITALISM

2ND YEAR ON THE LIST

QUICK TAKE

Many define Surveillance Capitalism as the unilateral claiming of private human behaviours, experiences, and other personal data for free by private organisations who then analyse, package, and sell them for commercial gain. As arguably modern society's most profitable and prolific business model the rise of the **Internet of Things** (IoT), as well as other trends including the continued erosion of both offline and online privacy, mean that it's certain that, unless ill prepared regulators intervene, that this business model will only grow in popularity, power, scale, and sophistication.

IMPACT

While this trend has numerous benefits, such as being able to be used for both Utopian and benign purposes such as to improve customer convenience or the customer experience, as well as even well-being with trends such as **Predictive Healthcare** and **Quantified Self**, it can also be used for highly Dystopian purposes including to advance the **PsyOps Pandemic** and enforce **Population Control**.

Arguably the main driving force responsible for the **Demise of Anonymity and Privacy**, with 91% of people believing it's an unfair practise, today it's estimated that the large tech giants make an average $35 per month by selling and using people's personal data. It also shouldn't come as any surprise that this trend has also led almost every government to question people's right to privacy and data ownership, and that it's generated much debate about its true societal cost.

Seen by some as the "Price of Connection" to the world's largest technology ecosystems it's now estimated that this trend accounts for over $4 Trillion of global **GDP Growth**, and that figure is climbing.

EXAMPLES

We all know the common examples of this trend - Alibaba, Amazon, Baidu, Google, Meta, Tencent, and others. But the fact is that almost every organisation, whether they operate offline, online, or both, want to know more about you so they can communicate and engage with you and sell you more stuffm however most avoid the spotlight because they're eclipsed by the giants. Today perhaps one of the most disturbing commercial examples of this trend is its use to collect data and "intelligence" on people before they're even born by analysing the behaviours and purchases of parents to be.

Asides from this more common a garden examples of this trend include Google's capture and analysis of the contents of more than 1.2 Trillion searches a year to generate marketable insights into users "thoughts," and Meta who it's claimed now have more than 5,000 data points on every person and data on more than over five billion people. And all of this is before I highlight examples from China where so called **SuperApps** from organisations such as Tencent are gathering and analysing data on even more people from an even greater variety of sources.

ACT NOW

While gathering, analysing, and selling people's personal data for profit has now firmly established itself as the go to business model for many organisations, whether it's in whole or in part, many questions remain about its ethical and moral implications, and its impact on people's personal privacy and society. However, with regulators ill equipped to properly debate the future of this trend and create and enforce appropriate regulations it's almost certain that this trend will only become more divisive, invasive, prolific and, of course, profitable.

EXPLORE:

- AI bias and data privacy
- Benefits and impact assessment
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Communications, Media and Entertainment, and Technology
- New business and operating models
- Policy and regulation reform

Data sources: Harvard University, London School of Economics, ResearchGate, and various.

CUSTOMER BEHAVIOUR TRENDS

CONTENTS

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EXPLORE STARTUPS & MORE

MOBILE FIRST

2ND YEAR ON THE LIST

QUICK TAKE

Globally we live in a Mobile First world with 52% of all internet traffic being mobile. But country specific usage varies depending on local network infrastructure investment patterns over time. Irrespective of usage patterns though as **Global Digital Addiction Rates** remain elevated, **Digitisation**, and as **Super Apps** become central to people's lives this trend will dominate even more in the years to come with companies prioritising mobile already seeing 39% higher customer satisfaction than their peers, 50% better customer loyalty, and perhaps most importantly 10 to 15% higher revenues.

IMPACT

This trends impacts are numerous but the ability of companies to offer mobile first experiences is obviously limited to the affordabilty, availability, reliability, and speed of local mobile networks whether that's 4G, **5G**, or even **Satellite Internet**, and to a lesser extent local broadband networks, which makes country level investment in these networks increasingly vital to both regional and **Global GDP Growth**.

Globally it's now estimated 92% of people use their mobiles to research products and services before making a purchase and that over 62% have made purchases on their mobiles with mobile expected to account for 73% of global **E-Commerce** sales by 2025, up from 54% in 2022. Furthermore, and perhaps unsurprisingly mobile also accounts for 81% of all digital media time, rising to 90% by 2025.

This also means that Digitisation, **Omni-Channel Experiences**, **Opti-Channel Experiences**, and mobile responsive UI design are all increasingly crucial to a providing consumers with the best possible experiences, and used well these can provide companies with a significant competitive advantage.

EXAMPLES

Some of the highest mobile first usage actually comes from developing countries whose societies who, with little or no access to reliable fixed line broadband services, went straight to mobile as cellular networks were rolled out. this also means that in some countries many consumers are not just mobile first they're mobile only. Good examples here include those countries in Africa, Asia, and LATAM.

While the global average for mobile use is 52% as you'd expect it's unevenly distributed and it's skewed higher in countries with poor fixed network infrastructure. In Sudan and Yemen, for example, 83% of all internet traffic is mobile, Libya (75%), Chad (74%), Egypt (68%), Eritrea (67%), and Ethiopia (58%). Then, when we skew the perspective slightly to look at the most populous countries on Earth, 80% of India's traffic is mobile, and in China it's 65%.

Meanwhile in more developed countries the figures are closer to the global average or even below it with Italy at 57%, Greece (51%), Brazil and the UK (50%), France (48%), Spain (47%), Germany (44%), Australia (37%).

ACT NOW

In time we'll see device format change as trends such as **Immersive Reality** continue to emerge and as big shifts in the Telecoms sector play out. However, while people in developed countries are more likely to use multiple connected devices including desktops and laptops for leisure and work, which affect the reported mobile internet usage figures, as hundreds of millions more people become middle class - especially in Asia - companies would do well to remember that some of these high mobile first usage rates we're seeing in regions of the world could decline in percentage terms and be more in sync with the figures we see in the developed world. As a result I'd urge companies to not forget the rest.

EXPLORE:

- Emerging technologies and technology roadmaps
- Frictionless customer experiences and payments
- Future of Communications, Retail, and Work and the Workplace
- UI design and optimisation

Data sources: Bain & Co, Cloudflare, Forrester, McKinsey, and various.

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EXPLORE STARTUPS & MORE

MOVEABLE MORALITY

2ND YEAR ON THE LIST

7

QUICK TAKE

Human morality changes, and today we're seeing big shifts in consumer morality and therefore consumer behaviours. One day individuals and societies live by one set of principles and values, and then the next not so much. Moveable Morality refers to the changing principles and values that consumers use as their North Star when deciding which companies to buy from and what products to buy. With access to info, and with greater awareness of social and environmental issues and the growing importance of personal ethics in decision making, today's consumers are more informed and fickle than ever.

Data sources: NCBI, NIH, and various.

IMPACT

Today we're seeing consumers, especially Gen Z and Millennials who were once staunch advocates of ethical and sustainable consumerism welch on their principles as **Global Household Debt**, **Global Inflation Rates**, and other "Polycrisis" factors dampen their enthusiasm to pay premium prices for ethically sourced sustainable products.

Overall the impacts of this trend are further reaching than many people realise because consumer behaviours impact company behaviours which impact everything - in the same way that the ripples caused by throwing a stone into the water eventually touch everything in the lake. A simple example of this is imagine a society that prioritises sustainability above all else, then imagine the impact of that. Imagine how companies would respond, how they'd alter their business models and strategies, and their marketing and product development plans to align with their customer buying behaviours.

Now imagine the values of that society change to favour low prices over sustainability - you can imagine how fast companies, as well as governments and investors, would flip their priorities.

EXAMPLES

There are many examples of the impacts this trend has on companies, such as Patagonia the sustainable clothing company who became the literal darling of the retail industry when they and their customers North Stars aligned. Then there's the story of Coca Cola who, as sugary pop drinks fell out of favour, and even became subject to new **Global Indirect Tax Rates**, pivoted heavily to diet and sugar free alternatives.

Additionally, the rise of sustainable consumerism saw consumers flock to products that were environmentally friendly and sustainable helping fuel the rise of eco-friendly products such as bamboo toothbrushes, plant based cleaning products, and reusable shopping bags. Similarly there's been a large increase in the numbers of consumers seeking out products that are ethically sourced and produced such as cruelty free cosmetics, fair trade coffee, and organic cotton clothing.

However, as the cost of living rose we then saw many of these same consumers flip behaviours and move away from these core buying principles to seek out lower cost and less ethical and environmentally friendly alternatives.

ACT NOW

It's fair to say that there are companies in the world who follow their own morality and priorities irrespective of how consumer behaviours change. And then there are those who change their priorities as often as the wind changes direction, and those companies who appear to align with changing consumer behaviours while in reality changing very little about their behaviours - as we witness with the **Anti-Sponsorship**, **Brandalism**, **Greenwashing**, and other such trends. Despite this though surveys continue to show that consumers see through brands attempts to fool them and remain loyal to brands that are consistent and authentic.

EXPLORE:

- Brand authenticity
- Corporate culture, mission, and values
- Future of Retail
- Taxation strategies

NOW OR NEVER

2ND YEAR ON THE LIST

QUICK TAKE

After a series of devastating **Global Epidemics and Pandemics**, with the COVID-19 pandemic being by far the worst, not only do consumers feel they have to catch up on the time they lost in lock downs, but they also realise life is too short to mooch. So, while the pandemic helped push the **Global Loneliness** and **Global Mental Health Crisis** trends to historic highs, now consumers are seizing the day - even as we see **Global Household Debt** levels spiral - and prioritising immediate experiences and purchases they may have previously put off to make the most of every opportunity.

IMPACT

Confronted by a daunting and somewhat unpredictable VUCA future dominated by Permacrises and Polycrises - two words noone ever wants to hear let alone in the same sentence - consumers are embracing the present like never before and this trend, which can be seen as a rebellion against restraint, is having not just an impact on company sales, it's also having an important impact on people's mental well being as many embrace their inner selves, step out of their bubbles and comfort zones, and live in the moment.

However, while some activities that people are engaging in, such as buying products that they've been lusting after for a long time are about instant gratification, we're also seeing a significant up tick in the pursuit of experiences that are fulfilling, meaningful, and **Unapollacetically Me**. In short, ones that satisfy the soul and make a satisfying but tiny dent in **Global Digital Addiction Rates**.

Overall, akin to impulse buying, women are more likely to indulge than men, 45% of people are single, and 20% of people admit spending $1,000 or more, with the average being $30 to $100.

EXAMPLES

With trends such as **Buy Now Pay Later** (BNPL) helping fuel this trend it could be said that companies are finding new ways to help consumers Live Now and Pay Later. However, as most of these purchases happen in store rather than online there's an opportunity for hard up Brick-and-Mortar retailers to grab much needed additional revenue.

In the UK estimates suggest consumers spend over £3 Billion each month on impulse buying - up from £2.5 billion in 2012 and up 2% from 2021 - equating to a staggering £144,000 per person over a lifetime, with a third experiencing "Buyers Remorse." Meanwhile in the US Americans are spending 14% more on impulse buys than they did in 2021 - up from $260 to $300 per month - with 87% admitting to impulse buying more and clothing, dining out, household items, vehicles, technology, toys, and travel topping the lists.

Interestingly though, studies suggest the growth of this trend is due in part to people needing to alleviate anxiety and reclaim a sense of control after the pandemic which also means we must be wary that this trend doesn't create future compulsive buying behaviours.

ACT NOW

With some experts now believing that some consumers are embracing this trend to hide or overcome their anxieties and regain a sense of control in their lives post pandemic societally we need to be careful that this trend doesn't turn people into compulsive buyers that, in the long term could only make their financial and mental well being worse. as a result companies should act ethically and responsibly to ensure that their customers well being is being upheld.

EXPLORE:

- Business and impact assessments
- Dark pattern UI regulation
- Future of Financial Services, and Retail
- Government awareness and possible policy reform
- Psychological implications
- UI design and optimisation

Data sources: BRC, Deloitte, MyJar, NIH, Shopify, Statista, Whistl, and various.

UNAPOLOGETICALLY ME

2ND YEAR ON THE LIST

QUICK TAKE

The Unapologetically Me trend refers to the growing desire among consumers to express their individuality and authenticity through their purchasing decisions.

Driven by the desire for self-expression and personalisation, as well as the overall rejection of what many see as conformity and homogeneity this is a rising trend, with the result being that consumers are increasingly seeking out products and experiences that reflect their unique identities and preferences, rather than simply following trends or conforming to societal norms.

Data sources: Mckinsey, and various.

IMPACT

From a brand perspective this trend can be difficult to navigate for the simple reason brands need to manage costs and inventory which often means producing generic products en masse which goes counter to the identity and purpose of this trend. However, as it becomes easier for manufacturers and retailers to tap into the **Customisation** and **Immersive Reality** trends, among others, there are opportunities for companies to differentiate themselves by offering personalised and customised products and experiences. And then there's the data that shows 71% of people want personalised products, 76% of people are disappointed when they don't find them, and the opportunity for companies to grab a piece of what some regard as a $1 Trillion pie.

Furthermore, this trend also contributes to a shift in cultural attitudes with consumers embracing **Diversity and Inclusion** and celebrating individuality, which has the potential to drive positive social change and promote greater inclusivity and acceptance - which in itself has a huge number of benefits on everything from corporate innovation through to creativity and wellness.

EXAMPLES

As more consumers than ever before seek out products and experiences that reflect their unique personalities and preferences, from customised accessories and clothing to personalised travel itineraries and wellness programs, and even individualised gourmet, there's no denying that we're seeing a surge in demand for niche and specialty products, as well as the rise of platforms and marketplaces that cater to specific consumer interests and identities.

One brand embracing this trend is Tourist Journey who in their own words sell world class travel advisory services, affordably, with a tech driven twist, and whose mission is to make the luxury of personalised travel planning accessible, easy, and quick with t platform letting travellers build completely customised itineraries that span 19 countries across three continents within minutes.

However, whether it's exclusive investment portfolios, off beat gastronomic experiences, original sports apparel, personalised nutrition plans, tailored running sessions, or the latest in haute couture beauty and fashion statements there are no shortages of examples - or what brands can offer.

ACT NOW

To deliver on this trend companies generally need to rely on one of two things - either they need to rely on the consumer to personalise their own products and experiences, or the company has to have enough data on those consumers to do it for them, which takes brands uncomfortably close to the **Demise of Anonymity and Privacy** trend and all that entails. However, while this, like many trends will rise and fall, there will always be people who want to live their most unique lives and so there will always be a market to serve.

EXPLORE:

- Authenticity and company culture
- Emerging technologies and technology roadmaps
- Future of Agriculture, Gaming, Hospitality and Tourism, Manufacturing, Media and Entertainment, and Retail
- Marcom and product development
- Social listening

CUSTOMER EXPERIENCE TRENDS

CONTENTS

OMNI-CHANNEL EXPERIENCES

2ND YEAR ON THE LIST

QUICK TAKE

Consumers in the B2B and B2C spaces shop and interact with companies across multiple channels and multiple devices, and today they expect those channels to be integrated and unified with one another so they can have a seamless customer experience.

A step up from Multi-Channel Experiences that treated each channel separately Omni-Channel Experiences are centered around the customer to ensure they can easily and seamlessly navigate between every company touch point to make a single purchase or complete a single task.

Data sources: Adobe, Google, OmniSend, Zendesk, and various.

IMPACT

With 90% of consumers expecting consistent interactions with the companies they deal with across channels this trend is an important one to get right, especially as purchase frequency is 250% higher, and order values are 13% higher, on omni-channel versus single channel.

However, as we continue to see the growth in both the number of and variety channels, which can include everything from **Behavioural Computing** interfaces and **Digital Humans**, to new immersive experiences, the **Metaverse**, as well as new apps, devices, platforms, and even **Robot Customers**, it's proving increasingly difficult for companies to keep up with trends and develop optimal strategies.

15 years ago the average customer typically touched two touch points when buying, now that number's six, with 50% of people using at least four, and soon it will be over ten. Despite these challenges though the companies that get their omni-channel strategies right on average retain 89% of their customers, compared to just 33% for those with poor strategies.

EXAMPLES

There are plenty of organisations who have, to coin a phrase "done omni-channel right." On the one hand we have organisations like Disney who perfectly marry their in park apps and experiences with their Magic Band program, then on the other we have the likes of Starbucks who have seamlessly unified their apps, payment cards, and even Spotify integrations with one another to create seamless customer experiences. Both of which go to show that when it comes to omni-channel there's alot more to think about than simply unifying different web and social media channels together.

Then we have the likes of Walgreens who integrate both front end and back end elements together to help customers stay in the loop, but also help them rapidly complete all manner of forms and refill requests. And, as for Sephora their omni-channel strategy so far has helped them nurture over 11 million customers who spend 15 times more than the average customer. As you can see there's not necessarily a one size fits all approach, but with the right forethought organisations can leverage this trend to their, and their customers benefit.

ACT NOW

All the data shows that organisations with a well thought out and executed omni-channel strategy have customers who are more loyal and spend more, and ultimately that's every executives dream combo so this is a trend that, arguably, should be prioritised.

EXPLORE:

- Customer journey planning
- Data and technology strategies
- Emerging technologies and technology roadmaps
- Future of the Customer Experience, Marketing, Retail, and the Workplace

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OPTI-CHANNEL EXPERIENCES

2ND YEAR ON THE LIST

QUICK TAKE

While **Omni-Channel Experiences** are very much about organisations passively offering their customers and would be customers the opportunity to engage with them via all manner of different channels Opti-Channel Experiences, which are seen by many as the next evolution of channel engagement, are all about organisations proactively presenting customers with the right channel for the task, with the aim of optimising, simplifying, and improving the overall customer experience and all the benefits that brings.

IMPACT

Seen as a fad by some and as the future of customer engagement by others at its heart this trend is driven by organisations who are trying to proactively provide customers with the best frictionless experience that encourages customers to engage more, spend more, and remain loyal - whether it's offline or online or invariably both.

Whereas omni-channel experiences are all too often dominated by discussions about being present on every channel this trend is more about proactively simplifying and optimising the overall customer experience and right sizing the number of channels customers are exposed to.

As a result the predominant impacts of this trend include helping organisations reduce the cost of managing, operating, and supporting a bloated channel portfolio while also allowing them to simplify back end business processes while at the same time improving customer personalisation, precision, and the overall customer experience - the latter of which can be negatively impacted if an organisation has too many channels to choose from anyway.

EXAMPLES

Every day consumers interact with organisations across hundreds of different channels and with the number of channels growing daily inevitably not only will organisations find it increasingly difficult to keep on top of them all but customers will also feel increasingly overwhelmed by them.

In today's age though while people might not remember your content once hooked you can be assured they'll remember how it feels to do business with you, and that's where this trend can help organisations differentiate themselves from the crowd.

While organisations such as Disney have fully embraced this trend to give their customers what they call a "White glove" concierge service across every touch point more traditional organisations, such as DBS Bank in Singapore, have also been using it to improve the customer experience, with one simple example being to switch customers who've lost their credit cards to their voice channels which has been shown to put customers at greater ease than purely relying on passive digital channels.

ACT NOW

While some organisations are focused on delivering experiences via every possible channel they can, and often doing it poorly, others are trying to optimise and simplify the customer experience by making careful strategic decisions that tie into this trend. Furthermore, in the age of **Digitisation** and **Hyper Personalisation**, it could be argued that this trend provides the most appropriate customer centric experience.

EXPLORE:

- Benefits and use case examples
- Emerging technologies and technology roadmaps
- New business and operating models
- Partner ecosystems and solutions

Data sources: Various.

ROBO CUSTOMER SERVICE

2ND YEAR ON THE LIST

QUICK TAKE

Today's customers are more demanding than ever, wanting everything not only faster but also on demand and naturally those expectations extend to customer service and support.

As a result more organisations than ever before are now exploring new ways to serve their demanding customers better across all the channels they use while at the same time reducing operational costs and improving efficiency - the net result of which is the increasing provision of customer service using technologies such as **Artificial Intelligence** (AI), and others.

Data sources: Accenture, Forbes, Hubspot, Zendesk, and various.

IMPACT

Even though 86% of customers value human based interactions when it comes to the future of customer service there's no doubt that the "robots" are coming - whether they come in Bot, **Digital Human**, **Robotic Process Automation**, or some other form, and with $1.6 Trillion in revenue lost every year due to poor customer service, and with customers spending 17% for a good experience, and with customer centric businesses being 60% more profitable than their peers this trend is potentially invaluable. Furthermore, as **Exponential Technologies**, such as AI and **Behavioural Computing**, as well as others such as **Immersive Technologies** improve, and as new channels such as voice become increasingly capable, cost effective, and ubiquitous there's no doubt this trend will accelerate and become the dominant way organisations serve their customers - especially in the digital age.

Today over 40% of adults use voice and 70% use messaging apps to interact with businesses, over 80% of enterprises use AI to augment their customer service, and with bots alone reducing customer service costs and wait times by at least 90% this is a trend to watch.

EXAMPLES

As more organisations embrace **Digitisation** there are inevitably going to be more organisations where you never ever engage with a real human being with Netflix being just one example of millions that I could mention. Furthermore, as we see the rise of **Autonomous Organisations** it could very easily be argued that in the future not only will customers, whether they are humans or **Robot Customers**, never engage with a real human but that the organisations themselves will be fully automated - and that's a thought worth pondering for lots of reasons.

In the meantime though we have car manufacturers using Augmented Reality (AR) to help customers service their vehicles without the need for manuals or training, and we obviously have a proliferation of bots spread across all manner of channels that are helping customers get the information they need the instant they need it.

Elsewhere we also have digital humans and voice assistants helping customers in all manner of ways, whether it's helping them choose products or just check the status of their orders, and we're only just scratching the surface.

ACT NOW

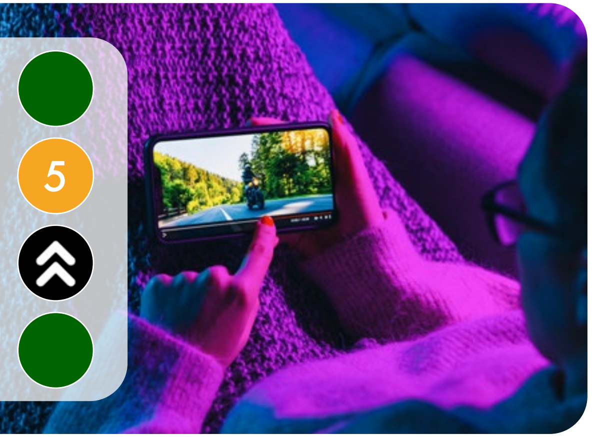
Being able to service your customers on demand for little to no cost is needless to say a very attractive proposition for organisations and done well this trend has been shown to enhance the customer experience and improve brand loyalty. However, implemented poorly it can also have the opposite effect, but as **Affective Computing** matures increasingly robo systems will be able to sense customers emotions and, if need be, modify their responses and tones accordingly which may mitigate some of these negative experiences.

EXPLORE:

- Best practises and case studies
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence and Customer Experience
- New business and operating models
- Partner ecosystems and solutions

SHOPPABLE VIDEO

2ND YEAR ON THE LIST



5

QUICK TAKE

Movies and TV series, as well as all manner of other content categories, have made money from product placements for decades so it was inevitable that at some point someone would try to create a seamless link between consumers being able to see something on screen in one moment and being able to buy it and have it delivered to their home in the next.

This is the promise of Shoppable Video which literally lets people "Buy the screen," and it's seen by many in the content industry as being the next advertising frontier.

Data sources: Brightcove, Spott, and various.

IMPACT

With over 85% of organisations now using video as a primary marketing tool surveys have consistently shown that consumers watch interactive videos 47% longer and are much more likely to add products to their carts while doing so, with some brands seeing conversion rate increases of 80% or more. And, needless to say, the global pandemic supercharged these trends with 96% of consumers saying they watch more video than ever before.

Looking at the stats it's clear that brands, E-Commerce, and Shoppable Video are a marriage made in marketing heaven, especially given the fact that 80% of consumers remember what they see in videos and that 54% want to see more content from "the brands they support." Surveys have also found that over 50% of adults engage with a brand after watching video thereby adding even more fuel to the power of this trend.

Then, combine this trend with the rise of authentic live videos and streaming, product demos, and all manner of other more traditional types of content and video, as well as the **Metaverse**, and it's easy to see why it's a must have.

EXAMPLES

Shoppable videos offer calls to action and "Add to Cart" functionality that turns on screen inspiration into a sale within seconds, and with some brands such as Endeavour Drinks Group seeing conversion rates of over 40% on sales it's clear to see this trends potential.

Brands like CBSUniversal, Estee Lauder, Facebook, Instagram, Issuu, Levi, and Spott are also seeing significant success and are championing the ability for consumers to simply click an area of the video, or even the product in the video itself, in order to buy it rather than having to visit banner links or links below the videos.

Seen as the ultimate seamless shopping experience many of these brands, and others, are now busy expanding their programs and scaling their platforms.

While shoppable video has been around for a while it's now becoming much more personalised, refined, and integrated into the consumer viewing experience and ecosystem with other trends such as **Synthetic Content**, as well as the rise of the increasingly connected and digital society, only serving to supercharge it further.

ACT NOW

The ability of brands to use this trend to engage consumers in new ways and to boost conversion by multiples is so powerful that it gives new meaning to the trend of "Shoptainment."

EXPLORE:

- Best practises and case studies
- Brand engagement strategies
- Future of the Customer Experience, Media and Entertainment, Retail, and Synthetic Content
- Partner ecosystems and solutions

HR AND TRAINING TRENDS

CONTENTS

AI BASED RECRUITING

2ND YEAR ON THE LIST

QUICK TAKE

Advances in Artificial Intelligence (AI) are helping organisations find and recruit new talent cheaper, faster, and using less resource than ever before. Today over 70% of the Fortune 1,000 use AI in their recruitment process with that number increasing quickly.

However, the link between these technologies and surveillance technologies, both of which share common traits, are stoking concerns about their impact on bias, D&I, ethics, personal privacy, and security, leading many to call for increased industry regulation and transparency.

Data sources: Various.

IMPACT

While AI, mainly in the form of Big Data and Machine Learning, have been used in the recruitment process for decades today the adoption and development of increasingly sophisticated surveillance-like AI technologies, such as Deep Learning and Machine Vision, are giving HR teams unprecedented insights - both from a historic and predictive perspective - into the people they're looking to hire.

For example, today these technologies can use biometric cues to determine people's characters, personalities,their intent to criminality, and even their potential. They can also accurately determine candidates mental and physical well being, including identifying undiagnosed or undeclared health conditions that include everything from dementia, depression, and PTSD, to genetic abnormalities, high blood pressure, and heart defects.

And that's before we discuss the power of combining these data sets with other Big Data sets that can be used to analyse every aspect of an individuals academic, professional, and social background.

EXAMPLES

People are becoming an open book, and by combining these technologies with other assessment, HCM, and performance management tools organisations can now identify and catalogue the core competencies and traits of their top performers, or target hires, and then use those matrices to identify perfect matches - at the top and bottom of the hiring funnel.

Every aspect of a candidates spoken and unspoken information can be analysed - from telling when they're lying during a video interview, to using their biometric cues, micro-movements, and their voices to analyse every aspect of their response. And it can be all be presented in a convenient real-time dashboard, or fully automated.

Today, for example, companies like EightFold and HireVue, as well as many others, have developed AI hiring platforms that are both very innovative and powerful. But that said organisations need to enter this space with their eyes wide open and need to be fully aware of the pros and cons of using AI to automate and "improve" the recruiting process.

ACT NOW

While there is little to no doubt that this trend can help organisations identify and recruit the talent they need faster organisations have to be very careful in how they apply and use it and need to do their utmost to ensure that these systems are fair and transparent, and align with informed organisational policies.

EXPLORE:

- Algorithmic audits and AI and Human bias
- Emerging technologies and technology roadmaps
- Future of Human Resources, Work and the Workplace
- Future legal exposures and risks
- GRC implications
- Partner ecosystems and solutions
- Policy and regulation reform

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EXPLORE STARTUPS & MORE

ARTIFICIAL INTELLIGENCE COACHES

2ND YEAR ON THE LIST

QUICK TAKE

Traditionally knowledge and skills have all been taught by people, and technology and tools have been little more than dumb complimentary aids.

Today though technologies such as **Artificial Intelligence** (AI) are helping us personalise and improve learning outcomes in new ways via trends such as **Adaptive Learning** and increasingly AI, which has beaten world experts in numerous fields, is now coaching and training people directly in everything from empathy to strategy. Needless to say this represents a paradigm shift in how people learn.

IMPACT

While AI is increasingly able to automate and master particular jobs, tasks, and skills which increasingly, it is then able to "teach" to people, as well as to other AI, one of the most interesting complimentary trends to keep an eye on as you explore this trend is the **Centaur Principle**.

In fields as diverse as AI design, coding, combat, data science, debating, decision making, empathy, game play and game theory, investing, negotiation, product development, pure maths, science, and strategy, AI is increasingly out performing its human peers, and doing so by multiples at extreme speeds. It's also mastering many of these fields by learning them in new ways, often in simulation or via Zero Shot Learning, and from alternative perspectives - many of which are novel and foreign to the ways we humans learn.

The upshot of all this is that when people are taught by proficient AI's studies have shown they learn more, retain more, faster, and that their "performance" improves by 30% or more - all of which makes this nascent trend an increasingly interesting one to watch in the years to come.

EXAMPLES

There is no doubt that when it comes to certain tasks AI can perform them better than humans, but what's most interesting about this trend is what happens when we combine the best of AI's skills with the best of the "human condition." In many cases not only are we seeing people's point of view and learning behaviours change, but we're also seeing their performance levels being amped up and in some cases becoming "super human" especially in the elite and expert fields.

In the US, for example, AI's are teaching call center agents empathy by coaching them to listen to customers speaking patterns, in E-Sports AI's that thrashed human players are teaching players game strategy, and in the military AI's are teaching USAF pilots how to perform better in aerial combat - after it wiped the floor with them.

Meanwhile, in the boardroom AI's helping executives become better decision makers, in China it's coaching ministers in foreign policy and negotiation, and at Google it's teaching expert AI designers how to design better AI's and even computer chips ... all of which is just the beginning.

ACT NOW

While this trend is still ramping up as it matures over the next decade it will be a driving force that helps re-invent and turbo charge human learning at all levels of society. And, as this trend becomes increasingly accessible, affordable, and democratised it will no doubt move the dial and have a significant material impact on people's potential and therefore their downstream impact on global business, culture, and society.

EXPLORE:

- Benefits and use case examples
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Education, HR, and the Workforce
- Partner ecosystems and solutions

Data sources: DOD, Falcon, Github, Google, Microsoft, MIT, and various.

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EXPLORE STARTUPS & MORE

DIVERSITY AND INCLUSION

2ND YEAR ON THE LIST

QUICK TAKE

In all honesty Diversity and Inclusion (D&I) shouldn't be a trend because it should just be part of common-a-garden good business practise - especially bearing in mind that in today's rapidly changing world organisations of all shapes and sizes need to be adaptable and be able to view the world from different perspectives in order to both avoid and harness disruption for their benefit.

For these reasons organisations should be embracing cognitive, ethnic, and gender diversity, and implementing the appropriate policies accordingly.

IMPACT

In general diverse and inclusive organisations are also the most adaptable and competitive in their fields with numerous global studies bearing this out. But D&I only wins if everyone wins and if noone feels that they have been purposefully discriminated against, excluded, or over looked.

Different individual perspectives, which are the result of different backgrounds, experiences, and personality types are vitally important in today's fast paced ever changing world. Not only do they provide organisations with a creative boost that means on average inclusive organisations are 1.7 times more likely to be innovation leaders, but it also makes them 25% more productive, and much faster and adept problem solvers.

Furthermore, when we consider the impact on decision making inclusive organisations also outperform here too with diverse teams outperforming individual decision makers, in both quality and speed, 87% of the time. And then, naturally, people within more inclusive organisations also often feel more engaged which not only translates into better financial results, but also benefits brand reputation and hiring.

EXAMPLES

Today companies have two ways to embrace diversity - voluntarily or by force. And when it comes to the latter increasingly governments and institutional investors aren't afraid to use a variety of tools in their arsenal, such as withholding grants or tax incentives, or dumping shares, to 'encourage' organisations to do the right thing.

Additionally, as some organisations, such as the police, find it difficult to recruit from particular ethic groups some of them are calling on governments to change the laws so they can positively discriminate against particular groups in order to meet their D&I goals - something that many governments have said would set a dangerous, and wrong, precedent.

While getting the D&I balance right is hard organisations such as Accenture have introduced a number of initiatives that include Diversity Awareness, Diversity Management, and new Professional Development and Hiring programs, and Sodexo report that they have seen a 23% gross profit increase, a 5% bump on brand valuation, and a 4% increase in employee engagement, as a result of their inclusion initiatives.

ACT NOW

Inclusive organisations often top the charts when it comes to adaptability, creativity, decision making, innovation, and most importantly financial results, but organisations need to make sure that their D&I policies are fair and transparent, and that they do not directly or indirectly disadvantage specific groups - something that can easily happen.

EXPLORE:

- Brand assessments
- Corporate structures and policy initiatives
- Future of HR, Work and the Workplace
- Initiatives to identify and eliminate organisational and technological bias
- Investor insights, outside perspectives, and honest feedback
- Proportional representation

Data sources: BCG, Cloverpop, HBR, JBR, McKinsey & Co, and various.

VIRTUAL REALITY TRAINING

2ND YEAR ON THE LIST

QUICK TAKE

Irrespective of their job role at some point during their career everyone has had some form of on the job training, and while some of this will have been done online some of it will have no doubt been in the field and in person.

While online training can be delivered at scale and affordably its impact can often be questioned especially when it comes to retention and expected outcomes. In person training however generally gets better results but the counter is that it's often difficult to co-ordinate and expensive. Now though Virtual Reality (VR) is an alternative.

Data sources: Accenture, MIT, PWC, Strivr, and various.

IMPACT

When it comes to training organisations are looking for three main things, namely results and retention for minimal cost and increasingly VR training is showing itself to be better than traditional alternatives in all these areas.

As recent real world studies have shown not only does VR impact more of the learner's senses and create a stronger bond between the learner and the content, but employees trained via VR get up to speed four times faster than classroom learners and twice as fast as E-Learners. Which is staggering.

From a cost perspective those are coming down too with the cost per employee in larger enterprises now 52% less than classroom learning, and while those costs aren't on a parity with E-Learning it won't be long before they drop further and get closer to cost parity.

Things get even more interesting from a retention rate perspective though with waves of studies reporting real world retention rates of over 80% after one year compared with just 20% after traditional training. All of which makes this a trend to watch.

EXAMPLES

The number of examples increases daily but some of the more common and most interesting ones are highlighted below.

In the US T-Mobile used VR training to help its leaders practise how to manage changing business conditions as they prepared to merge with Sprint by enabling them to build their skills in handling change management conversations, both by voicing their own concerns as well as dealing with objections from resistant team members.

Elsewhere others have been using VR simulations to help teach employees about Diversity, Equity and Inclusion (DE&I) training, as well as teaching them about harassment and unconscious bias, and banks are using it to teach employees how to de-escalate situations.

And so far Walmart's trained over 20,000 associates on everything from new technology, to soft skills such as customer service and empathy, and compliance, construction companies have used it to train employees on heavy equipment, and others are using it to train engineers on installations and new equipment. The sky, it seems, is the literal limit.

ACT NOW

The ability to use VR to simulate almost any kind of training, with all of the associated beneficial impacts, increasingly makes it an ideal training medium, and while it might not be suited to all situations so far it's shown that it's more than a match for traditional forms of learning. Furthermore, as the technology and supporting ecosystem improves, as headsets morph into VR glasses and as the realism of the simulated environments gets better, there's no doubt that this trend will help learners everywhere learn better faster for less.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Education and the Workplace
- Partner ecosystems and solutions

ICT

TRENDS

CONTENTS

CLOUD COMPUTING

2ND YEAR ON THE LIST

QUICK TAKE

Cloud Computing represents a paradigm shift in the way that organisations buy, consume, share, and supply all manner of computing related services, and even though the concept is decades old, with projects such as ARPANET in the 1960's being an early example, this trend only really took off in a meaningful way in the early 2000's, and it's accelerating.

Fast forwards to today and almost every organisation and every consumer is using one form of cloud computing or another to access an increasingly large and diverse variety of services, hence the common term "X" as a Service.

IMPACT

Cloud's impact on the way organisations and consumers alike, as well as other computing dependent systems such as the **Internet of Things**, buy, consume, sell, and share computing resources and services is undeniable. It also represents a titanic shift in operating models as organisations race to embrace public, hybrid, and private cloud models.

In 2020 the cloud computing market was estimated to be worth over $375 Bn and by 2025 it's projected to be over $832 Bn, and while over 94% of all enterprises are now using cloud worries over the security of these systems remain with over 75% of enterprises citing cloud security as their major concern going forwards - with good justification. However, despite these concerns with over 100 Zettabytes of data stored in the cloud and 89% of all breaches due to human error over 50% of organisations say they are storing classified data in the cloud.

Today it's also estimated that cloud datacenters are responsible for processing over 95% of all ICT workloads and that **Software as a Service** (SaaS) accounts for over 75% of that workload.

EXAMPLES

When we think about examples of cloud use cases, whether it's public, hybrid, or private cloud, they're all around us, but for obvious cultural reasons many people are more inclined to focus on examples that include Amazon AWS, Dropbox, Google, IBM, Microsoft, Salesforce, and many others rather than some of the major Asian services such as those from Alibaba, Baidu, or even Huawei which in terms of ambition, scope, and size rival their western peers.

As a result of this I am going to share some more out there examples with you such as Google's Everyday Robot Project which is using **Artificial Intelligence** (AI) and the cloud to help robots learn in new ways by developing **Hive Mind Systems** that let users teach one robot new skills and then allow that robot to instantly teach that same skill to every other connected robot or device wherever they are on the planet.

We then also have the CIA and US DoD's secretive multi-billion contract awards to the likes of AWS, Microsoft, and others to stand up their own cloud platforms, and many other examples.

ACT NOW

With cloud becoming the dominant ICT operating model, as well as a means for organisations to save money by helping them avoid the costs incurred by buying, supporting, and over provisioning their own traditional on premise hardware and software it's clear that this trend is one to investigate and embrace.

EXPLORE:

- Best practises and case studies
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Communications, Computing, Security, and the Workplace and Workforce
- Partner ecosystems and solutions
- New business and operating models

Data sources: Accenture, Cisco, Checkpoint, Cloudflare, Gartner, and various.

DIGITAL TWINS

2ND YEAR ON THE LIST

QUICK TAKE

Digital Twins which are digital clones of physical processes, products, and systems - in some cases down to the granular level - that bring the benefits of digital tools and technologies to the real world to help organisations analyse, diagnose, innovate, maintain, query, research, and visualise, them in new ways in real time or near real time.

As a result their benefits are broad and considerable, and in some cases revolutionary, which is why Digital Twins are seen as being an increasingly important part of the future digital economy.

Data sources: Deloitte, IDC, Markets and Markets, UKRI, and various.

IMPACT

Expected to have significant business, economic, environmental, health, and societal benefits it's only recently that Digital Twins, thanks to the combination and integration of different maturing **General Purpose Technologies** (GPT), have been able to be bought to life in both 2D and immersive 3D form.

By 2025 it is estimated that the Digital Twin market will be worth $35.8 Billion and that 40% of **Internet of Things** (IOT) platform vendors will integrate the capabilities, simulation platforms - which will accelerate the **Continuous Innovation** trend - and systems, needed to create and integrate them into their product and service offerings, and that 70% of the customers using them will use them to conduct process simulations and scenario evaluations, especially when it comes to things like operations optimisation, risk analysis, and supply chains.

As the GPT's that make digital twins possible improve they will become increasingly detailed and life-like which will make them more vivid, and the information that organisations can glean from them more revealing and valuable.

EXAMPLES

Today the massive availability of new data sets, which include everything from the CAD models and scans of products and systems, to real time sensor data, combined with increasingly intelligent and sophisticated simulation and visualisation systems, mean that the number of interesting Digital Twin examples is growing exponentially.

Examples include researchers who are creating Digital Twins of the Earth and humans so they can analyse them and find new ways to reverse **Climate Change** and treat healthcare conditions, researchers who have created Digital Twins of all the buildings in the US so they can analyse their energy consumption and simulate strategies to reduce them, through to organisations like BMW who have created **Factory Digital Twins** that run million of simulations to discover the most optimal manufacturing and operating environments.

And, of course, when you combine Digital Twins with Conversational AI, as GE have, engineers can diagnose and fix faults with products, such as wind turbines, using just their voices.

ACT NOW

One of the greatest benefits of Digital Twins is the ability to simulate and run different scenarios at digital speed which, unsurprisingly, accelerates all areas of their operations which, in turn, can be leveraged for serious competitive advantage.

EXPLORE:

- Best practises and case studies
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Communications, Healthcare, and Manufacturing
- Partner ecosystems and solutions

DIGITISATION

2ND YEAR ON THE LIST

QUICK TAKE

Digitisation, which is the process of converting analogue systems, information, and processes into digital ones, is such a significant business, cultural, and societal transition that it is often said we live in the Digital Age.

Asides from helping organisations reduce costs and improve efficiency and insights, this trend also erodes the boundaries that separated previously distinct industries, and enables organisations to enter new markets and serve customers in new ways at a scale and speed that would have been unimaginable just 20 years ago.

Data sources: Accenture, and various.

IMPACT

Organisations around the world have been digitising their front and back office operations, as well as their customer experiences and **Supply Chains**, for decades but the trend has accelerated furiously in the last 20 years after so called Digital Native organisations rose to prominence, disrupted markets, found new ways to serve customers on demand, and reached sky high valuations within what seemed like the blink of an eye.

For better and worse digitisation has had a major impact on global business, culture, and society, and has impacted everything from **Business Models**, especially **Multi-Sided Platforms**, business operations and strategies, collaboration, cyber security, product development, and many other areas.

It also bought about the creation and re-writing of global policies and regulations, such as the Digital Markets Act in Europe and the creation of the EU Digital Single Market. However, as it became easier for organisations to trade cross border and enter new markets with impunity this trend also caused a lot of problems for competition and markets authorities as well as treasuries.

EXAMPLES

The benefits and examples of this trend are all us from Airbnb, Facebook, Google, Netflix and Uber, to Amazon, Baidu, Revolut, Spotify, Tiktok, and millions more.

When we look a the best examples of digitisation done well though it'd be hard to beat organisations like Amazon - perhaps the truest digital native of them all who's using it's multi sided business to seamlessly and abruptly move into new adjacent markets. Started in 1994 they are still a pioneer, causing the share prices of incumbents in adjacent markets to crash spectacularly when they move in on their turf. This effect was neatly highlighted when Amazon bought Whole Foods for $13 Billion - not only did Krogers and Walmart see their share prices dive but Wall Street rewarded Amazon's stock price with a $15 Billion bump which meant that virtually the organisation made a $2 Billion "profit" on the deal.

And I haven't even started talking about Google or Facebook who both count a third of the world's population as customers, Netflix the king of entertainment, Uber and their 10 Billion rides a year, and many others.

ACT NOW

With the business benefits of digitisation and the competitive environment being too great to ignore it's no longer a question if organisations will digitise, but when. As a result it's safe to say that in most countries, especially in the developed world, the vast majority of organisations already have digitisation programs in full swing with organisations such as JPMorgan Chase spending upwards of $15 Billion a year on technology as they, to quote their CEO, "Chase a once-in-a-generation transformation."

EXPLORE:

- Best practises and case studies
- Future of Business, Communications, Work and the Workplace
- Partner ecosystems and solutions
- Policy and regulation reform

ROBOTIC PROCESS AUTOMATION

2ND YEAR ON THE LIST

QUICK TAKE

Robotic Process Automation (RPA) can very much be thought of as little more than instructing a machine - in this case a bot or code - to execute mundane, repetitive, manual tasks, but while this might not sound that exciting RPA is seen by many as a revolution in Business Process Automation (BPA). Mundane it seems is cool.

It's this ability to automate everyday processes that require human action that allows organisations to use RPA to reduce costs and improve efficiency, and no matter what kind of organisation you are that's an attractive proposition.

IMPACT

At a global level it's believed that RPA could help boost global productivity growth by between 0.8 and 1.4 percent annually, which bearing in mind that some slow moving industries such as Construction, Education, Healthcare, and the Public Sector have actually seen productivity stagnating for the past few decades, obviously with caveats, is interesting in itself. This gets even more interesting though when you consider the fact, for example, in the USA alone productivity between 2007 and 2017 only grew at an annualised rate of 1%.

At a more personal level RPA gives organisations the opportunity to move their staff away from performing repetitive routine tasks, such as those associated with compliance, and take on work that's more demanding, interesting, and financially rewarding for both themselves and the organisations they work for.

Furthermore, with over 50% of enterprises already running RPA programs, and the trend on track to achieve almost universal adoption in the next few years, studies have shown savings of 35 to 65% for onshore operations and 10 to 30% for offshore.

EXAMPLES

Today compliance and productivity associated tasks are naturally at the forefront of the RPA revolution, but there are plenty of other tasks that can benefit from this trend too including financial closing, hiring and on boarding, inventory management, invoice processing, payroll, **Robo Customer Service**, system setups, and more. And, with benefits including helping eliminate human errors, improving compliance and service processing times, and increasing the overall scalability of operations there are plenty of examples to choose from.

In one example Uber used 100 bots to ensure regulatory compliance and improve the hiring experience and is now realising over $10Ml in annual savings. In another Spotify created a cross LOB citizen developer program who then developed 100 bots which helped them save over 45,500 man hours of labour and release a further 24,000 hours of capacity. Then, elsewhere, Siemens automated over 350 processes with over two thirds of them related to helping automate SAP activities. All of which is only just scratching the surface of what's possible.

ACT NOW

Every organisation is riddled with mundane and repetitive manual tasks that very few, if anyone, enjoys doing and that harm the organisations overall efficiency and productivity, so now that RPA tools are maturing it's little surprise that organisations everywhere are lining up to benefit from this trend.

EXPLORE:

- Best practises and case studies
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Computing, Regulation, and the Workforce
- Partner ecosystems and solutions

Data sources: Deloitte, Gartner, Intellera, NASSC, OECD, UiPath, and various.

MARKETING TRENDS

CONTENTS

ANTI-SPONSORSHIPS

2ND YEAR ON THE LIST

The proud anti-sponsor, Brewdog

QUICK TAKE

While some see the trend of so called Anti-Sponsorships as little more than shameless PR stunts one could easily argue that attention grabbing PR stunts have been a mainstay of many brands for as long as brands have existed.

Anti-Sponsorships, which can often compliment **Brand Jacking** and other trends, is when brands take a stance against a particular activity or event. It's also a way for them to benefit, albeit sometimes questionably, from the buzz and hype around certain events without actually having to pay the organisers any money.

Data sources: Campaign, Drum, Marketing Week, and various.

IMPACT

While there are many impacts of this trend, which range from using it as a platform to stir debate about the ethics and morals of particular events, hosts, and organisers, and raising awareness of important societal issues, ultimately this trend is about aligning your brand and its core values with important societal issues to drive long term customer engagement and loyalty.

Executed very carefully the results can be impressive especially as surveys show that more than 50% of consumers respect brands that take a stance on important issues much more than those that don't. However, if your brand has skeletons in the closet, is inauthentic, or worse has a dubious reputation itself then beware - embracing this trend can create a backlash that's difficult to contain.

Assuming you execute carefully though it can put your brand on a golden pedestal and make you the envy of your competitors with the added benefit that it allows you to "participate" and be included in the conversations about the events you're "not sponsoring" without ever having to pay the organisers a dime which is a huge saving in itself.

EXAMPLES

While there are many campaign examples some of the best, depending on your definition of that word, have been those that took a strong stance against the hosts and organisers of particular events, and which generated both criticism and praise from industry pundits, the media, and the public alike.

In 2021 during the Qatar FIFA World Cup UK beer manufacturer Brewdog declared itself the proud anti-sponsor of the tournament with a series of billboard ads protesting Qatar's human rights record, LGBTQ stance, and FIFA's bribery scandals. Not only did the "Lost Lager" campaign, the profits from which were donated to charity, generate international headlines but it also generated significant praise and outrage, stirred up frenzied armchair debates, and had critics questioning why the brand was both campaigning against the World Cup while at the same time still screening it in their bars.

Results wise though after the campaign 11% of beer drinkers said they would be less likely to buy the brand, but 24% of football fans and 31% of beer drinkers said they would be more likely to buy it, so "Score!"

ACT NOW

While many companies spend millions or even hundreds of millions of dollars securing the sponsorship rights of major events, and other things, this trend provides brands with a cheaper way to piggy back on the popularity of those events while at the same time extolling their core values and aligning them with consumer sentiment to build brand loyalty and equity. But its not without its risks which is why brands should embrace it with their eyes wide open and should have plans in place should things go south.

EXPLORE:

- Business and impact assessments
- Consumer behaviours
- Future of Media and Entertainment, and Sports
- Litigation protection
- Scenario planning

ATTENTION PRICE INFLATION

2ND YEAR ON THE LIST

QUICK TAKE

We are all used to the concept of traditional inflation, such as the Consumer and Retail Price Inflation indices, but as we continue to see the rise of **Synthetic Content** one kind of inflation that many companies are missing is the rise of Attention Price Inflation (API). As the volume of content being produced increases exponentially it will become increasingly difficult for your content to be surfaced and viewed. Ultimately, this means that in the future you will have to spend more energy and more money than you do today to get peoples attention, thereby the reason behind the name of this trend.

IMPACT

We're entering an era where the supply of content so far outstrips demand that standing out and capturing peoples attention will become exponentially harder and more expensive in the future. And if you follow Cost Per Click (CPC) rates then you'll already be seeing the tip of this trend emerging.

Furthermore, as this imbalance gets worse in the future - as more brands and creators come online and as new technologies and trends including **5G**, **Digitisation**, **Creative Machines**, and **Web 3.0** democratise content creation and distribution - it means it will be increasingly difficult for your content to be seen, let alone be acted on or stand out. Unless, of course, you're willing to pay platforms top dollar to surface it.

Ultimately, this means that brand will be the defining differentiator between businesses that thrive and those that struggle to survive, especially as next generation platforms and marketing channels that only offer a limited set of results to consumers, such as voice, will disproportionately favour businesses and content producers who have emerged as the market leaders with strong brands.

EXAMPLES

While there are many ways to measure the cost of acquiring an individuals attention overall it's difficult to quantify because there are no aggregated industry figures and even if there were they would depend on what groups and industries you're targeting, the time of year, the country or region, as well as what format your adverts take, so as all marketing agencies know it's a literal minefield. And that's before the companies selling these ad spaces change their reporting methodologies and transparency.

Despite this though in the past two years on average the cost of Google CPC for retailers in the USA has increased by well over 40%, and globally Facebook and Instagram CPC costs have doubled on average during the same period.

However, while we still see significant API we have to be thankful that it isn't as high as it was in the early years when Google CPC cost grew by over 175% between 2010 and 2015 and Facebook's grew by over 300% during the same period. But, that said while the headline numbers are somewhat suppressed today the fact is they're still growing so beware API.

ACT NOW

As the growth in the availability of content continues to far outstrip the growth in user demand inevitably brands will find themselves having to spend more effort and more money getting the content they produce in front of customers, whatever channel they're using, and whatever regions, sectors, or groups they're targeting. Ultimately this also means that the brands that get their API strategy right will win and grow at a faster rate than their peers which will only serve to increase the divide between the leaders in a respective field and the others.

EXPLORE:

- Alternative brand building, content, and Marcom strategies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Content, Entertainment and Media

Data sources: Federal Reserve, Google, Social Media Examiner, Tinuiti, VaynerMedia, and various.

BRANDALISM

2ND YEAR ON THE LIST

HSBC being flamed, Brandalism

QUICK TAKE

While many companies use marketing to promote the benefit and virtue of their products Brandalism does the opposite. A portmanteau of the words "Brand" and "Vandalism" this trend is used almost exclusively by activists around the world to bring attention to the causes they care about by removing your brands glossy marketing veneer to expose your company's dirty laundry.

It's anti-marketing at its finest, and from sharing images of cars stuck in pollution shrouded traffic jams and flights to plastic strewn beaches, this trend is gaining global momentum.

IMPACT

As the cost of marketing grows, thanks in part to **Attention Price Inflation**, and as the cost of content going viral falls thanks to the **Power of the Individual**, brands today are having to spend more than ever before to distribute and promote their carefully crafted marketing content, and that's before the Brandalism experts get these brands target consumers to question their buying choices.

As a result, and increasingly worried that their expensive ad campaigns will be hijacked and distorted this trend has prompted many brands to investing more heavily in copyright and trademark infringement, criminal damage, defamation, and removal and take down litigation.

Furthermore, as the trend gathers momentum so too does the number of brands, geographies, and issues activists target, and with an almost endless number of issues to highlight, from corporate mismanagement to **Greenwashing** and beyond, they've no shortage of material. For their next act though we're now seeing them not just target brands, but also the advertising agencies behind the brands.

EXAMPLES

There are many examples of this trend, and while some use the power of crowd sourcing to get the message across, such as a brandalism campaign in the UK that saw hundreds of street artists replace hundreds of corporate adverts with radical anti-consumerist advertising - dubbed "the largest advertising takeover in world history" - others are more nuanced and sophisticated.

With HSBC logos that are on fire to highlight the company's continued investments in fossil fuel projects alongside Nike logos that bleed to highlight poor factory working conditions, to RyanAir ads that have been re-written to advertise "RuinAir's" holidays to plastic strewn tourist beaches there are no shortages of examples.

We've also seen activists turning Volkswagen ads into "We're sorry we got caught" DieselGate ads, British Airways "Going Green" ads into illustrations of planes with golf courses in business class, Air France's UN COP sponsorship ads turned into a bribery scandal, and Lamborghini's opulent ads into equally opulent pieces of artwork promoting climate chaos.

ACT NOW

As we continue to see activism on the rise across the world brands in all sectors should be ever mindful of how their activities and marketing can be turned against them. However, while this trend might seem to have many downsides brands could also use it to their advantage either by countering it head on, or embracing and owning it, and then using it as a tool to help change organisational behaviours and culture.

EXPLORE:

- Business and impact assessments
- Corporate culture
- CSR and ESG policy reviews
- Ethical and moral obligations
- GRC reviews
- Litigation options

Data sources: CNET, DesignBoom, Drum, FT, Researchgate, and various.

BRAND ACTIVISM

2ND YEAR ON THE LIST

QUICK TAKE

As brands look to boost customer engagement and loyalty, and ergo revenues, many recognise the fact that increasingly consumers expect them to have a strong public position and take a stance on today's major societal issues - hence the term Brand Activism, and the trend **Anti-Sponsorships**. Brands also realise that sitting on the fence or staying silent is increasingly not an option, which takes many of them into uncomfortable territory especially when we consider the **Polarised Society** trend. However, while embracing this trend authentically can have its benefits, mishandled it can destroy brand value.

Data sources: Uppsala University, and various.

IMPACT

Brands have always had positions on important societal issues but historically most of these have been kept behind closed doors, or at best discretely hidden behind carefully worded marketing communications.

Today though more than 50% of consumers want brands to be open and vocal about their positions on important issues and take a stance, so it's no coincidence that being on the right side of the so called "opinions fence" can have significant upsides including increased brand equity, which can top 30% of a company's market cap, customer engagement and loyalty, revenues, and shareholder value.

Despite these benefits though you need to be acutely aware that by "picking a side" you can inadvertently alienate some of the customer groups you're courting. Furthermore, navigating this trend gets even trickier when you factor in the fact that when brands do take a stance studies have shown that customers who agree with them will check the company's language and back stories, and if they aren't authentic or consistent then even these supportive customer groups can turn on you.

EXAMPLES

When it comes to embracing this trend companies have to be all in or all out, there is generally no room for a middle ground, plus the C-Suite and board have to agree your strategy because if executed incorrectly there can be significant damage to your company's reputation and share price which can take years to repair. Despite the risks though more brands are embracing this trend today than ever before including Apple, Disney, Patagonia, and Nike.

In Apple's case they take a strong stance against the **Demise of Anonymity and Privacy** which translates into their being the brand for privacy, and in Patagonia's case every strand of the organisation supports the **Circular Economy**, environmental activism, and sustainability.

However, while some brands just benefit others experience mixed outcomes such as Disney who took a strong stance on LGBTQ rights then saw Republicans rescind their special multi-billion dollar tax breaks, then there's Nike whose sales surged when they supported Colin Kaepernick right before they saw their shares tumble, Nike gear set on fire, and calls to boycott the brand.

ACT NOW

It's always easy to stay silent in the face of adversity or wrong doing, and while this trend can be one that keeps the board awake at night and investors on tender hooks it's fairly easy to argue that we should all step up to our moral obligations and speak up as when the need arises. That said though you have to embrace this trend with your eyes wide open and with contingencies as when or if things go south.

EXPLORE:

- Business and impact assessments
- Consumer behaviours
- Corporate culture
- Scenario planning

HEADLESS BRANDS

2ND YEAR ON THE LIST

QUICK TAKE

We're all familiar with the marketing strategies for traditional brands with traditional company hierarchies and structures, but in an age where **Web 3.0** and **Tokenisation** are helping decentralise all manner of products and services as well as enabling the development of **Decentralised Autonomous Organisations** and other non-traditional business models, we're seeing the rise of what many call Headless Brands - brands built by decentralised fandom communities that collectively, albeit loosely, contribute and decide on everything from asset and product development to messaging.

Data sources: Other Internet, FT, STOA, and various.

IMPACT

Headless brands challenge the very idea that a brand is centralised, as well as our assumptions about what a brand is and how it works. Unlike traditional brands the promotion of these "alt-brands" such as **Cryptocurrencies** like Bitcoin, open source communities, and even **Virtual Nations**, is done by the community and not by any centralised marketing authority.

Built around the pillars of community, autonomy, and equity - the ability to buy into the "brand" they're building and participating in - today fandoms have been able to successfully build globally recognised alt-brands that outperform those created by some of the best and well funded marketing teams.

While the nature of this trend makes quantifying its overall impact difficult we do have some metrics that we can play with. Take Bitcoin as a prime example, in 2021 without any form of centralised marketing team or strategy it reached a market cap of $1.28 Trillion putting it on a par with the likes of Amazon, Apple, and Google. Looking further afield we saw the Github community bought by Microsoft for $7.5 Billion, as well as Kaggle by Google, and many more.

EXAMPLES

Today the convergence of different technologies and trends lets individuals with common passions come together in loose collectives to build self-enforcing, self-incentivised, contagious narratives that are irrepressible, and while many of the headless brands they create remain small every so often some of them break cover and change the world.

Undoubtedly Bitcoin is one of the most famous headless brands, along with Dogecoin, Polygon, and Tether, as are many open source communities such as Linux. Even Asgardia, the world's first self-proclaimed space nation, is in on the act. But, there are also less obvious examples on the **Dark Web** like Hydra, one of the world's largest and most notorious criminal marketplaces which, if it was a company, would be in the Global 200 with over $50 Billion in annual revenue.

Then we have an increasing number of NFT marketplaces such as the Bored Ape Yacht Club which, worth over $1 Billion, have already signed numerous corporate partnerships, and launched everything from skateboards to animated YouTube series.

ACT NOW

The business models that have served us so well this far are being stretched and re-invented before our eyes with the result being that many modern age "brands" that exist in the ether now have almost nothing in common with their predecessors. As a result I suggest marketing departments investigate the power of this trend and use it to compliment their own official strategies.

EXPLORE:

- Business and impact assessments
- Fandom communities
- Emerging technologies and technology roadmaps
- Future of the Workforce and Workplace
- New business models, operating models, and products
- Partner ecosystems and solutions

MARKETING TO THE PLAYGROUND

2ND YEAR ON THE LIST

Prime Hydration

QUICK TAKE

Most countries have strict rules governing how brands market their products to children and in the majority of cases brands simply fiddle around with traditional formats and tweak the content to make it more age and audience appropriate. However, as the **Global Digital Addiction Rates** increase and as social media continues to dominate children's lives influencers and marketers alike are increasingly targeting younger consumers using various antics, behavioural psychology, viral marketing, and other marketing techniques to generate hype and hysteria around their products.

Data sources: Bleacher Report, The Conversation, and various.

IMPACT

When it comes to social media despite regulators best efforts to govern it it's fair to say it's still very much the Wild West, and this has given influencers especially almost a free reign to do whatever they want to capture, entertain, and monetise their audiences - and monetising them they are.

However, while most influencers such as Selena Gomez are rather traditional in their approaches to audience monetisation others such as KSI and Logan Paul have been bolder, using their large follower bases and scarcity marketing tactics to generate hysterical levels of demand for their products among playground age children unlike anything anyone has ever seen before. Largely seen as marketing to the playground to turn their products into the next playground craze the pair and other influencers managed to whip playground children everywhere into frenzied mobs who, at the height of the craze, would do almost anything and pay almost anything to get their hands on the drinks. As a result this trend has already shown it can be used to build multi-billion dollar brands, and turn markets on their heads, in what many would regard the blink of an eye.

EXAMPLES

While many brands would love to whip their consumers into a frenzy the fact of the matter is that very few of them target children - the playground - in the same way the virality of Logan Paul's Prime campaign managed to do. And, as we see the **Power of the Individual** continue to rise, as well as the cost of creating content become easier and cheaper with the rise of **Synthetic Content** there's little doubt this will be the last time we see influencers, with no foothold in a market, create hysteria that most companies can only dream of.

In the first year alone Prime Hydration, as it's known burst onto the shelves of over 20,000 stores around the world, sold more than 300 Million bottles worldwide, and broke $250 Million in sales to rival some of the biggest companies in the world - namely Coca Cola and PepsiCo. Then, with an eye to securing the future of the brand they expanded the product lines, embraced the world of sports, penned a deal with Base Sports to expand the drink's presence into more than 60 US based youth sports to reach an additional 1.2 Million consumers, and expanded their partner program internationally.

ACT NOW

We live in an age where individuals can generate huge amounts of hype around the products they want to sell cheaper and easier than ever before, and while many brands make use of influencers increasingly it's dawning on many incumbents that these same influencers, if they know what products to develop and how to execute their campaigns, could quickly turn into their next fearsome competitor. As a result this is a trend no brand should under estimate.

EXPLORE:

- Brand building strategies
- Business and impact assessments
- Communication and content strategies
- Creative marketing campaigns
- Future of Marketing, and Media and Entertainment
- Influencer and Marcom strategies

SINGLE CUSTOMER VIEW

2ND YEAR ON THE LIST

QUICK TAKE

In an age where **Artificial Intelligence** (AI) and **Digitisation** are two of the world's most prevalent trends the opportunity for companies to collect and analyse vast quantities of offline and online customer data to create a Single Customer View that can be used as the basis to create hyper personalised advertsing and customer experiences has never been cheaper or easier. However, whether it's for regulatory or technical reasons, many companies still store customer data in disconnected silos preventing them from creating engaging, frictionless, or relevant experiences for their target audiences.

IMPACT

Ultimately the more you know about your customers the better you can serve and target them. However, as AI advances increasingly companies will also be able to use their customer data, augmented with data from other sources, to predict their customers needs ahead of time which in itself will be a titanic shift in capability and thinking. Today we see this already emerging.

From an on the ground perspective though 71% of customers express frustration with impersonal experiences, and research has shown that 91% of consumers are more likely to engage with companies who recognise and remember them and their individual preferences. Furthermore, these same people are also 90% more likely to buy more frequently and spend 60% more per transaction with companies that have fully invested in this trend, with those companies out selling their peers by 20% on average.

On the flip side of the coin though it's also estimated that duplicate data costs companies around the world $3 Trillion per year - let alone the cost of inaccurate data whose direct and indirect cost is likely a lot higher.

EXAMPLES

While there are many examples of this trend in action some of the most pertinent include companies such as Amazon, ASOS, Netflix, and Starbucks.

In Amazon's case it's estimated their relentless pursuit of customer data and creating a single customer view that they can then use to make persoanlised recommendations generates more than 35% of their revenues - a staggering uplift by any measure and not inconsequential in dollar terms either.

Meanwhile the story at Starbucks is similar, by using this trend to drive their mobile app and rewards program it's now estimated that it helps drive more than 40% of their global revenues.

Over at Netflix though the picture is different - in their case having a single customer view of their customers viewing habits, genre preferences, and ratings the company has reportedly saved over $1 Billion a year by reducing customer churn. Then, at ASOS according to their annual report the company reported a 16% increase in orders and a 22% increase in revenues after they rolled out their first "Fit Recommendations" feature.

ACT NOW

There's no denying the more you know about your customers - even in our increasingly faceless digital and **Mobile First** world - the better you can serve them and the more stuff you can sell them. As we continue to see the rise of the **Demise of Anonymity and Privacy**, **E-Commerce**, and worldwide digital first business models this trend means that companies can serve their customers better via their **Omni-Channel Experiences** and **Opti-Channel Experiences** than they could without this trend making it an important trend to embrace.

EXPLORE:

- Business and impact assessments
- Data privacy regulations
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, and Retail
- GRC reviews

Data sources: Accenture, EConsultancy, Razorfish, Segment, and various.

TREND JACKING

2ND YEAR ON THE LIST

QUICK TAKE

Trend Jacking, which is an upper funnel activity that helps build awareness, is the opportunity to capitalise or exploit a current brand, craze, trend, or news topic in order to strengthen your brands association with your core target audience, attract sales leads, and generate profitable outcomes.

Not only will using this trend correctly help you quickly amplify your brand voice and align your brand values to the topic in question, but done correctly it can earn you positive media attention, increase your organic reach, and significantly improve your credibility.

Data sources: BuzzSumo, Hubspot, and various.

IMPACT

Done correctly and authentically, by picking events that are relevant to your brand, by getting the timing right, and by not putting the obvious pursuit of profits first, this trend has significant upsides, can drive brand conversations and engagement, and can even help brands overcome the **Attention Price Inflation** trend. However, if you're not very careful with your content and messaging, such as jumping onto a trend that includes death or upset which is something known as "Black Hat Trend Jacking," it can have the opposite effect and send your brand equity into a death spiral.

A great way to build brand equity and loyalty the ROI of trend jacking campaigns varies massively and is incredibly difficult to guage. That said though often the results speak for themselves and you'll be hard pressed to find any brand that's not got this trend embedded into its marketing strategy so it's here to stay. And with brands like Dove managing to use the news of news anchors being fired for having grey hair to get millions of social media impressions with their #KeepTheGrey campaign it's obvious that anyone can leverage it.

EXAMPLES

While there are many examples, almost an infinite number, some of the best and most inventive come from the entertainment, retail, sporting, and technology sectors, and they range from quickly put together memes to full on video productions.

Some of them are also the least obvious with, for example, Mr Beast famously hijacking the Squid Games trend to create his own viral content which so far has topped over 360 Million YouTube views alone. Then there was Dunkin' Donuts who hijacked the infamaous Blue-Black White-Gold dress trend a few years back to earn themselves a staggering number of likes and shares across their social media platforms, Budlight who hijacked the Storm Area51 trend with mock ups of glowing beer cans, and Oreo who even used power outages across the US to promote their "Dunking in the Dark" campaign.

Elsewhere Adidas, Nike, Under Armour, as well as Netflix and Microsoft are also famous for trend jacking everything from big societal topics and beyond, and even the UN jumped on this trend by hijacking Oscar announcements to promote womens equality.

ACT NOW

Trend jacking done right is a very powerful way for brands to increase their organic reach for relatively little cost to boost customer engagement and loyalty, but it can't be done in a thoughtless or haphazard way. This is a trend that all brands should explore and experiment with but company executives have to be on board and there should always be clear guidelines in place, you still have to be respectful of other companies IP and Trademarks, and you should always be on guard for your own brand being trend jacked.

EXPLORE:

- Advertising guidelines
- Alternative branding strategies
- Business and impact assessments
- Future of Content, Media and Entertainment
- Trend jacking defensive plays

OPERATING MODEL TRENDS

CONTENTS

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

ADAPTIVE OPERATING MODELS

2ND YEAR ON THE LIST

QUICK TAKE

The **Accelerating Rate of Change** not only means that our world is changing faster than ever before, it also means that organisations everywhere are faced with trying to predict and react to cycles of disruption and shifting consumer demands that are getting faster and more intense over time. And, bearing in mind that the vast majority of organisations have problems adapting and, if required, pivoting at speed this trend, which prioritises discrete modular plug and play capabilities, frictionless interactions, on demand resourcing, optimised processes, and human centric design, is now coming of age.

Data sources: HBR, Innosight, McKinsey, and various.

IMPACT

In today's age, and even more so in the future, having the culture and tools that let you adapt and react to changes in your marketplace at speed is vital. In fact it is increasingly being seen by many as not just necessary, but as the new competitive advantage.

One of the most over used statistics today is the one that quotes the average length of time organisations remain in the S&P 500. While it used to be an average of 61 years in 1958 today it's less than 18, with many analysts believing that by 2027 75% of the organisations in today's S&P will have disappeared. This figure is also why the trend of **Creative Destruction** has now become so popular.

Organisations that embrace this trend design their operating models around their customers and employees, and operate in much the same way as a modern technology platform does. They do this by being able to frictionlessly integrate and interact with different ecosystems, by focusing on continuous improvement, optimisation, outcomes, and standard interfaces, and by being able to scale modular-like plug and play resources on demand.

EXAMPLES

When it comes to reacting to market changes whether it's disruption, new competitors, shifting customer demands and government policies, new technologies, or all manner of other things, most organisations are too big, too slow, and too bogged down by their culture and processes to be able to react in time to either take advantage of them or defend their market positions.

Many of the organisations embracing this trend are known for their market dominance and adaptability including Alibaba, Amazon, Facebook, Google, and other such organisations. However, Huawei and Samsung both of whom operate in highly disruptive and competitive environments, are perhaps the most interesting examples.

In Huawei's case they have over 240 foresight professionals in their 2012, consumer, and enterprise divisions who scan the future and interact with local ecosystems, these signals are then fed into the board who prioritise R&D and LOB activities based on market intelligence and adapt and pivot the organisation accordingly. The same goes for Samsung and their 3,000 strong Chaos Lab in Seoul ...

ACT NOW

The ability to be both proactive and reactive to change and be able to adapt to it at speed, or to put it another way to be able to rebuild the aircraft in mid flight, is no longer just a nice to have it's necessary in today and tomorrows environments.

EXPLORE:

- Best practise and case studies
- Emerging technologies and technology roadmaps
- Future of Work
- Partner ecosystems and solutions
- New business and operating models

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

ALGORITHMIC DECISION MAKING

2ND YEAR ON THE LIST

QUICK TAKE

Historically it was always humans who made the decisions. Technology and tools were just dumb prosthetics - screwdrivers and steam trains. Today though **Artificial Intelligence** (AI) - both Machine Learning and Deep Learning systems - is changing that paradigm. Capable of basic "If This Then That" decision making as well as more advanced strategic "What If" decision making today this class of AI's are being used by organisations and boards to both augment decision making and make decisions - all of which makes **Explainable Artificial Intelligence** even more necassary.

Data sources: Various.

IMPACT

As we cede more decision making to the machines we also cede human responsibility for those decisions and put more trust in those machines. All of which has system level impacts and ultimately re-enforces the **Algorithmic Society** where our personal and professional lives are increasingly directed and influenced by those same machines for better and worse.

As AI decision making systems rise to prominence and as the decisions they make become more critical, for example in the Defense, Financial Services, Government, and Healthcare sectors, Explainable Artificial Intelligence that allows stakeholders to understand their decision making processes becomes an increasingly vital tool.

Furthermore, as **Behavioural Computing** lets customers, employees, executives, and stakeholders alike interact with and leverage these systems more it is inevitable that, as we are already seeing, they will be responsible for more inter and intra organisation decision making, including **AI Based Recruiting**, corporate strategy and M&A, as well as many other B2B and B2C related decision making activities.

EXAMPLES

While there are plenty of examples how AI is being used to make all manner of business related decisions, whether it's customer credit decisions or deciding which suppliers to prioritise or use, I've highlighted some of the most interesting examples below.

Examples such as an investment management firm in Hong Kong who, on the brink of bankruptcy, decided to use an AI to make its investment decisions for it with the result being that it saved the company and was officially "promoted" to become a member of the board with no future investment decisions being made until it was "consulted."

Then there is the example of a fully autonomous hedge fund based out of Wall Street whose AI is responsible for all investment decisions with the founders stating that if they died it would just keep on running.

Elsewhere the US military is using AI to run war games and make in theatre decisions, healthcare organisations are using it to create and recommend treatment plans, and many more mundane examples as well.

ACT NOW

While the use of AI to augment and automate decision making has its advantages unless stakeholders are able to quantify and query the accuracy of those decisions, and the reasons behind them, then they risk their organisations becoming little more than algorithmic black boxes with limited to no control or oversight, and a whole host of compliance, ethical, and regulatory problems.

EXPLORE:

- Best practises and case studies
- Customer and employee escalation, service, and support
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Ethics, Government, and the Workforce
- GRC, policy, and regulation reform
- New business and operating models

R&D

TRENDS

CONTENTS

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

ARPA EVERYTHING

2ND YEAR ON THE LIST

Stealth projects in 1974 laid the B-2A foundation

QUICK TAKE

As governments increasingly see innovation as a means to help them increase **Global GDP**, as well as move the dial on **Wealth Inequality**, and many other trends, as well as win the geopolitically charged **Innovation Cold War,** it shoudn't come as much of a surprise that increasingly they're trying to replicate the US Defense Advanced Research Projects Agency (DARPA) model which has been responsible for developing many of the world's most impactful innovations. The result is that today many countries are developing their own country specific or sector specific ARPA initiatives.

Data sources: Various.

IMPACT

There is no denying the impact that DARPA, the US military's bleeding edge research agency, has had on the world at large. What is most surprising though is that at any one point in time the agency is running more than 200 projects on what many would regard as a relatively meagre budget of just a few billion dollars per year with a lean staff whose sole purpose is to "develop breakthrough capabilities, concepts, and technologies" for US national security.

With historic world changing innovations that include everything from self-driving cars, drones, GPS, and the internet, through to RISC computing, stealth, and many others, across an incredibly diverse range of themes, today you'd be very hard pressed to find anyone who doesn't agree that the agency has been one of the world's greatest innovation success stories and that the US economy hasn't greatly benefited from its research.

Despite all these successes though it can be argued the agency's just getting started which is why today governments everywhere, from China and Japan, to the UK, are creating their own country and sector specific ARPA programs.

EXAMPLES

While many people will look to DARPA's past successes the agency never rests and it's fair to say that the research they conduct is often at least two generations (N+2) ahead of today's bleeding edge capabilities. This means that today their projects include everything from the development of knowledge uploading and memory transfer technologies, through to the development of airborne aircraft carriers, biological cyborgs, in vivo human pharmacies, living sensors, and much more - many of which appear in my complimentary Exponential Technology Codex and on our website.

Moving beyond DARPA though so far the US government has created many spin offs including ARPA-Climate (ARPA-C), ARPA-Energy (ARPA-E), ARPA-Health (ARPA-H), as well as Intelligence-ARPA (IARPA), and others, and while their success remains to be seen ARPA everything seems inevitable.

In 2016 China created Junweikejiwei it's own high risk high reward DARPA clone, Europe launched JEDI, India launched DRDO, Russia launched the Skolkovo Institute, the UK launched ARIA, and there are many others emerging, including in Japan and elsewhere.

ACT NOW

DARPA's success on the world stage means that today there are a large number of governments who are trying to replicate it and create their own Advanced Research Project Agency (ARPA) programs. However, while the ARPA model is attractive and successful, so far, replicating it is by no means an easy task.

EXPLORE:

- Emerging technology and technology roadmaps
- Partner ecosystems
- New business and operating models
- Policy and regulation reform

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

CONTINUOUS INNOVATION

2ND YEAR ON THE LIST

QUICK TAKE

Continuous Innovation, where products can be constantly and in many cases automatically and autonomously designed, iterated, and produced on the fly in real time, is now possible because of the convergence of several powerful technologies and technology capabilities.

Not only will this give organisations a significant competitive advantage in the marketplace, but it will also let them significantly reduce the cost and time it takes to produce products in some cases by up to 99 percent.

Data sources: Autodesk, Brookings, ECB, and various.

IMPACT

Continuous innovation, or innovation at digital speed, allows organisations to create and iterate new products and get them into the market at speeds that would have been unimaginable just twenty years ago. And, as the technologies that underpin this trend evolve and mature, we could soon see a time where both digital and physical products and services are designed, iterated, produced ,and updated in real time.

Today we are witnessing the beginning of a new **Innovation Cold War** and inevitably this trend could widen the gap between those who embrace it for economic and political advantage and those who don't. Furthermore, when combined with **Creative Destruction**, and other trends, it's no understatement to say that it could change the world order as countries, as well as organisations, leverage it for competitive advantage.

Innovation has long been known to help fuel economic growth and improve productivity, and as the pace of innovation accelerates in the future we can expect these benefits to be even more pronounced.

EXAMPLES

By combining together the benefits of **5G**, **Additive Manufacturing**, **Digital Twins**, **Internet of Things** (IoT), **Synthetic Innovation**, and other technologies and trends today products embedded with intelligence and sensors can relay information about their behaviours and usage patterns to Creative Machines that can then use that information to iterate new and improved versions in simulation. These products can then be digitally generated, or in the case of physical products manufacturing processes can be optimised in Digital Twin environments before being fabricated in factories using Additive Manufacturing or robotics technologies.

As an early stage trend organisations such as Airbus, BMW, General Motors, Google, NASA, and others are leveraging it, and parts of it, to help them innovate everything from cars and computer chips to aircraft, space habitats and vehicles, and software.

In time it is inevitable that this will become the defacto way all organisations design, innovate, and iterate new generations of products.

ACT NOW

The ability to continuously design, iterate, and produce products in real time, and therefore all but eliminate the often lengthy product development cycles that we have today, will not only transform the innovation process but it will also call for a radical re-think of how organisations develop, connect, integrate, and support their products.

EXPLORE:

- Business and impact assessments
- Future of Artificial Intelligence, Communications, Creativity and Innovation, and Manufacturing
- Integrated ICT and OT stacks
- Partner ecosystems and solutions
- New business and operating models
- Policy and regulation reform
- Product innovation initiatives

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

CREATIVE DESTRUCTION

2ND YEAR ON THE LIST

QUICK TAKE

Creative Destruction, which is the dismantling and ergo "destruction" of long standing organisational cultures, products, and practices, has been around for hundreds of years.

Today though, as the global rate of industry disruption and associated "Economic Destruction" accelerate which, for example, is highlighted by the increasing churn we see in the S&P 500, this trend is now going into overdrive as all manner of organisations experiment with new ideas and innovations and try to re-invent their markets and create new ones.

Data sources: INSEAD, Invesco, MIT, and various.

IMPACT

Creative destruction is often seen as the economic driver of growth in modern economies and has both positive and negative impacts on society. It's generally accepted though that the benefits far outweigh the costs with the trend ultimately creating more resilient organisations and societies, better income equality and living standards, greater wealth, as well as often improving the customer experience. It also does all this in a way that regular economic stagnation can't replicate.

Throughout history we've seen creative destruction impact the fortunes of many industries, from the agricultural industry in the 1900's to the communications, construction, energy, entertainment, manufacturing, retail, space, technology, and transportation industries,and many others, today.

While there are many ways to measure its impact recent studies have shown it increases economic productivity by over 50 percent, and that each year it's responsible for destroying 10 percent of all jobs, as well as being responsible for creating about the same number of new ones.

EXAMPLES

While it is only natural for people to fear change and uncertainty, both of which this trend can introduce into the market, and focus on the trends losers we can clearly see today that there are a huge number of benefactors from it.

While organisations such as Amazon, Apple, Microsoft, Netflix, SpaceX, and Tesla, as well as others, have embedded this trend into their corporate culture and destroyed a lot of the value held by older more traditional industry incumbents such as Sears, Nokia, IBM, Blockbuster, Boeing, and General Motors respectively, along with others, it can be easily argued that they have created even more wealth and prosperity than if the status quo had been allowed to perpetuate. And this is the principle power of this trend.

Ultimately as long as we live in a capitalist society the forces of competition and innovation will always compel organisations to develop new products and services, and those who remain stagnant will be hurt by them. As a result the lesson, if there is one to be taken from this trend, is to never sit still and, as Jeff Bezos says: "Always treat every day as day one."

ACT NOW

In a world that is increasingly volatile and complex, and where the **Accelerating Rate of Change** lets organisations disrupt the status quo at speeds that were unimaginable just twenty years ago, this trend must be at the forefront of your thinking.

EXPLORE:

- Emerging technology and technology roadmaps
- Future of Disruption
- New business and operating models
- Partner ecosystems and solutions
- Product innovation initiatives

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

ROBO-LABS

2ND YEAR ON THE LIST

IMPACT

Today there are many experiments that rely on repetition and repetitive processes, and Robo-Labs are already showing that they can perform experiments thousands of times faster than their human counterparts - if for no other reason that the robots performing the experiments can work around the clock without breaks. As a consequence this means that new scientific breakthroughs and product development is sped up dramatically with all the benefits that brings.

Additionally, as the technologies that make Robo-Labs possible continue to mature, and as robotics technologies become both easier to program - in some cases programming themselves as is the case with General Purpose Robotics - and become more adaptable, in time these labs will only get faster and more capable which, in turn, will multiply the benefits.

QUICK TAKE

As access to increasingly affordable and powerful automation technologies increases, which include advanced computing, **Artificial Intelligence** (AI), and **Robotics**, more organisations are semi or fully automating their laboratories and laboratory processes - the primary benefits of which include reduced costs and improved efficiency, speed and the automation of repetitive tasks, and the ability of these technologies to self-refine their experiments based on the outputs.

EXAMPLES

The majority of robots used in Robo-Labs today wouldn't look too out of place in a factory production line and are dependent on Machine Learning to perform their duties, but there isn't denying their value when it comes to helping researchers run their experiments faster and more efficiently.

Often described as autonomous mobile workers these LiDAR equipped robots be dropped into a wide variety of different lab environments and use the equipment that is already there without either any, or much, modification.

Furthermore, in general if people can use the equipment then so too can the wireless robots - and from measuring and dispensing chemicals to measuring the outputs and deciding the best course of action and modifying and optimising their workflows accordingly they're certainly proving their worth.

While the field is still young organisations like Kuka Robotics are taking the lead with university researchers predominantly in the West leveraging the trend.

ACT NOW

Designed and incorporated into the R&D workflows properly Robo-Labs can be of great benefit. But, at the moment they are often better suited to particular environments and use cases. Therefore, In our estimation organisations should explore this trend as well as other trends in this section to find the one that is most optimal for your ambitions and circumstances.

EXPLORE:

- Automation strategies
- Best practises and case studies
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Creativity and Innovation, and Robotics
- Partner ecosystems and solutions
- Proof of Concepts

Data sources: Kuka, MIT, University of Liverpool, and various.

SCIENTIFIC REPLICATION CRISIS

2ND YEAR ON THE LIST

QUICK TAKE

The Scientific Replication Crisis, which increased 10 fold in just 10 years from 2010, with retractions now running at an average rate of 4 papers for every 10,000, is a crisis that impacts the methodology of scientific research. Over time several scientific reseach bodies have noticed that the results of many scientific studies are hard, nearly impossible, or even impossible to replicate. Having started in psychology the crisis now affects many different scientific fields, and is not only affecting the community's reputation but is having a wide range of commercial, cultural, political, and societal consequences.

Data sources: Nature, PLOS, PNAS, Science, and various.

IMPACT

The reproducibility of empirical data is essential for the scientific method, so naturally difficulty in reproducing the results of different studies not only undermines confidence in the scientific community, but also people's trust in it. Furthermore, bearing in mind that scientific papers are used in everything from the awarding of grants, as well as in news publications and even the measurement of a country's Innovation Quotient (iQ), the impact of this trend extends far beyond just being bad or incorrect science. It also impacts future research activities and outcomes.

In a poll of 1,500 scientists recently over 70% reported that they'd had problems reproducing studies. Chemists led the pack with 87%, then biologists with 77%, engineers and physisists with 69%, medical with 67%, then Earth and environmental researchers with 64%. Most oddly though was the fact that 50% of those questioned had had problems reproducing their own research, and then elsewhere researchers found that on average non-replicable papers recieve 16 more citations per year than replicable ones, or 153 over time, further confounding the crisis ... or did they!?

EXAMPLES

Low reproducibility is caused by a variety of factors that range from outright fraud and publication bias, where studies can become statistically skewed in the pursuit of significant results and overwhelm the correct results, all the way through to thew use of contaminated research equipment and questionable data analysis such as research data dredging, degrees of freedom, and HARKing. And it can also be the result of bad scientific practise.

In Biomedicine and Cancer research where annual grants now exceed $100 Bn, noone knows how bad the crisis acutally is. Not only does this affect the development of new Cancer treatments, for example, but in some cases study results have caused lines of study to be cancelled and grants pulled. To highlight the problem in 2013 - albeit a while ago - just 11% of 53 Cancer studies were reproducable.

The scientific community's "Publish or Perish" slogan also puts adverse pressure on researchers to publish papers, and with so many examples of researchers being banned from Kaidi and Nosek to Obokata and Wakefield, the question is now how to fix the crisis.

ACT NOW

While this trend affects a relatively small percentage of the total number of studies published every year it has shaken the scientific community to its core and had wide ranging consequences for everything from grants and trust, to the future of research itself as well as the products and solutions that the research produced would have helped develop. As a result both researchers and organisations that rely on it should be on their guard and have methods in place to validate research they're interested in.

EXPLORE:

- Future of Innovation
- In lab validation
- Metascience
- Open research initiatives
- Registered replication reports
- Robust compliance, governance, and standards initiatives

SYNTHETIC INNOVATION

2ND YEAR ON THE LIST

QUICK TAKE

Made possible by increasingly powerful technologies that are capable of designing and generating new product concepts either in software and, or via virtual simulations Synthetic Innovation is game changing trend that can accelerate an organisations innovation pipelines by billions fold.

Furthermore, as the technologies underpinning this trend mature, and as the data sets and virtual modelling engines become more complex and robust, the complexity and variety of product concepts that these platforms will be able to create will improve.

IMPACT

The implications of being able to design, innovate, and test new product concepts, from computer chips and drugs, to cars, clothing and beyond in simulation at speeds that are millions to billions of times faster than using traditional innovation techniques are, needless to say, numerous. And asides from being able to innovate new products at previously unimaginable speeds the biggest impact this trend will have on society will be the ability to design and bring new products to market up to 99% faster than previously possible.

Today over $1.7 Trillion is spent globally on R&D every year, and that is increasing on average at a rate of 12%. However, given Synthetic Innovations' comparatively low costs another one of its many advantages is the fact that it could let organisations flatten or even reduce their R&D spending while still generating even better results and increasing their innovation pipeline.

As more organisations embrace this trend, which will increasingly be delivered via platforms as a service, they should take great care to ensure the security of their data and IP.

EXAMPLES

As the technologies that underpin this trend continue to mature, including Artificial Intelligence (AI) and Simulation Engines, the products these systems are able to design, innovate, and iterate, are becoming increasingly complex and sophisticated.

While some examples of their benefits are tactical, such as Airbus, GM, and NASA's use of them to design lighter weight aircraft, cars, rovers and rockets, there are plenty of more strategic examples such as Google who are using them to design AI computer chips, Insilico who are using them to design thousands of new drugs at extreme speed, and Toyota who have used the technology to design new electric vehicle batteries 90% faster than using traditional techniques. And, all this is before we discuss Amazon and Under Armour who are using them to design new fashion lines and apparel.

ACT NOW

There is no question that Synthetic Innovation will change how organisations innovate and help them dramatically increase their so called Concept to Shelf times. Therefore, in our estimation organisations should explore this trend as a matter of urgency.

EXPLORE:

- Data privacy and security trends
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Creativity, and Innovation
- IP protection strategies
- Partner ecosystems and solutions
- Proof of concepts

Data sources: Autodesk, Google, NASA, Nvidia, OpenAI, and various.

SECURITY TRENDS

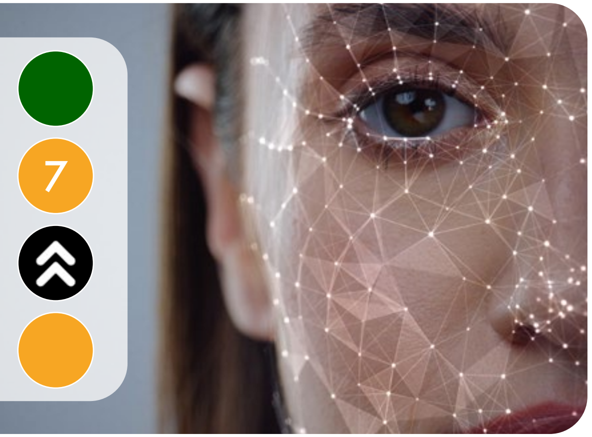
CONTENTS

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

BIOMETRIC SPOOFING

2ND YEAR ON THE LIST



QUICK TAKE

We are all used to our various messaging systems and passwords being spoofed but as more organisations make the switch to biometric based authentication and identification systems criminals are making the switch too.

By using **Artificial Intelligence** (AI) and the same technologies behind **Synthetic Content** criminals and researchers have been able to spoof biometrics and generate everything from synthetic "master" fingerprints, synthetic video, and synthetic voices that let them commit behavioural attacks and access protected systems.

Data sources: Pymnts, SCMP, Thales, Verizon, and various.

IMPACT

When criminal actors compromise your passwords you can change them, but when they clone or spoof your biometrics it's not so easy. In fact it's darn near impossible unless of course, you opt for plastic surgery, have your fingerprints lased, or have voice training, but it's unlikely those are options.

While the biggest benefit of biometrics is their uniqueness, and while we have new **Biometric Authentication** solutions coming through all the time, this trend should concern everyone.

With over 61% of all cyber attacks relying on compromised passwords everyone in the industry agrees we should all switch to biometric authentication quickly, and as a result enterprising criminals are responding and discovering new ways to crack these systems at scale - with "at scale" being the phrase to watch.

To date most biometric spoofing has been targeted and conducted by relatively well resourced and sophisticated actors, but in time as the methods get cheaper and easier to execute we'll see the barriers fall.

EXAMPLES

While this area is still relatively nascet when it starts taking off it will take off at an exponential rate.

So far some of the best examples of people's biometrics being spoofed include criminal actors cloning the voice of a German energy company CEO to convince his CFO to wire over $250,000 to a Ukrainian bank account, and researchers using AI Deep Learning technology to create a synthetic master fingerprint that can unlock any device.

However, both of those notable events dwarf in size and impact when compared to a biometric spoofing attack on a Chinese government facial recognition ID authentication tool which saw attackers use photos of people to create synthetic videos of them "looking live" by blinking, nodding, shaking, and opening their mouths to beat a biometric Presentation Attack Detection (PAD) system and create fake tax invoices. Uncovered recently over a period of two years the attackers net over $80 Million.

Given the trajectory of this trend you can consider all of this as just the beginning of a very dangerous new era in cyber crime.

ACT NOW

With more people using biometric authentication organisations must ensure they don't put too much faith in the technology and must remain as vigilent always to new attacks and threat vectors that could let criminal actors gain access to systems and do harm at scale and speed.

EXPLORE:

- Best practises and case studies
- Detection tools
- Emerging technology and technology roadmaps
- Future of Artificial Intelligence, Security, and Synthetic Content
- Partner ecosystems and solutions
- Process review and pen testing

CYBERCRIME AS A SERVICE

2ND YEAR ON THE LIST

QUICK TAKE

This trend is responsible for helping drop the cost, resources, and skills needed to launch and profit from cybercrime to near zero, and increasingly it is encompassing every kind of crime and value add cybercrime service.

With nothing more than an internet connection this trend gives anyone anywhere in the world the ability to enlist the help of seasoned criminals and hackers skills to execute a wide range of cyber attacks and sell or launder the proceeds. At a basic level this means crippling your organisation can cost less than your child's weekly allowance.

Data sources: Digital Shadows, McAfee, Trend Micro, and various.

IMPACT

As with anything that is offered as a service one of the primary impacts of this trend is to make it cheaper and easier to launch increasingly destructive and sophisticated cybercrimes against a variety of global targets. Also, as criminals and hackers increasingly take a percentage of the proceeds of the crimes they help carry out this means that in many cases the up front costs of launching attacks is zero - with the added benefit that people no longer need to maintain their own attack infrastructure.

The net impact of this then means that cybercrime and cyber attacks become more brazen, more common, and more financially lucrative with little chance of arrest, and with estimates and projections putting the proceeds of cybercrime in the trillions of dollars you can quickly see the appeal of this trend, which then makes trends like **Zero Trust** even more important to adopt.

EXAMPLES

Broadly if you can think of a cybercrime service then the chances are it exists, and just as we see in the legalised world of business the scope of cybercrime related services knows no bounds - from fully outsourced and managed cybercrime activities through to the provision of dedicated customer care centers to field and support both attackers and victims enquiries.

What is perhaps most interesting though is the multi-sided nature of this industry. Much in the same way that arms dealers might sell to and therefore profit from both sides in a war there are cybercrime service providers that focus on helping both attackers and victims which, unsurprisingly, increases their addressable market opportunity and boosts profits.

For example, as happened a while ago with the EDA2 and Hidden Tear Ransomware attacks, on the one hand wannabe criminals were able to use services to execute attacks while on the other victims were able to use alternative services to help them find weaknesses in the code that made it easier for them to decrypt their data and avoid paying the ransoms.

ACT NOW

Wannabe criminals and individuals can leverage this trend to their advantage, and while the odds might seem stacked in the aggressors favour careful open minded organisations can also ironically benefit from this trend - albeit by exercising extreme caution at all times and by working hand in hand with ethical trustworthy partners.

EXPLORE:

- Best practises and case studies
- Future of Artificial Intelligence and Security
- New business and operating models
- Partner ecosystems and solutions
- White Hat hacker communities

RANSOMWARE

2ND YEAR ON THE LIST

QUICK TAKE

Ransomware is almost the perfect example of how criminals are able to weaponise technologies that are designed to protect us, in this case encryption, and turn it against us for their own gain.

Fuelled by force multipliers such an increasingly digital and connected society, as well as the development of pseudo-anonymous and anonymous cryptocurrencies such as Bitcoin and Monero, this trend, the damage it inflicts, and criminal proceeds are all expanding fast.

Data sources: Cyence, FBI, Sophos, and various.

IMPACT

While many people might think that Ransomware attacks are new the first recorded attack, names the AIDS Trojan, took place in 1989 against an American hospital, and ironically the healthcare industry is still very much in the cross hairs today and is seen by many criminal organisations as a prime target - albeit an unethical one which is where some groups draw the line.

Ransomware has posed a threat for some time now, however in 2017 the FBI recorded 1,783 Ransomware complaints that cost victims over $2.3 million, and today it's estimated that figure is 184 million globally and growing. It's also estimated that criminals have so far extorted over $350 Billion from organisations and individuals alike with new Ransomware variants growing at a rate of at least 46% per year, 4,000 attacks a day being launched, and 1 in every 3,000 E-Mails containing Ransomware payloads.

Furthermore, as the audacity of criminals, including state actors, grows and as critical infrastructure increasingly becomes a target the only thing preventing a catastrophic loss of life or worse are criminal ethics.

EXAMPLES

While there are many examples WannaCry launched in 2017, and which caused global panic, is still considered to be the biggest and most widespread Ransomware attack with estimates suggesting it crippled more than 200,000 computers across 150 countries and caused more than $4 Billion in damages - all numbers that are probably too low.

While it's estimated that most larger organisations pay on average $170,000 per ransom, with ironically only 65% of their data actually being restored, it's also estimated that those who do not pay incur average costs of $1.85 Million, including downtime and recovering their systems, with the average downtime being 19 days.

In many cases it's this downtime and the downstream impacts rather than these capital costs that do the real damage to businesses as we saw with Travelex in 2020 who seven months after a crippling attack fell into administration with the loss of all 1,300 jobs. And this is merely one example of hundreds.

ACT NOW

Most Ransomware attacks, but not all, are indiscriminate so it seems fitting that the trail of destruction they leave behind is also indiscriminate. As more individuals and organisations get savvy to this kind of attack we will in time see perpetrators switch tactics and innovate new kinds of attacks, but that said Ransomware will likely remain an important weapon in the criminal arsenal for decades to come.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Back up, Recovery, and Archive (BURA) policies and procedures
- Emerging technologies and technology roadmaps
- Future of Security
- Infrastructure containment and confinement strategies
- Employee education programs
- Partner ecosystems and solutions

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EXPLORE STARTUPS & MORE

ZERO TRUST

2ND YEAR ON THE LIST

QUICK TAKE

The Zero Trust model recognises that trust, in all its forms, is a security threat especially since trust can be compromised and misplaced. As a result zero trust systems, which operate on a "Never trust always verify" basis eliminate the concept of trust from an organisation's network architecture by leveraging network segmentation, preventing attackers from moving laterally within an organisations systems, providing Layer 7 threat prevention, and by simplifying granular user access control. And, in today's connected world zero trust is now considered the defacto security posture.

Data sources: Grandview Research, Microsoft, Palo Alto, Statista, and various.

IMPACT

Traditional security models operate on the outdated assumption that everything inside an organisation's network should be trusted. So, needless to say under this broken trust model it's assumed that a user's identity hasn't been compromised and that all users act responsibly and can be trusted. As we know though this isn't always the case which is why we continue to see wave after devastating wave of attacks.

As a result globally 72% of CISO's have either already moved to a zero trust model or plan to do so in the coming years, and 96% say it's critical to their success - especially as they embrace new workplace trends post pandemic. The upshot of this means that the market is expected to grow at a rate of 16% CAGR until 2028 to reach $60 Billion.

At a more practical level though surveys have also shown that enterprises who haven't deployed zero trust on average face costs of $5.04 million, where as those with mature deployments see those costs decrease by $1.76 million, and that even those in the early stage of deployment see reductions of $660,000.

EXAMPLES

Ransomware is just one prime example of what happens when trust is compromised and is also a prime example of why tradtional security models are struggling to cope with today's realities.

While there are alot of zero trust case studies I could highlight one of the most interesting examples of this trends potential to avert disaster was the DarkSide groups ransomware attack on the US Colonial Pipeline which in 2021 caused the 5,500 mile long pipeline, which carries over 45% of all the US East Coast's diesel, gasoline, and other fuels, to shut down for more than a week which then, needless to say, caused havoc.

Given how the attackers gained entry into Colonial's system had Colonial deployed zero trust many experts don't think the attack would have been successful. And this is just one example of many.

ACT NOW

We live in an increasingly interconnected world where humans and trillions of smart things and smart entities, including increasingly autonomous AI's and bots, are all becoming inextricably connected and inter-reliant on one another. Ultimately, with all the benefits this brings it also means there is a greater need to authenticate everyone and everything than ever before to ensure they're all who they say they are.

EXPLORE:

- Best practises and case studies
- Emerging technology and technology roadmaps
- Future of Artificial Intelligence and Security
- Partner ecosystems and solutions

SUPPLY CHAIN TRENDS

CONTENTS

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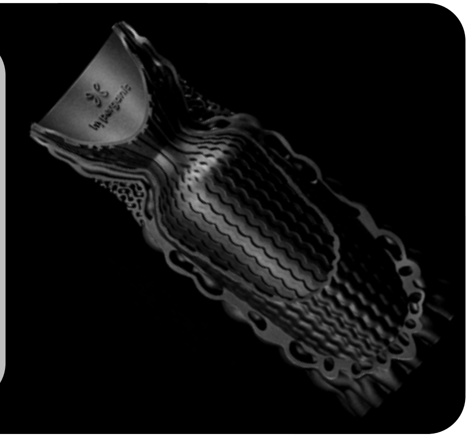
EXPLORE STARTUPS & MORE

FLATTENING SUPPLY CHAINS

2ND YEAR ON THE LIST



An AI created rocket engine, Hyperganic

QUICK TAKE

In the mid 1900's the world, especially the West, went through a period where giant manufacturing conglomerates, like GE and GM for example, were the kings of all industries, and during this time the vast majority of physical products that were manufactured often required thousands, if not tens of thousands, of different components. Not only did this trend persist for decades but it also led to the development of incredibly complex global supply chains. Now though new innovations are reducing the number of components needed and giving rise to the trend of Flattened Supply Chains.

IMPACT

The impact that complex supply chains have on an organisations ability to compete to source products, adapt, as well ensure that they get all the components they need at the right time to ensure continuous product availability is well understood.

The unsustainable complexity of today's supply chains was bought into sharp focus by the COVID-19 Pandemic which, wreaking havoc on global supply chains and manufacturing capacity alike, meant many key components were in short supply which then inevitably led to significant product shortages as well as massive share price volatility with Meta, as an eccentric example, loosing over $220 Bn of market cap as the issues hit advertisers budgets, and the share prices of other affected organisations falling by an average 22%.

One answer to this problem is to reduce the number of components used to build products, which then in turn reduces the number of suppliers, and today in some cases trends such as **Additive Manufacturing**, the **Circular Economy**, and **Creative Machines** are reducing the number of components needed by up to 90% - or more.

EXAMPLES

With the average car containing over 30,000 components a shortage of just one, such as a computer chip, can have dramatic consequences on product availability. However, while the number of components in cars are falling, in part thanks to the trend of **Vehicle Electrification** which alone eliminates the 1,800 parts needed to make Internal Combustion Engines (ICE), there are other better examples we can look at.

These include the development of System on a Chip (SoC) architectures from organisations like ARM that collapse previously separate compute components, such as CPU, controllers, GPU, memory, modems, and more into a single device.

Then, for those who think reducing the number of components is difficult, others include Hyperganic's use of a Creative Machine to develop a new rocket engine made from just a single part, the development of the 216Ft long 3D printed Terran R rocket from Relativity Space which has over 100 times fewer components than traditional rockets, and then Adidas and Nike's ability to 3D print sports apparel on demand in the backs of their stores.

ACT NOW

The fact is the fewer parts your product has the simpler your supply chains will become. Then, get to the point where your products can be fully 3D printed on demand in situ, and all of a sudden your supply chains aren't just simpler, they're collapsed and almost "eliminated." Today we have a raft of new technology paradigms that make this reality not just possible but feasible.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Creativity and Innovation, Logistics, Manufacturing, Materials, and Transportation
- New business and operating models
- Partner ecosystems and solutions
- Product development and innovation

Data sources: Europa, Financial Times, SP Global, The Whitehouse, and various.

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

PRODUCT TRACEABILITY

2ND YEAR ON THE LIST

8

An edible electronic tag to track soft fruits

QUICK TAKE

Product traceability is the ability trace the history, distribution, and use of a product throughout its entire life cycle. It plays a vital role in helping organisations prove the provenance, safety, and sustainability of their products and supply chains, as well as helping them counter fraud and human rights violations.

As processes and technologies improve brands are able to surface and solve problems faster, earn the confidence of their customers, and it is increasingly becoming a competitive differentiator.

IMPACT

Ultimately, the more information an organisation has about its products and supply chains the more informed its decision making can be. Not only does this help organisations improve the cost and efficiency of their supply chains, as well as ensuring their resilience, and help identify and mitigate risk, but in the event of problems it lets organisations react accurately and quickly.

Recently the number of multi-billion dollar recalls has risen dramatically whether it's been exploding phones, faulty cars or faulty replacement hips, infected food, and many other examples with the top ten largest recalls costing organisations $50Bn - excluding indirect costs and brand damage costs.

While no industry escapes on average automotive and industrial recalls account for 71% of all recalls, followed by food and beverage at 16%, with the other industries bringing up the tail with averages of between 3% and <1%. Furthermore, 43% of all recalls are the result of defective products or workmanship, and 31% are due to human error. However you slice the numbers there's no denying that product traceability is a good thing.

EXAMPLES

Over recent years there have been many significant developments that have helped organisations improve product traceability. From better ERP systems and the use of game changing technologies such as blockchain that help organisations enhance supply chain efficiency, speed, and trust, to the development of more subtle Internet of Things (IoT) technologies such as genetically engineered spores and printable edible electronic tags that let organisations precisely track the origin, distribution, and history of everything from common a garden food items to advanced electronics.

Used wisely these and other technologies can be used to help organisations achieve higher efficiency, production, and sustainability standards, help drive innovation and revenue growth, decrease risk, and improve brand reputation. While there are many examples in most cases organisations embracing this trend are able to decrease recall costs by over 40%, automate over 60% of transactions and increase transaction speeds by over 70%, and eliminate over 80% of human errors and over 90% of fraud.

ACT NOW

As compute, electronics, and sensors of all kinds continue to miniaturise and get cheaper it is becoming increasingly easy to capture and analyse product and supply chain data in real time in ways that were never possible before.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- GRC implications
- Partner ecosystems and solutions
- New business and operating models, and products

Data sources: Accenture, AIG, Allianz, AON, FDA, IBM, and various.

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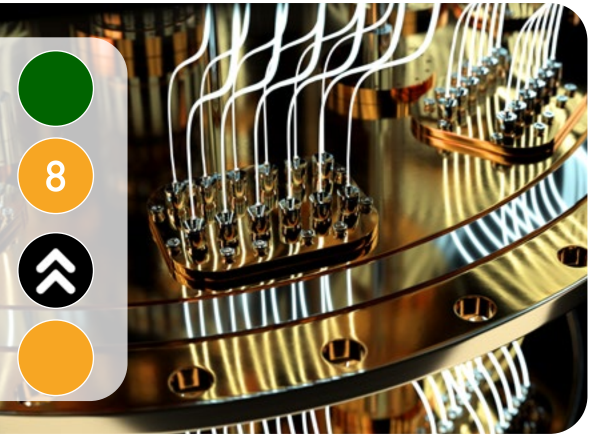
EXPLORE STARTUPS & MORE

QUANTUM SUPPLY CHAINS

2ND YEAR ON THE LIST



Close up of a Quantum Computer

QUICK TAKE

Quantum computers are a revolutionary form of computer platform that can solve even the most complex optimisation problems billions of times faster than traditional computing platforms.

It's this ability that makes them the perfect tool of choice when it comes to helping organisations optimise their supply chains, whether it is in terms of miles travelled or optimising their overall flow, and thereby reducing all manner of supply chain associated costs and risks.

Data sources: Cambridge Quantum Computing, IBM, and various.

IMPACT

As organisations everywhere embed sensors into their operations and products, thereby generating vast amounts of granular real time data, quantum computers can easily analyse these vast data sets, as well as external data sets, at speed in a decision making model to give executives the intelligence they need to optimise all aspects of their supply chains on the fly.

This is also before we discuss the imperative organisations have to be agile in today's world and discuss the need for them to be able to adapt their supply chains to swift changes in demand and supply, as well as mitigate impacts from climate, cyber, geopolitical, and other dynamic risks.

In addition to the above quantum computers can also solve the "Travelling Salesman" problem, something that can generate trillions of possible outcomes, almost instantly, and as customers become increasingly accustomed to ordering tailored products, something that will introduce extra complexity into supply chains, organisations can use QSC to save time and money while improving organisational agility and customer service.

EXAMPLES

Quantum computers are becoming increasingly powerful and are available for anyone to try as a service (QCaaS), and some of the pioneers in the space, from a supply chain perspective, are companies such as BMW and Volkswagen who have not only been experimenting with quantum technologies for some years now, but who are also now starting to commercially deploy it for their own advantage.

Needless to say though there are millions of organisations who could benefit from new supply chain optimisation technologies and while these companies are the pioneers there is no doubt that in the coming years they will be swiftly joined by all manner of others.

ACT NOW

As supply chains become more complex, and as supply chain related risks increase quantum computers give executives a powerful new tool to keep their businesses agile and operating.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Computing
- Hiring and talent requirements
- Partner ecosystems and solutions

SELECTIVE DECOUPLING

2ND YEAR ON THE LIST

QUICK TAKE

Increased geopolitical instability, as we enter into a **Bi-Polar and Multi-Polar World**, as well as the rise of other trends such as **Export Controls**, **Sanctions**, **Trade Wars** and tariffs, mean we are entering into a period of time where the world order is going through a significant adjustment, and this is creating new fault lines and exacerbating old ones. As a result many organisations, who are keen to limit the damage these trends have on their daily operations, are actively looking for new ways to improve supply chain resilience with one option being to decouple themselves from unfavourable countries.

IMPACT

While some of the initial reactions by organisations to growing global instability is often to try and absorb increasing costs and then pass those increases onto consumers unless organisations have confidence in the future the next step they'll often take in these situations is the tough decision to rework their supply chains in an attempt to negate as many of the negative consequences as possible. And, from **Flattening Supply Chains**, moving operations wholesale to other countries, re-routing shipments, and switching suppliers there are a variety of options open to them.

As expensive as it is to re-shape supply chains and decouple from countries such as China in studies the vast majority of organisations believe that the expenses are manageable with estimates also suggesting that, for example, to decouple all foreign manufacturing in China that is not intended for domestic consumption there would cost $1 Trillion over a five year period and reduce Return on Capital Employed (ROCE) by 0.7%. Ultimately this would then mean that the organisations left in China are in China for China only. Needless to say though China isn't the only illustration.

EXAMPLES

While many people in the West talk about selectively decoupling from China in China they talk about selectively decoupling from everyone else, hence the rise of the **Standards Shadow War**, and while this trend has many winners and losers South Korea and Vietnam especially are two countries benefiting handsomely from it.

While the rise of different trends has accelerated the shift from China in particular the fact of the matter was that costs in China were increasing for a long time anyway, so recent geopolitical wrangling, such as Trump Vs Xi, has simply hastened many organisations exits. However, that said, this is a trend that's affecting multiple countries, including the USA, as organisations seek out countries and partners with more collaborative, predictable, and stable regimes.

On the ground though Apple and its supplier Foxconn, for example, despite having collectively invested over $275 Bn in China are now just two examples of organisations decoupling from China with both having moved at least 30% of their production capacity to countries including Taiwan and Vietnam.

ACT NOW

The fact of the matter is that if something is bad for your business then you're more than likely going to try and find a way to reduce or eliminate its impact, and as we see multiple trends on the rise it's inevitable that this trend will be present for decades to come. As a result organisations should do their best to develop resilient supply chains with no single points of failure and find new ways to reduce supply chain complexity.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Creativity and Innovation, Financial Services, Government, Logistics, and Manufacturing
- Product development and innovation

Data sources: Bain, Barrons, BCG, Pew Research, SCMP, Rabbobank, and various.

SUSTAINABILITY TRENDS

CONTENTS

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

CARBON NEGATIVE PLEDGES

2ND YEAR ON THE LIST

Bhutan

QUICK TAKE

While many governments and organisations commit to **Net Zero Pledges** some, realising that these pledges simply stop **Climate Change** rather than reversing it, are going further and committing to Carbon Negative Pledges.

Not only are these kinds of pledges ambitious but they will also help boost investment and research in **Carbon Capture and Storage** (CCS) solutions, and help reverse climate change faster. It also raises the question: If the **Polluter Pays** should the preservationist benefit?

Data sources: IEA, Microsoft, United Nations, and various.

IMPACT

Carbon Dioxide accounts for roughly 75% of all human generated Greenhouse Gas Emissions (GHG), with the remainder including Hydroflurocarbons, Methane, and Nitrous Oxide, so if they are developed then Carbon Negative Pledges have to be taken seriously by the organisations embracing and promoting them.

Becoming carbon negative also means organisations have to undertake fundamental shifts in their **Corporate Social Responsibility** (CSR) and **Environmental, Social and Governance** (ESG) reporting, strategies, thinking, and visions as they relate to everything from their business and operating models as well as their building certifications, HR, product development, and supply chain strategies.

Ultimately if everyone took up a Carbon Negative Pledge then here would be hope that the environment and humanity could avoid some of the worst effects of climate change, but looking at the progress so far there are far too few governments and organisations committing to anything like this.

EXAMPLES

Today there are still comparatively few governments and organisations pledging to be carbon negative there are some worth highlighting.

Bhutan, for example, which in 2009 at the UNGA "abandoned economic growth as its compass," and with its rich hydroelectricity supplies and huge forests, which cover 70% of the country, is the world's first officially recognised carbon negative country.

Then, in 2020 Microsoft announced a $1 Bn climate innovation fund, and that by 2030 it would be carbon negative, and that by 2050 it would remove all of the historic carbon emissions it had emitted, either "directly or by electrical consumption," since its founding in 1975. To achieve these admirable goals they're taking a "Principled approach," which includes the following pillars: **Corporate Foreign Policy** initiatives that allow them to be vocal about carbon related public policy issues, empowering customers by promoting **Digitisation**, enlisting employees, investing in new CCS technologies, taking a maths and science approach and responsibility for its carbon footprint, and by being transparent.

ACT NOW

Reaching Net Zero simply stops the damage caused to our environment and society from excess GHG's getting worse - it doesn't reverse it and that's arguably what we need. Consequently, it is good to see some governments and organisations going beyond what they are expected to, being bold, and trying to lead by example. Now we need more of them.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Ethical Capitalism
- Future of Energy, Manufacturing, Supply Chains, and Transportation
- Partner ecosystems and solutions
- Policy and regulation reform

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

CIRCULAR ECONOMY

2ND YEAR ON THE LIST

The iVision Circular, BMW

QUICK TAKE

The Circular Economy is an alternative to a Linear Economy which the norm of make, use, dispose, is replaced by make, use, recycle, and re-use, and where materials, products, and other resources are used and recycled for as long as possible.

It is also an especially pertinent trend given the overall growth in global consumption and population, and the problem of growing global **Resource Scarcity**.

IMPACT

On average it is estimated that 80% of a products environmental impact are the result of decisions made during its design stage, which is why it is crucially important that organisations explore ways to "design out" waste when products are still at the concept stage.

Every year more than 100 Billion tonnes of resources enter the global economy, which includes everything from fossil fuels, metals, and minerals, to organic materials from plants and animals, and only 8.6% of this gets recycled and used again.

Since the 1970's global resource use has tripled and it's estimated that it will double again by 2050, and in a world of finite resources where we are already experiencing worrying Resource Scarcity that's an issue. A Circular Economy isn't just about fixing these environmental wrongs though, it can bring big opportunities and positive impacts across business, culture, and society.

EXAMPLES

When people think about the Circular Economy they often think about recycling. But it's more than that - the Circular Economy is a business philosophy. Recycling begins when a product has reached the end of its useful life - the "Get rid of it" stage - but Circular Economy thinking looks at how waste and pollution can be prevented from the very beginning - before the product has even been designed - and the trend encourages people to look at waste and pollution as product design flaws.

Examples of such thinking include creating food products with edible packaging, BMW's iVision Circular car concept which makes use of new adhesives and materials, as well as other mainstream products such as sports apparel from organisations like Adidas who partnered with Parley to create Circular Economy sneakers under their "Made to be Remade" initiative.

When we think bigger other examples include 3D printed buildings made from local materials such as clays and muds, and carbon neutral rockets from Relativity Space designed with 90% fewer components.

ACT NOW

To create a Circular Economy you have to see waste as a design flaw and design it out during the products design stage. It is only by taking this all in approach that you will be truly successful.

EXPLORE:

- Best practises and case studies
- Adhesive and materials research
- Designing out waste
- Emerging technologies and technology roadmaps
- Future of Materials, Recycling, Supply Chains, and Sustainability
- New business and operating models
- Recycling trends

Data sources: Ellen Macarthur Foundation, WRI, and various.

CORPORATE SOCIAL RESPONSIBILITY (CSR)

2ND YEAR ON THE LIST

QUICK TAKE

Corporate Social Responsibility (CSR) helps organisations develop sustainable business strategies and integrate their economic, environmental, ethical, philanthropic, and social performance strategies with their business operations and interactions with shareholders and stakeholders.

Research also shows CSR accounts for 40% of a brands reputation, and that organisations who vocally communicate, as well as demonstrate their commitment to CSR via affirmative action, have significantly more loyal customer bases, and better investment potential.

Data sources: OECD, RepTrak, Reuters, UNIDO, and various.

IMPACT

In what represents a paradigm shift in thinking over the past decade, and to show the growing importance of CSR, today over 90% of S&P 500 organisations publish CSR reports compared to just 20% in 2011 - and 73% of investors say these play an important role in investment decision making.

CSR also plays an increasingly vital role in helping organisations communicate and demonstrate their purpose and commitment to ethical, sustainable business practices - which are now more important than ever.

Additionally, 76% of customers say they would be more likely to defend, protect, trust, and be loyal to organisations with strong CSR strategies. And 66% say CSR - or an organisations commitments and purpose - play a role in purchase decisions, with 71% saying that in the event that two organisations products are identical they'd purchase from the more purposeful of the two. Diving deeper, another 49% of customers also believe that organisations who don't speak out on social issues don't care, and 80% want organisations to play active roles in solving societal issues.

EXAMPLES

Whichever way you look at it it's clear that CSR and **Environment, Social and Governance** (ESG) are both playing an increasingly important role in brand reputation, as well as customer and investor decision making, and with CSR now accounting for more than 40% of a brands reputation and playing a role in 66% of customers decision making, the importance of getting CSR right is high.

Some of the organisations with the highest CSR reputations include Adidas, Bosch, Lego, Microsoft, Netflix, Patagonia, Rolex, and the Walt Disney Company.

While there are many ways to measure CSR reputation, as well as its impact on the triple bottom line - Profit, People, Planet - all of which broadly fall under the umbrella of "organisations saying and doing the right thing," the most popular metrics include measurements that relate to community involvement, investability, the buying and recommendation of products and services, environmental and sustainability commitments, positive commentary, and working conditions.

ACT NOW

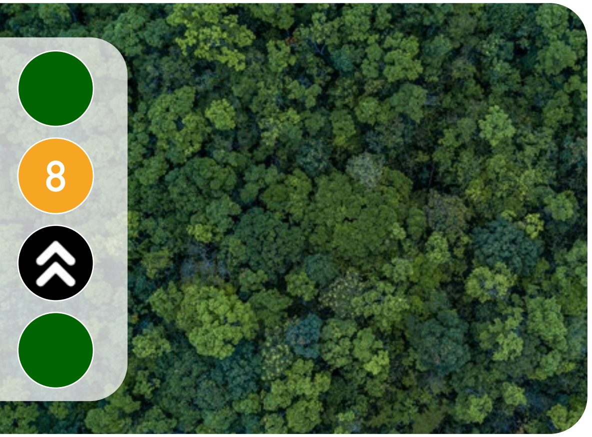
While CSR has always been important it's more important than ever today and has a qualitative and quantitative impact on businesses. It's also not enough for organisations to simply play a good CSR marketing game - they have to be able to show customers, investors, and stakeholders alike that they have taken their CSR responsibilities to heart and are actively implementing and investing in them.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Ethical Capitalism
- Future of Sustainability, and Work and the Workplace
- Policy reform

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE

2ND YEAR ON THE LIST



QUICK TAKE

Environmental, Social, and Governance (ESG) is a set of standards that environmentally and socially conscious business leaders and investors use to evaluate, measure, and monitor the impact that organisations have on the environment and society.

ESG environmental criteria evaluate and measure everything from an organisations energy and natural resource usage, pollution, and waste to their treatment of animals, while the social criteria evaluate and measure the impact of their business relationships on communities and society.

IMPACT

In the past socially responsible boards and investors often had to make trade offs between investments, returns, and business strategy that were in opposition with one another. However, now that boards, governments, and investors alike are all now aligned on the importance of ESG, as well as actively promoting and supporting it at global, national, and regional levels, that's increasingly no longer the case.

Not only is ESG a top of table conversation, but when implemented correctly it gives organisations and investors alike a greater chance of avoiding situations like those that embroiled BP and Volkswagen, with Deep Horizon oil spill and the emissions scandal.

Today ESG investments account for over a third of all global Assets Under Management (AUM), and by 2025 they are on track to exceed $53 Trillion with an annual projected growth of 15%, while at the same time ESG Exchange Traded Funds (ETFs) have reached over $1 Trillion mark. And these figures alone show how important strong ESG performance and robust strategies are for both businesses and investors.

EXAMPLES

Around the world more governments, investors, and organisations than ever before are promoting the importance and value of Sustainable Finance strategies, with Europe for example leading the way and introducing transitional finance initiatives and instruments, such as the European Green Bond scheme, that ease the transition from traditional investment practises to more sustainable ones which, in turn, compliment Europe's Sustainable Economy initiative.

When implemented well ESG has been shown to have a positive impact on organisations top line growth as it creates stronger communities and aligns with many modern B2B and B2C buying trends. It also helps reduce costs through reduced energy consumption and wastage, boost employee engagement and improve talent hiring and retention, and enhances investor returns via the better allocation of long term capital.

The past five years worth of data also shows each ESG rating upgrade generated an extra 0.5% investor return, and a downgrade resulted in -1.2% - with ESG laggards consistently under performing the market.

ACT NOW

ESG, along with **Net Negative Pledges**, **Net Zero Pledges**, and **Zero Waste Pledges**, provides organisations with the opportunity to benefit and profit from ethical and sustainable business practises while at the same time helping develop and strengthen a healthy planet and healthy communities.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology solutions
- ESG best practises, policy reform, rankings and ratings
- Future of Financial Services, Government, and Sustainability
- Investment strategies

Data sources: Bloomberg, Europa, McKinsey, University of Newcastle, and various.

SUSTAINABLE PROCUREMENT

2ND YEAR ON THE LIST

QUICK TAKE

Let's face it, when it comes to minimising our environmental and societal impact we can all do better and make smarter procurement choices - whether it's buying energy from renewable sources, buying locally grown organic vegetables that aren't wrapped in plastic, or all manner of other things. However, depending on your location, despite having all these and many other choices the vast majority of organisations still don't buy as sustainably as they could by any stretch of the imagination, and at its heart this is really what this trend is about - making better buying decisions that benefit people and planet.

IMPACT

Sustainability goals are now at the top of almost every executive agenda with 63% of executives saying sustainability is "Very important" compared to just 23% two years ago. And, even though many feared that the global COVID-19 pandemic would negatively impact global sustainability progress surveys have found the opposite to be true with 93% of organisations saying that despite the turbulence their sustainability commitments and investments held steady which is good news given the fact that investors often put an 11% to 14% premium on the best performing organisations, and that 58% of employees list sustainability as a key factor in their employment decisions.

When it comes to sustainable procurement however there's still a notable, albeit narrowing gap in aspirations, with 69% saying they take a suppliers **Environmental, Social, and Governance** (ESG) performance into account when sourcing and selecting new suppliers, up from 51% in 2019. Furthermore, with 48% of respondents believing that delivering on these goals, especially in the supply chain, is still a work in progress, it's clear there's much work left to do.

EXAMPLES

As with all initiatives things have to be measurable, and while we're still seeing a rapid increase in the number of new sustainability scorecards emerging almost all of them assess an organisations impact on the following areas: Environment, Ethics, Human Rights, and Labour Practises. It's also clear there are many ways to improve an organisations credentials.

From playing a role in helping your organisations R&D teams design **Circular Economy** products, **Flattening Supply Chains**, and helping improve **Product Traceability**, to sourcing sustainable raw materials, and more sustainable buildings and equipment, procurement has a much more vital role to play in helping organisations achieve their sustainability goals than they might at first imagine.

Some of the more notable examples of this include Apple who design their products to be safe for anyone who assembles or recycles them, Dell who promote programs to recycle and reduce **E-Waste**, McDonalds who cut its energy consumption by over 25% by sourcing energy efficient appliance, and many others.

ACT NOW

As environmental and political trends such as **Bio-Diversity Collapse**, **Climate Change**, **Net Zero**, **Plastic Planet**, and others continue to dominate global agendas and headlines sustainability is no longer a nice to have it's becoming table stakes in all kinds of areas, whether it's in helping attract investment, improve an organisations brand reputation, value, and hiring potential, and all manner of other areas. As a consequence this is a trend that should be at the forefront of everyone's minds.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Creativity and Innovation, Materials, Sustainability, and Work
- Partner ecosystems and solutions
- Reporting strategies

Data sources: Ecovadis, Gartner, McKinsey, UNGM, Stanford Graduate Business School, and various.

ZERO WASTE PLEDGES

2ND YEAR ON THE LIST

QUICK TAKE

While Zero Waste Pledges sound more like a marketing gimmick rather than a sound business strategy the trend plays well into the **Ethical Capitalism** trend, as well as others, and so far the organisations who have embraced it are reaping significant dividends including improved financial performance, increased customer and employee loyalty and satisfaction, and many other benefits.

With capitalism seen by many as being unsustainable to both people and planet this trend offers organisations a way to reset the balance and set an example.

Data sources: Apple, Microsoft, World Bank, and various.

IMPACT

It's fair to say that most zero waste pledges start life as organisations trying to reduce the amount of waste they and their products produce, whether it's through the development of **Circular Economy** products, **E-Waste** or **Plastic Planet** initiatives, or others, then using those as stepping stones to eliminate waste across their organisations, supply chains, and product lifecycles.

Whichever way you look at the statistics the amount of waste the world generates every year is shocking and it's estimated it will increase by at least another 70% by the year 2050 if left unchecked. Snapshotting it, every year the beauty industry alone, for example, creates over 120 Billion units of packaging, most of which ends up as waste, but even that figure pales into insignificance when you realise that every year the world is consuming over 110 Billion tonnes of raw materials, which in turn contributes to **Resource Scarcity**, with just 9% of it being recycled and a further 15.6 Billion tonnes of "finished products" going straight to landfill. Move the dial on any of these metrics by just 1% and you'll have an impact, then keep on going.

EXAMPLES

While there are alot of organisations committed to reducing the amount of resources they use and the amount of waste they and their products generate throughout their lifetimes very few of them have zero waste pledges.

One organisation that does though is Apple who began their zero waste journey in earnest in 2018 and who've been working to reduce waste across the board including chemicals, emissions, hazardous and non-hazardous materials, water waste, and other areas including product design, manufacturing, recycling, and re-use, as well as embracing **Sustainable Procurement**.

Another notable example is Microsoft who in 2020 announced they would hit their own zero waste pledge by 2030 by banning single use plastics, embracing **Digitisation**, empowering customers, improving waste data collection and analysis, and by tackling datacenter E-Waste by creating what they call Circular Centers which use **Artificial Intelligence** (AI) to help the company process, recycle, and re-purpose datacenter related waste.

ACT NOW

While zero waste commitments are a bold step many organisations, even the leaders in the space, are finding it difficult to meet their commitments while still trying to grow their businesses. At the moment it seems as though the two aren't as mutually compatible as they would like. However, that said in many cases the organisations embracing this trend are moving the dial and eliminating hundreds of millions of tonnes of waste per year, and not only are they benefiting commercially from reduced operating costs and improved customer sentiment but the more they learn the faster their results accelerate.

EXPLORE:

- Best practises and case studies
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Creativity and Innovation, Materials, Sustainability, and Work
- Partner ecosystems and solutions

WORKFORCE TRENDS

CONTENTS

CENTAUR PRINCIPLE

2ND YEAR ON THE LIST

QUICK TAKE

In the future we will continue to see a dramatic rise in the amount of job related Manual and **Cognitive Automation** which will impact the workforce. However, while this will cause a huge amount of dislocation and disruption in the jobs market as with every story there's a flip side.

In this case it's the use of **Artificial Intelligence** (AI), **AI Coaches**, and other so called Cognitive technologies to create "Centaurs," in other words people who use technology, as well as **Behavioural Computing**, to become hyper productive and "Super Human."

Data sources: NBER, Schroeders, and various.

IMPACT

The humanity versus the machine narrative has been a Hollywood staple for decades as script writers from 2001: A Space Odyssey to Blade Runner to the Matrix to Terminator envisioned a world where AI and machines took over.

One narrative though that you will only find in the real world is the story of a future where humanity and machines work together as **Hybrid Co-Workers** - each leveraging the best of the other. In this future human capability, creativity, and intelligence are all augmented, complimented, and super charged by increasingly connected and intelligent machines and systems, or to put it in another way by technologies and tools such as AI and robotics.

New technologies have always helped increase human productivity but the benefits have often been distributed widely and unevenly. They've also been hard to measure and quantify at both an individual and national level, but that said on the main there is a loose consensus that new technologies have helped improve productivity at the national level by between 1.2 and 6 percent for the periods between 1990 and today.

EXAMPLES

Let me ask you this question: Are you more or less productive because the internet exists? Does being able to access all the world's information in seconds help you learn more and do more faster? The answer's likely yes to both - depending on how you spend your time of course. This is a simple example of how "technology" has helped individuals become more productive over time, and **Democratised Skills** will be another.

This ability for humans to leverage the best that new technologies have to offer to improve our own "game" - our own abilities, capabilities, and skills - is perhaps best demonstrated by Gary Kasparov, the Chess Grand Master, and Lee Sedol the world Go champion who were both beaten by AI opponents. In both cases when asked if they were worried by a future dominated by AI they both answered "No" because in both cases their AI opponents, which acted, learned, and thought differently to them, taught them new moves and new strategies that, to quote them again, neither of them had ever thought of before - such as DeepMind's now infamous "Move 37" thus making them even better game players ...

ACT NOW

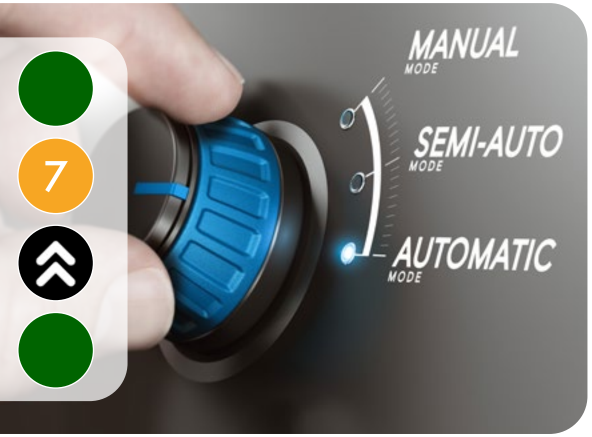
The Centaur Model has already shown that when you combine - hence the term - human capability, creativity, and intelligence with the best attributes of new technologies such as AI, which learn and see the world very differently to the way we do, they can make us even more capable and powerful. So, now imagine what happens to human potential when we consider all of the new technologies coming down the line ...

EXPLORE:

- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Computing, Creativity and Innovation, Education, Manufacturing, Robotics, and Work
- Partner ecosystems and solutions

COGNITIVE AUTOMATION

2ND YEAR ON THE LIST



QUICK TAKE

The development of increasingly sophisticated **Artificial Intelligence** (AI) and automation technologies, including **Robotic Process Automation** (RPA), are allowing organisations to automate cognitive roles and tasks at an increasingly rapid rate. However, many of the roles and tasks being automated today are highly standardised and repetitive as well as, in some cases, being low value and low risk. As automation technologies improve in capability and sophistication though in time they will move up the stack to automate more complex roles and tasks.

Data sources: OECD, PWC, and various.

IMPACT

Automation in general is a double edged sword - on the one hand it lets organisations lower operating costs and improve productivity and efficiency, and ergo competitiveness, but on the other there is a quantifiable impact on human workers and jobs as well as the local communities that rely on those jobs and their associated spending power.

By the mid 2030's it is estimated that automation, firstly in the form of algorithmic AI, which will then be followed by AI based augmentation, and eventually full autonomy, could contribute over $15 Trillion in extra value to the global economy, and that it will affect every sector.

It is also estimated that in the same time period at least 30% of jobs are at risk of full automation, with another 50% at risk of partial automation, and that workers with the lowest levels of education will be the worst affected.

Furthermore, from a gender perspective in the short to medium term research shows that women will suffer the greatest risk of automation, but that by the mid 2030's this will flip and it will be men who take the main brunt.

EXAMPLES

Ironically if there's one thing that we humans are good at it's finding ways to make ourselves redundant - literally and figuratively - the examples of which are littered throughout history, from the automation of agriculture and manufacturing, to the automation of equities trading, insurance claims processing, and beyond.

Historically though most of the roles and tasks that were automated were automated by mechanical machinery, but today software is taking up the mantle and that's not only a game changer, but it means that the variety of roles and tasks that can be automated is growing at an exponential rate.

Today there's no shortage of examples so I will lead with this: If you can break a role down into its constituent tasks then you can encode those tasks in algorithms and develop an AI that can automate that role.

This holds true for every role - from call center agents to Goldman Sachs automating the 160 step IPO process, to Autodesk and others automating human creativity and innovation, to Tesla and gang automating professional drivers ...

ACT NOW

While being able to automate various roles and tasks within your organisation is appealing, from both a cost and an efficiency perspective, organisations must be able to comprehend, empathise, and mitigate automation's negative impacts on their human workers and customers, and should not always automate for automation's sake.

EXPLORE:

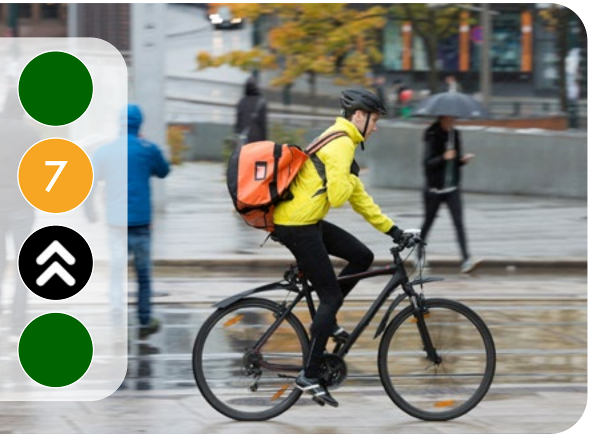
- Autonomous Organisations and new business models
- Education and re-training initiatives
- Employee mobility initiatives
- Emerging technologies and technology roadmaps
- Future of Creativity and Innovation, Customer Experience, and Work

BOOK AN EXPERT CALL

EXPLORE STARTUPS & MORE

GIG ECONOMY

2ND YEAR ON THE LIST



QUICK TAKE

The Gig Economy, which is enabled by big data and digitisation, among other trends, is really just the official term for Workers on Demand, and when you look at it from this perspective it's easy to see why it's so appealing to many of today's business leaders.

However, while being able to tap into the Gig Economy, which covers almost all kinds of work types now, from application development and marketing, to couriers, drivers, and warehouse staff, has its benefits, as many organisations are also now finding out it has its pitfalls too.

Data sources: Bureau of Labor, Deloitte, Gallup, Statista, and various.

IMPACT

The impact of the Gig Economy on society is not to be underestimated - whether it's the fact that many of us interact with it every day or know people who work in it, or the fact that during hard times it's a safety net for people who might otherwise find themselves claiming benefits.

As a result it has much more of an out-sized impact on our societies and strategy development than many people might at first think and should not be ignored.

Globally it's estimated that the Gig Economy contributes over $350 Billion and is growing at a rate of 17% with design and technology being the most active sectors and 44% of people using it as their primary income with just under 40% of workers being between the ages of 18 and 34.

Then, at a continental level 37% of Americans participate in it, and just under 100 million in Europe with 64% of people in full time employment wanting to do what they see as "side hustles" to earn extra money - which gives the Gig Economy plenty of room to expand in both size and scope.

EXAMPLES

The Gig Economy has been front of mind for many people and organisations for a long time now with companies like Uber being responsible for making it a mainstream term. And at the most basic level the Gig Economy is enabled by digital platforms that connect people with opportunities.

However, while the model is now ubiquitous it's been the subject of many ethical and legal debates and rulings that include everything from the dubious practise of using Artificial Intelligence (AI) to manage, monitor, and automatically fire under performing workers, as well as furious debates about the status of workers and workers rights.

Those asides though the number of companies who rely on the Gig Economy is growing fast and includes industry stalwarts such as Airbnb with an estimated 4 million hosts, Care with over 32 million providers, Etsy with 4.5 million sellers, Fiverr with over 1 million freelancers, Github with 40 million developers, Uber with over 4 million drivers, and many other examples.

ACT NOW

While being able to tap into workers on demand can be a significant advantage for organisations it can also have its pitfalls - especially if your entire organisation relies on Gig Economy workers for its prosperity and survival.

EXPLORE:

- Business and impact assessments
- Case studies and examples
- Decentralised organisations and new business models
- Emerging technologies and technology roadmaps
- Employment law and liability risks

HYBRID CO-WORKERS

2ND YEAR ON THE LIST

QUICK TAKE

Today we are all used to using technology but all too often it's dumb and little more than a passive prosthetic.

Increasingly though powerful technologies are helping us develop increasingly intelligent **Artificial Intelligence** (AI), **Behavioural Computing**, **Digital Humans**, and other platforms, which not only change how we interact with technology, but also lets it increasingly become our intelligent co-worker - the result of which means that in the future more of your co-workers - as well as directors and managers - could be "machines."

Data sources: Various.

IMPACT

We are all used to working alongside and with other human beings, but as we see the rise of **Algorithmic Organisations**, as well as other significant trends, we'll all also increasingly have to come to terms with working alongside, with, and even for machines - whether they take the form of AI's that are hidden from view, or digital humans and robots which have a more tangible and physical presence.

The impact of this future of work will be varied. It will be positive in some ways, negative in others, and create new frictions and debates about ethics in the workforce especially as AI takes on a more central role when it comes to hiring, monitoring and managing, and also firing human workers as we've already seen happen in the **AI Based Recruiting** and **Gig Economy** trends, as well as in other places.

On a less controversial note, human workers who work alongside and with machine co-bots and co-workers will also, on the one hand, have to learn how to work effectively with one another, but they could also see significant productivity gains as we've witnessed with the **Centaur Principle.**

EXAMPLES

Today there are plenty of both good, bad, and quirky examples of what happens when humans work alongside, for, and with machines.

While factory workers have worked alongside robots for decades one of the oddest examples of what happens when robots infiltrate new workplaces is the example of Flippy the burger flipping robot which was hired by CaliBurger. Created to automate burger fry cooking Flippy was fired because it was too fast for human workers to keep up with. Caliburger then re-trained the human workers to work better with it, and Flippy was "re-hired" and rolled out nationally. Elsewhere, we've also seen Amazon and Uber being taken to court for using AI to automatically monitor and fire employees, and there are even examples of AI being promoted to company boards in Hong Kong.

However, as dystopian as all that sounds we've also seen the benefits of workers teaming with cognitive AI's like IBM Watson, as well as digital humans, to help them find new leads and other data insights that help them be more productive and get better results for both themselves and their organisations.

ACT NOW

As human workers increasingly work alongside, for, and with machines of all kinds it's important that organisations walk into this trend with their eyes open and that their HR and operating policies don't devalue people and what they bring to the table.

EXPLORE:

- Business and impact assessments
- Emerging technologies and technology roadmaps
- Ethical Capitalism
- Ethics
- Future of Artificial Intelligence, Education, and the Workforce
- Policy and regulation reform

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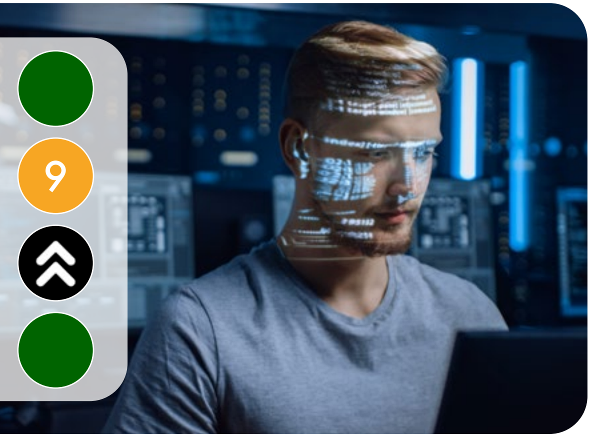
EXPLORE STARTUPS & MORE

SKILLS DEMOCRATISATION

2ND YEAR ON THE LIST



QUICK TAKE

Have you ever found that in your mind you can imagine all these amazing things but you lack the knowledge or skills to make them a reality, or have to rely on others to do things for you? Then you're not alone - we all have things we're good at and not so good at. But what if technology could democratise access to all the skills and "resources" you need, and help you unlock your full potential? This is already being bought to life by advances in **Artificial Intelligence** (AI), **Behavioural Computing**, the **Centaur Principle**, **Creative Machines**, **Digitisation**, and other powerful trends.

IMPACT

Ultimately when we talk about democratising access to all manner of different skills - whether it's the ability of non-lawyers to use AI to automatically check and create legal contracts, or non-programmers to use AI to automatically create new applications, and all manner of other sci-fi like examples which I'll discuss in the next section - the impact will be nothing short of society changing at every level.

Imagine this - rather than relying on others to "do work" or "things" for you or having to learn these skills technology will help you do these things for yourself, ironically by doing it for you. Technology will literally be your co-pilot. And, as we venture into this future it's no exaggeration to say that this trend will increasingly let us unlock human capital and potential and finally let each one of us, irrespective of our backgrounds or skills, create what we imagine in our minds in the real world.

Which then brings us to trying to measure its impact ... just what figure or stats do you put against a trend that unlocks the full range of human potential? After all, just one Elon Musk changed the world ...

EXAMPLES

Ironically democratising access to skills first means we have to use technology to automate those skills, and by association jobs, which then leads us into conversations about the impact of Manual and **Cognitive Automation** and **Autonomous Organisations**.

Giving you tangible examples of this trend in action, today if you're a non-programmer you can simply talk to so called "No-Code" AI's like Microsoft DeepCoder, describe the app you want them to create and they will use Natural Language Processing (NLP) to understand what you say and mean - the context of your request - then scavenge code from Github and Stackoverflow, bring it together and compile it for you. No programming knowledge or skills needed.

Then there's being able to use Robo-Lawyers to check and create your contracts for you - as JPMorgan are doing currently - all without the need for human lawyers. We can also see a time when you can talk to Creative Machines and ask them to create and design content and products for you on demand. And many more examples ...

ACT NOW

The power to democratise access to skills - affordably and digitally - and use this trend to unlock human potential at global scale - to let people design everything from new computer chips, content, drugs, software, vehicles, and much more - is truly revolutionary. It also provides a positive counter narrative to today's doom mongers who all too often highlight the societal dangers of automation at the expense of all other news.

EXPLORE:

- Emerging technologies and technology roadmaps
- Future of Artificial intelligence, Creativity and Innovation, Education, Manufacturing, and the Workforce
- Policy and regulation reform

Data sources: Google, JPMorgan, Microsoft, World Futures Forum, and various.

TELE-OPERATIONS

2ND YEAR ON THE LIST

QUICK TAKE

It used to be the case that in order to perform the majority of jobs workers had to be physically present where those jobs were taking place. However, while many people can **Work From Anywhere** there are still some jobs, such as those in construction and healthcare, that are harder to "dislocate" than others. But that's changing as new technologies let even the most "tethered" jobs be performed from anywhere, and not only is this trend helping de-centralise those jobs, but it's also opening up new opportunities for countries to increase productivity and GDP.

Data sources: Various.

IMPACT

The impact of being able to de-centralise almost all kinds of jobs and make location irrelevant is huge. For example, just being able to perform **Remote Surgeries** using **5G** and **Robotics**, where the surgeon is physically located in one place and the patient they're operating on is anywhere else on the planet, could save over 17 Million lives and improve the lives of another 143 Million people who today don't have access to safe surgical healthcare services. Then there's the commercial benefit of, in this case, the healthcare industry being able to avoid the $420 Billion of capital expenditure they'd have to spend if they were solving this problem the traditional way. And this is the impact that just a single "job type" embracing tele-operations would have.

This rising trend also means that for the first time almost all manner of workers, performing all manner of jobs and tasks, could be based out of a single city or country and be delivering all manner of high value services to any other location in the world which in itself could literally dislocate trillions of dollars worth of value and "services" revenues.

EXAMPLES

The number of jobs and tasks that can be performed using tele-operations is increasing every day as organisations get their heads around what this new capability means for their top and bottom lines, as well as how they deliver services and manage their workforces.

While I've already discussed the ability to use tele-operations to perform remote surgeries, with real world examples including surgeons in China, India, and the US performing everything from brain surgery to heart surgery on patients who were hundreds of miles away from them, there are plenty of other examples.

Examples such as Doosan who used a combination of 5G and drone construction equipment to enable workers based in Germany to build buildings in South Korea 8,500km away, and T-Mobile and Halo who used a similar approach to enable "drivers" based at a central location to remotely control and drive taxis around Las Vegas as they picked up paying passengers. All of which is just the tip of the iceberg.

ACT NOW

The ability to use high capacity low latency networks and combinations of drone machines and robots to "extend" a workers physical presence to anywhere on the planet is revolutionary. Not only will it let organisations change how they deliver services and where they base their operations and staff, but it will also let them realise new cost efficiencies and scale into new markets easier and faster than ever before.

EXPLORE:

- Best practises, case studies, and examples
- Business and impact assessments
- Emerging technologies and technology roadmaps
- Future of Artificial Intelligence, Communications, Robotics, and Work
- New business and operating models
- Policy and regulation reform

WORKPLACE TRENDS

CONTENTS

CHI WORKSPACES

2ND YEAR ON THE LIST

9

QUICK TAKE

Even before the global pandemic having "Chi" workspaces that energised and revitalised employees mental, physical, and spiritual well being was important. And now these workspaces, that encourage people to engage with one another, be mobile, and that promote equality and inclusion, as well as mental and physical well being, have never been needed more. This trend offers organisations a way to encourage and promote employee inclusivity and wellness, improve belonging, loyalty, and productivity, and ultimately become more attractive dutiful employers with minimal employee churn.

IMPACT

Workspaces play a vital role in encouraging and nurturing positive inclusive work cultures, but despite this not every organisation gives much thought to their design or layout.

Not only has this lack of forethought and planning been shown to contribute to the dismal **Employee Engagement** stats we see, where just 34% of the workforce feels engaged, but it's also a key factor in the rise of mental health issues in the workplace with 1 in 7 now saying that they experience mental health problems in the workplace which then, in turn, accounts for approximately 13% of all sickness absences.

Furthermore, with 1 in 4 people having a physical health condition, with 1 in 3 of those being long term, and with 42% of those employees having conditions that affect their work, it's easy to see how having comfortable workspaces can help boost engagement, morale, and productivity.

Likewise, with respect to **Diversity and Inclusion** (D&I) inclusive workspaces also improve overall productivity by up to 25%, and boost an organisations ability to adapt and innovate.

EXAMPLES

Workspaces that nourish, promote, and revitalise peoples mental, physical, and spiritual well being have been shown time and time again to be good not just for the employees but also their employers brand reputation and top and bottom lines. Some of the best examples of organisations that get this right include organisations such as Cisco, Google, Hubspot, Intuit, Netflix, Salesforce, Zoom, and Mars - the latter of which has also been working hard to promote **Ethical Capitalism**.

While workspaces are just one part of an organisations overall culture and value they're arguably one of the most vital and it's important that their design and layout are aligned with your organisations overall purpose.

In Salesforce's case workspaces are designed with their Vision, Values, Methods, Obstacles and Metrics (V2MOM) strategy in mind. The result is the creation of what they call "Immersive Spaces" and "Community Hubs," the latter of which are a form of **Hybrid Workspaces**, that "foster human collaboration and connections" and "reflect their culture as a company."

ACT NOW

It's not rocket science that happier employees are more engaged and productive employees, and there's no reason why every organisation and every employee for that better can benefit from this trend.

EXPLORE:

- Case studies and examples
- Design and technology solution
- Emerging technologies and technology roadmaps
- Future of Work
- Hybrid work strategies
- Organisation brand and culture impacts

Data sources: BCG, CIPD, Gallup, Royal College of Psychiatrists, and various.

HYBRID WORKPLACES

2ND YEAR ON THE LIST

QUICK TAKE

A trend even before the COVID-19 pandemic post pandemic the debate and development of hybrid workplaces has accelerated as people and organisations alike adopt more flexible working practises.

Hybrid workplaces are designed to support distributed workforces that consist of both in office and remote workers, and as a consequence need to balance the right levels of flexibility and support with the organisations need to empower employee productivity and wellbeing.

IMPACT

There is no doubt that the global pandemic changed the nature of work and the workplace as everyone was forced to work from home, and even though the memories of that time will eventually fade in the short to medium term surveys have consistently found that 1 in 3 employees say they will quit if they're not allowed to work from home, over 80% of company leaders plan to allow work from home, over 60% of employees want more in-person time with colleagues, and that over 40% of employees struggled with group work during the pandemic.

Furthermore, and to add some confusion into the mix, when it comes to what many organisations care the most about though, namely employee productivity, over 70% of the most productive people identified in surveys cited a stronger sense of connection with their colleagues as being their primary differentiator.

While organisations need to carefully weigh the pros and cons of hybrid workspaces it is clear they can add value if properly implemented, but that finding the right balance could be difficult.

EXAMPLES

While hybrid workplaces are nothing new they were arguably thrust much more into the spotlight by supporters in Silicon Valley, such as Facebook, Google, and the throng of new Unicorns and Decacorns, who used them as a means to attract and retain talent, and by companies such as WeWork who embraced the model and scaled it globally.

When it comes to implementation strategies there are three models organisations can rally around such as Remote First that puts remote work policies first, Office Occasional which allows random drop ins per se, and Office First Remote Allowed which prioritises being in the office. Needless to say which one of these organisations favour depends on a variety of factors.

When Microsoft embraced the hybrid workplace model they found that they needed to develop a new operating model and strategy that encompassed flexible working, inclusive space design, and innovative technology solutions, but they also found it enriched their culture, bought in fresh perspectives and unique local viewpoints, and increased their customer touch points.

ACT NOW

An organisations HQ and global offices - its physical presence and spaces - often embody and help strengthen its brand and values in a way that is often difficult to achieve digitally, but as HR and workforce habits change it is imperative that organisations understand the pros and cons of hybrid workplaces and maintain an open mind to implementing them.

EXPLORE:

- Case studies and examples
- Design and technology solutions
- Employee availability expectations and equal employee engagement policies
- Fostering in person connections
- Hybrid work strategies
- Organisation brand and culture impacts

Data sources: Gartner, Forbes, HBR, Microsoft, and various.

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EXPLORE STARTUPS & MORE

WORK FROM ANYWHERE

2ND YEAR ON THE LIST

QUICK TAKE

While the majority of organisations debate Work From Home (WFH) initiatives technology has long enabled us to Work From Anywhere (WFA) - provided there's an internet connection and then even that's optional.

When it comes to WFA versus WFH there are distinct and significant differences between the two in terms of employee availability, benefits, culture, location, productivity, and strategy, therefore as technology and the workforce evolve we argue organisations should increasingly consider the benefits of WFA over WFH.

Data sources: HBR, and various.

IMPACT

While there are many WFA benefits, many of which overlap with WFH benefits, perhaps the greatest is improved staff well-being thanks to the ability to eliminate stressful commutes, being able to sleep longer, spending more time with family, and being able to exercise and eat healthily. Meanwhile, other organisational benefits, among the many we could cite, include being able to avoid costly immigration and visa issues, and research that shows WFA employees are 20% more productive.

However, while organisations might only focus on these and other tangible benefits such as employee expense and wage benefits, as well as tax incentives and sustainability benefits, increasingly millennials and military spouses are excited about the prospect of WFA and being able to travel the world while still working - something that provides organisations with a hiring dividend.

WFA also allows employees to save money on having to rent apartments in expensive neighbourhoods next to physical offices, such as those in London or San Francisco, which is yet another important consideration when thinking about the benefits of WFA.

EXAMPLES

The large scale transition from traditional working practises to the adoption of working remotely first began in 1973 when the OPEC oil embargo made commuting to work both expensive and in some cases impossible - and it's been a growing trend ever since.

While there are many examples of organisations who have embraced WFA, rather than just WFH, some of the more notable examples include Microsoft owned Github who are the world's largest all-remote company with 1,300 employees, as well as Automatic and Zapa whose employees are spread across 50 and 23 countries respectively with none of them being co-located.

While these companies have fully embraced WFA for all their employees other organisations such as TCS, the Indian technology services giant permit over 75% of their 500,000 strong workforce to WFA, and the USPTO have several thousand WFA employees. And, of course, there are many others I could cite.

ACT NOW

While many see WFA and WFH being interchangeable there are distinct differences between the two which means that organisations need to be clear about which one they focus on and offer to their employees so everyone's expectations are aligned.

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VIRTUAL WORKSPACES

2ND YEAR ON THE LIST

Work in virtual space, MeetingVR

QUICK TAKE

While the majority of people pay attention to where people work from, whether it's in the form of **Tele-Operations** or **Work From Anywhere**, as well as the physical environments they work in such as **Hybrid Workspaces**, fewer people are paying attention to the upcoming trend of Virtual Workspaces.

Essentially an extension of the **Metaverse** this trend lets individuals and organisations completely re-invent their workspace environments as well as how they collaborate and work with customers and other stakeholders.

Data sources: Meta, and various.

IMPACT

Ultimately the ability to re-imagine and tailor worlds and workspaces in the virtual world, which don't have to obey the laws or limitations of the real world, and that help you and your employees become more productive and engage with customers and stakeholders in new ways, is a fascinating concept that many people have yet to experience or experiment with.

Furthermore, as **Immersive Reality** (A/M/VR) environments increase in convenience, responsiveness, and resolution, and as the bulky gadgets and headsets we use to access them evolve into smaller more compact form factors, such as Smart Contact Lenses and VR glasses, in time we could see organisations ditching the laptops in favour of nothing more than a pair of glasses that literally "teleport" their employees into purpose built virtual workspaces.

While nascent it's also worth noting that this trend will be supercharged by the convergence and development of many other complimentary exponential and **General Purpose Technologies**, and could become the new norm.

EXAMPLES

On the one hand this trend lets people, via the use of avatars and virtual environments, digitise their physical presence and teleport themselves into the virtual world. On the other though it also lets them change how they collaborate and work with others, and create more productive workspaces by, for example, letting them configure multiple virtual monitors.

Taking productivity to the next level, and as a demonstration of the art of the possible these worlds open up, Stanford University have been experimenting with giving avatars a virtual third arm and as odd as that sounds once their staff got used to using it in the virtual world they found that their productivity increased by 30%.

Elsewhere we have organisations including Meta and Microsoft heavily promoting their own virtual office platforms such as Infinite Office on Oculus.

ACT NOW

While culture and the availability and cost of hardware currently holds this trend back it's seen by many as the future of work and collaboration. It's not surprising therefore that some of the world's largest organisations are now investing heavily and pivoting to make it a reality.

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Notes:

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