

10th
EDITION

COMMERCE RELOADED

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MUTATION(S)

#CR21ECH

ECHANGEUR

BNP PARIBAS
PERSONAL FINANCE

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EDITORIAL

Stem cell | Ten years ago Commerce Reloaded was born, an event created by l'Echangeur BNP Paribas Personal Finance to examine developments in the world of commerce and better understand the major trends that structure it. In the same year, Uber set out to conquer the world, a stem cell the first manifestations of which - quickly described as uberisation - would turn our relationship with commerce upside down. Today, the Covid crisis affecting every country of our planet is assertively accelerating this digital and structural change, against a backdrop of sustainable and responsible consumption.

Incubation | The easy life. The world in one click. A one-swipe meeting at a given moment in time was underway. Symbolised by Google Now, Ebay Now, Tinder.. everything was set up to simplify our lives as customers and citizens. Interactions are generating new forms of dialogue, demand and ultimately value creation in day to day life. Streamlining, automating the act of purchasing, and being delivered within one hour became the first markers of an Ambient Commerce totally dedicated to improving the customer journey.

Circulation | In 2014, Google's takeover of Nest initiated the spread of the algorithmic 'virus' capitalising on our every day manifestations, leading to the emergence of an economy based on the uninterrupted flow of life - a life industry. These ecosystems crystallised by Amazon, Alibaba, Google and the like, supported by the connected objects that have become commonplace, have had no trouble taking over our daily lives. To serve us better?

Acceleration | Covid-19 has precipitated the digital transformation of our daily lives. For Satya Nadella, CEO of Microsoft, we have seen two years of digital transformation in just two months. This unbridled digitalisation is spreading and in all the dimensions of our lives that have been forced to transform, breaching the final bastions such as education, health and work. In short, the advent of contactless life!

Immunity | Inspired by how living organisms function, the technological innovation that is now using DNA through synthetic biology is positioned as humanity's salvation, just like Messenger RNA. This biomimicry is gradually integrating our daily lives and the approach to future business centred on deep tech and the circular economy, among other things.

Mutation(S) | During the periods of lockdown, our virtual and computational doubles had the chance to walk through Animal Crossing in Gucci or attend a giant concert on Fortnite, leaving the real world behind. Between binge-watching and managing your virtual identity, many people have moved seamlessly into the Metaverse, creating a mutant economy where the new markers are called NFT, Loot box, Skin etc. Welcome to the new world!

With this tenth edition of Commerce Reloaded, l'Echangeur BNP Paribas Personal Finance invites you to immerse yourself in this mutant ecosystem... enjoy the journey!



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INTRODUCTION

Commerce Reloaded. For the last ten years, experts at l'Echangeur BNP Paribas Personal Finance have been delivering a trend report to economic actors on innovative technologies that will affect Retail. Writing this report first of all requires that we monitor the weak signals and key breakthroughs in relation with those at the heart of digital innovation and retail.

These analyses are enriched by coverage of key trade shows such as the Web Summit in Lisbon, CES in Las Vegas and Shanghai, NRF in New York and the South by Southwest festival in Austin.

Since the first Commerce Reloaded, Echangeur has not stopped anticipating and following developments in the world of retail! At the start of 2010, this world arranged around a frontal relationship between brands and individuals is now a thing of the past. Driven by the connectivity (Internet of Things, smartphones, voice assistants, etc.) in all interactions, it is turning into an economy where our needs and desires are being perfectly managed, more or less subconsciously.

It is no longer a question of simply intensifying our relationship with retail indefinitely, but of ensuring that the act of purchasing, which is becoming ever more rapid, fades away and becomes evanescent in favour of a permanent and exclusive relationship provided by a single supplier. One point of contact, one platform, one 'super app'!

In 2014, we named this new form of business "Ambient Commerce", which means the industry of life!

Covid-19 is amplifying this breakthrough. While health crises are always painful, they also carry immense transformative power.

GAFAM or BATX with their energy and technological force want to transgress the inertia of societies and initiate a transmutation of the established frameworks. Covid-19 has inoculated the final historical bastions such as Education, Health, Labour.

In 2021, this transmutation has accelerated and today we must examine, observe and analyse its manifestations, its variants, its changing threshold, in other words, a comprehensive diagnosis!

For this tenth edition of Commerce Reloaded, we have identified six variants for analysis:

DIGITAL LIFE: FAST FORWARD!

The Covid-19 crisis has been a marker of the unprecedented digital acceleration in our lives. Never before has humanity spent so much time behind its screens. Social media, streaming, video games, teleworking and video conferencing... the world is coming together and structuring itself around digital. The technology giants are becoming the main guarantors of these new worlds. They are taking over more and more of our daily lives with data and artificial intelligence.

Retail Reloaded

The world of retail is changing, evolving and transforming to better take account of the new uses dictated by the global pandemic. From streaming to self-checkout, the world of retail is finding the most appropriate therapies. Faced with the environmental threats of tomorrow, retail must commit to becoming the guarantor of responsible consumption, of our well-being and therefore of our future. We are at the beginning of a new era, the stem cell of which appears to be the circular economy.

MOBILITY: SOFTWARE IS THE NEW KING

Mobility is now designed in a multimodal and connected way, making software the vector of a profound transformation from the world of the automobile to that of services. Its players must now make important choices regarding which technologies to install in the vehicle of the future! Should you make a deal with the technology giants or become a software company yourself?

HEALTH: DIGITALIZATION OF LIFE

The world of health is the first soluble sector in the world of Artificial Intelligence. Every medical process, from diagnosis to daily monitoring, is driven by AI, supported by numerous connectors which grow more and more precise with patients' medical records. The health crisis is accelerating and reshaping the existing health system, leaving room for new entrants. Whether they are tech giants, retailers or startups, numerous candidates have positioned themselves. Some don't hesitate to embrace change, becoming players in the

debate like American brands. This does pose the question: who are the guarantors of this domain, long preempted by the medical profession?

THE FUTURE AS-A-SERVICE

A new trade map has emerged: ecosystems. Beyond traditional borders, this economic battle to conquer neighbouring retail will become ever more fierce. The businesses of yesterday and today would be well advised to enter into the paradigm of the connected services to become part of tomorrow's world.

SYNTHETIC WORLD

Synthetic worlds are no longer science fiction, they are real. Whether it is to find a vaccine, define our diet, create the food of the future, or even extend life expectancy by twenty years, synthetic biology is interfering in our lives. From the living to the digital, there is only one step, that of algorithms. Synthetic media has the power to redefine the creation of digital content, alter our perception of reality, create extraordinary virtual experiences and even shake up our democracies. Are we alive or just algorithms?

For the tenth edition of Commerce Reloaded, join l'Echangeur in Mutation(S)!

DIGITAL LIFE

FAST FORWARD!



Digital Life: Fast forward!

Everyone has been talking about the acceleration of digitalisation for over a year now, but what does it really mean? Is it just working from home, having drinks over Zoom with friends or shopping online in the middle of a pandemic instead of going to a physical shop?

Indeed, Covid-19 has become the main driver of innovation in retail since it appeared. The virus has established itself as the new Chief Innovation Officer and will continue in the coming months!

Since the start of the crisis, consumers have been looking for new sources of entertainment, convenience and security in their purchases, while at the same time seeking social connection. This crisis has triggered the emergence of new platforms in the digital world. This forced digitalisation now seems to be turning into a tremendous opportunity for players in the retail sector to reinvent themselves.

THE ACCELERATION OF THE DIGITAL TRANSFORMATION

The digitalisation of the world that we have been

following for years is changing the face of retail and our societies. For Jamie Dixon, CEO of JP Morgan & Chase, the pandemic has accelerated digitalisation by about two years for 70% of US businesses. In the example of Deliveroo, its CEO says it has gained three years in market penetration in just five months.

At Walmart, Janey Whiteside explained at the last NRF that the US giant had gained five years in terms of customers adopting click & collect in just a few months. In Great Britain, home deliveries increased eightfold in 2020, while in France, online shopping for consumer goods increased by 55%. The sale of second-hand products is also benefiting from the current situation with 40% growth forecast for 2021 worldwide.

More globally, for McKinsey, e-commerce has gained ten years in just eight months over 2020. According to consulting firm GDR, British e-commerce could even

represent 50% of global trade by 2025, leading to the closure of 25% of physical stores. Physical shops are changing their role and some are becoming mini logistics hubs with the phenomenon of "dark stores".

In the field of payment, according to Mastercard, 54% of its users prefer contactless payments. At Visa, 78% of its credit and debit card users have changed their payment habits as a result of the pandemic.

But beyond consumption, the whole world has turned to the digital world, from social media to video conferencing tools, not forgetting leisure and health. Telemedicine in

Europe has grown by 40% in France, 65% in the US and 70% in the UK. Video streaming penetration with Netflix and Disney+ has accelerated by seven years in just five months, again according to McKinsey and shared by the Consumer Technology Association (CTA) at the Consumer Electronics Show (CES) 2021. The same study shows that 70% of Europeans want to continue using digital technology as much or more after the health crisis.

This acceleration of digitalisation is irreversible. The point of no return for hyper-digitalisation seems to have been reached.



E-COMMERCE

10 Years in 8 Weeks

Increase in e-commerce deliveries



TELEMEDECINE

x10 in 15 Days

Increase in virtual appointments



STREAMING VIDEO

7 Years in 5 Months

Netflix vs. Disney+ to hit 50M subscribers



REMOTE LEARNING

250 million in 2 Weeks

Students who went to online learning

Source: CES 2021 / CTA / McKinsey



Source: Clubhouse

EVEN MORE SOCIAL MEDIA WITH CLUBHOUSE

With the lockdowns, more than 60% of GenZ have turned to social media as a priority for entertainment. According to McKinsey, across all generations, 26% of Europeans (31% in Poland or Portugal) have taken their first steps on social media since the crisis began. Beyond the well-known networks, from Facebook to TikTok, new players are trying to change the game. Following the platforms structured around photos and videos, it's time for voice.

The Clubhouse network has been making the rounds in the media since the beginning of 2021. The platform was created in March 2020 and since Elon Musk signed up, the buzz has been building. Today, there are more than ten million daily users. This growth has led many to say that Clubhouse will become one of the major networks of the coming years.

This voice-based social network redefines both old media, such as radio, and new media such as podcasts and chat. Clubhouse offers a real audio agora. But beyond all that, it is obviously the status-led perception that comes from this invitation-based social network that has made it so successful. Scarcity often creates demand because to access it you have to be invited.

As for the way it works, it is a platform where voice content can be exchanged but also where live debates can be held. There is no way of redistributing content. This means that you have to be present at live events, unlike podcasts. After having been invited to register, each user has two invitations to send in order to limit the growth of the network and manage the quality. Those who generate the most content - the most value - on the network can win new invitations. But beware: guest accounts are linked and if users behave badly, they can all be banned. Users can then subscribe to individuals as well as to themed 'clubs'. They can interact with the speakers in discussions that take place in 'rooms'. It is thereby very easy to discuss, debate and capitalise on collective intelligence.

Over time and with use, the application creates a themed personalised agenda, pushing events or discussions tailored to each user. There are three types of discussion or room: open rooms (public), social rooms (only for members of your network) and closed rooms (by invitation only). Users can also have an audio chat with their followers and friends. There is no video or photo content ... Only your voice counts!

Clubhouse should initially maintain its very private or even elitist positioning in order to manage its

growth. Subsequently, the network should open up and eventually even be found on our connected speakers to consume this new form of interactive podcasts focusing on quality content. Like Youtube, Clubhouse could even become a kind of go-to for learning through audio.

What if Clubhouse became a channel for Voice Commerce? It may seem impossible but Ikea has just launched its 2021 catalogue in podcast mode. Even if the experience is not yet seamless, it perhaps foreshadows what tomorrow's e-commerce on audio platforms could look like.

Thus, if there is one network to follow in 2021, it is Clubhouse, although a number of issues remain unclear in terms of data management. One thing is certain: the digital world has made Clubhouse its own... even if only because of the number of events held at the South by Southwest (SXSW) festival. At most of the talks, participants were invited to continue the discussions on this social platform. Indeed, if you're not already on TikTok or Snapchat it's almost too late... so don't miss out, Clubhouse!

Unless the latest arrival, Swell, also positioned around the voice, quickly overtakes Clubhouse.

IS "MADE IN CHINA" LIVESTREAM SHOPPING FOR THE WEST?

With the pandemic, social distancing and the need to operate in contactless mode, e-commerce is exploding. E-commerce is evolving and turning more and more to live video. It's a trend that comes from Asia and reminds the over forties of the good old days of teleshopping.

According to various studies, teleshopping on the internet will represent on average between 10% and 12% of Chinese e-commerce in 2020. Chinese shop streaming has seen its turnover double by 2020 to €134 billion. The Chinese Ministry of Commerce estimates that there are 50,000 daily live streams generating over 260 million views each day! As a result, a whole ecosystem has been structured around streaming. Schools for streamers have been set up, such as the "Village Livestreaming College" funded by Alibaba. Being a streamer can be very lucrative, as a few minutes' appearance costs between €2,500 and €25,000, depending on the strength of the influencer, plus a 20% commission on sales. Thus, influencers such as Viya or Xinba have become millionaires thanks to streaming. Today, they are a must for international brands such as Tesla, L'Oréal and Procter and Gamble.



Source : globaltimes.cn



Source : retailinasia.com

Streaming at Alibaba generated €360 million in sales during Singles' Day 2020 on the twenty-eight official Taobao streaming channels. These channels received a technological boost with an instant translation solution into English, French, Russian and Spanish via an algorithm. This solution also cancels out ambient noise, including slang, colloquialisms and technical terms. Thus, numerous major CEOs and international stars have been able to take part on Taobao streams. And, in the other direction, Chinese streamers have been able to sell their products internationally. Virtual agents have also been made available to streamers and brands such as Philips or L'Occitane en Provence. These agents can continue to host the streaming channel once the influencer had stopped their live show. It's a way to sell 24 hours a day, 7 days a week, and which points to future developments in shop streaming with the help of virtual influencers.

CHINESE SHOP STREAMING REVENUE HAS DOUBLED IN 2020

At JD.com, more than 7,700 live streams took place on the same day. The Chinese government has even encouraged farmers to start streaming to sell their products during the Chinese lockdown. And physical shops are also adapting to this trend by creating streaming counters. The Shopline store in Hong Kong has become a hub for influencers and streaming.

In the United States, Amazon also has its Live service which offers video streams promoting various products. Although content is still scarce, Amazon with its logistical power is expected to drive the shop streaming trend in North America.

Google launched the Shoploop mobile app with a focus on discovering beauty products through short videos. Users can watch tutorials, product demonstrations and purchase products with one click.

Faced with the growth in this trend, numerous livestream shopping platforms have grown, such as Livescale, which integrates Shopify, Bambuser used by H&M and Popshop Live.

In France, multiple retailers have deployed remote shopping services via video conferences with sales staff, such as Galeries Lafayette, Printemps and Petit Bateau. During the 2020 Christmas holidays, Carrefour launched a veritable shop streaming retail operation on

toys, even though the department was closed because it was considered non-essential during lockdown. The brand succeeded in attracting more than 15,000 viewers during this first operation. The live stream took place on their dedicated Christmas website and was hosted by radio journalists to better answer live questions from the audience. It's an initial operation that should lead to many others for the French distributor. As for Fnac Darty, it has set up a real media agency, Retailink by Fnac Darty, and has transformed its store on Rue des Ternes, Paris, into a streaming studio. This transformation of the physical shop into a studio clearly demonstrates the group's ambitions in this area.

Last year, the company carried out forty-nine live streams with influencers. Live streams take place on social platforms such as Instagram, Twitch, Facebook and YouTube depending on the target audience.

In Florence, Italy, Gucci has redesigned the lighting and staging of its in-store products to facilitate streaming between sales staff and customers.

In the UK, fintech Klarna seems to have taken the lead with its Lifestyle feature, offering stream shopping videos. Shipped orders can even be tracked on the Klarna mobile app. With this type of service, Swedish fintech seems to be building a genuine ecosystem around commerce in the same way as Chinese super apps. What if a fintech became the major player in livestream shopping in Europe or even a real online shopping platform?

The competition will be fierce. Alibaba has announced that it is making Europe a priority target for 2021. Even

though 70% of Europeans seem ready to embark on the livestream shopping adventure, it is currently looking for entertainment. It will be important to monitor whether retailers prefer to keep a grip on their customers by managing the production of their streaming content or whether they are prepared to use proven technology platforms from Klarna to Alibaba, at the risk of losing some of their customer data.



Source: Fnac Darty



Source: TikTok

TIKTOK AT THE HEART OF E-COMMERCE

In the end, despite diplomatic crises and take-over rumours, TikTok had a successful year in 2020 with a growing number of downloads. As announced several months ago, TikTok will provide e-commerce solutions that users can integrate into their videos and live broadcasts. To do this, TikTok has signed a partnership agreement with Shopify. The Chinese media has also created an educational portal called TikTok Shop Seller University. This platform is currently being tested in Indonesia. TikTok describes it as a training centre to learn how to sell products on the social network, through tutorials, whether it be via their personal page, in their live videos or via video posts.

The Asian platform has also developed an affiliate programme in conjunction with its Creator Marketplace so that brands can find the right influencers to promote

their products and solutions. TikTok's objective is clear: to capitalise on the shop-streaming trend that brands are talking and dreaming about via Chinese platforms like Taobao Live.

With its firepower and growing penetration among the younger generation, TikTok could become the player that democratises shop streaming in Europe and the US. It is also a strategic way for TikTok to attract more and more influencers and content creators.

For Shopify it is also an excellent partnership that should allow it to keep Walmart away from Social Commerce for several more months, especially since the Biden administration seems to have buried Oracle and Walmart's plans to buy the social network.

Alongside retail, TikTok wants to broadcast more and more live sports events like Twitch, YouTube and Amazon. The Chinese network has already broadcast the latest X Games live from Aspen from the competition's official TikTok account. The broadcast attracted more than 1.7 million viewers behind their mobile screens. The American football league, the NFL, also ramped up the action on TikTok in conjunction with the latest Superbowl.

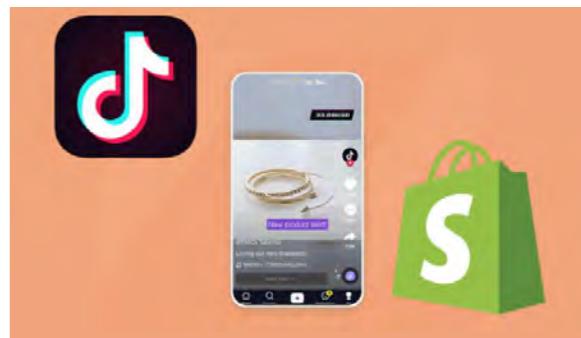
Two years ago, in Commerce Reloaded, we talked about TikTok as a platform to follow in view of its

international growth. It is now a serious player and is becoming essential in the era of connected retail. What if TikTok democratised livestream shopping through Shopify? One thing is certain, TikTok had a strong presence at South by Southwest 2021, promoting its enterprise solutions. So TikTok is no longer just a platform for karaoke and dancing. It has become a real media platform for the under-24s.

SHOPIFY, THE BIG WINNER IN THE PANDEMIC

In 2020, Shopify will be worth \$120 billion in transactions or 40% of Amazon's marketplace. The big winner and the biggest threat to the Seattle giant seems to be Canadian. Shopify has not taken on Amazon directly. The company simply offers a toolkit to help numerous merchants take their first steps into the world of online business. With the lockdowns, the pandemic has been a real boon for this digital player. These tools have been around for a long time but Shopify has made them easy to access and use.

Shopify is currently present in 175 countries with more than one million e-merchants using its services, including Allbirds, Hasbro, Red Bull and Heinz. In the last quarter of 2020, the number of online shops using Shopify increased by 71%. Faced with the closure of physical shops, retailers have naturally turned to e-commerce sites. Shopify has also developed chat tools between merchants and consumers. The Canadian company even offers checkout solutions for physical shops so that online and physical shop sales are aggregated together in the same management system. With Shop Pay, Shopify has also launched its digital wallet like Amazon Pay.



Source: marketing4ecommerce

In addition to the quality of the services offered, Shopify also benefits from the current Direct To Consumer (DTC) trend. Brands such as Heinz, Red Bull and Unilever have thereby moved into direct-to-consumer sales to meet the threat of new entrants on digital channels. It is also a way for these large companies, where IT is not always the most responsive, to launch themselves very quickly into e-commerce as a complement to their traditional distribution channels. So, much more than a competitor, Shopify is definitely a complementary platform for a giant like Amazon in capturing this Direct To Consumer trend.

RETAIL RELOADED



Retail Reloaded

The year 2020 will have left its mark on global retail. Within a few weeks, retailers had to deploy numerous solutions to respond to the global health situation. The crisis has increased the use of contactless retail. But at the same time, retailers need to integrate environmental issues into their strategic thinking.

RETAIL IN THE COVID ERA

With the health crisis, retail has had to reinvent itself, innovate and adapt to continue to welcome customers in physical shops. Employee safety has become a prerequisite. Amazon is a very good example. In the midst of the turmoil, the Seattle-based giant has developed a solution to help its employees respect safety distances and flows in its warehouses. A real "Distance Assistant" to help staff respect social distancing rules thanks to screens displaying flows and surrounding each individual in green as soon as the safety distance is met. When employees are fewer than six feet apart, they are circled in red on the assistance screens. Composed of a screen, a camera and sensors, the system is autonomous and only requires an electrical connection to operate. It can therefore easily be moved around the warehouse according to how employees are spread out. According to Brad Porter, Vice President of Amazon Robotics, the system works on the same principle as roadside speed cameras to help you control your speed. Unless it is being used to monitor employee productivity. A video inspection tool that the marketplace wants to deploy in its delivery trucks.

Thermal cameras are also being studied for train stations and airports, as well as for building lobbies or shopping centres like in China. Incredibly accurate, they can determine the temperature of individuals to within 0.3 degrees. But beware of individual freedoms! In France, the Commission Nationale de l'Informatique et des Libertés (National Commission for Data Protection and Liberties, CNIL) has just issued an alert on the use of these cameras in relation to privacy.



Source: VRWorldtech

Shops, too, have implemented solutions to disinfect the air and floors with robots such as those presented at the Consumer Electronics Show by LG or the Chinese UBtech Robotics. UV lamps with an air filtration system are also being installed in many shops and restaurants.

At the same time, all the drive-through or click & collect solutions deployed by retailers are chock-full of orders to manage. Pedestrian drive-throughs have even been set up in some city centres to handle the collection of online orders. Selling online is paradoxically quite simple, but handling the logistics is much more complicated and expensive. Especially since in the minds of customers, the benchmark for delivery remains that offered by Amazon. However, it is becoming very difficult for retailers and brands to align themselves with the standards of this kind of logistics. Consumers expect shorter and shorter delivery times, with 55% wanting delivery in less than two hours. The problem is that today only 19% of retailers are able to offer two-day delivery. The more commerce takes place online, the more delivery will become a key differentiator and success factor for retailers!

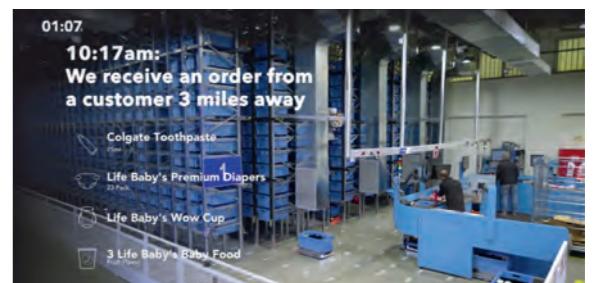
Some stores have already changed roles and become local logistics hubs, known as dark stores. This concept of mini local warehouse has been discussed at length at round-tables and conferences organised by the National Retail Federation (NRF) 2021 and at Shoptalk's Grocery Meetup 2021. Since the start of the pandemic, the American furniture retailer Bed, Bath and Beyond has converted 25% of its shops into logistics centres to improve its delivery times. Glovo, a Spanish delivery company, has announced that it is investing €100 million to open dark stores in Europe. The company has now partnered with Unilever, Nestlé

and L'Oréal for service chains as well as with supermarkets such as Walmart and Carrefour. Glovo plans to open a hundred dark stores by the end of 2021, compared to only eighteen at the beginning of the year in Spain, Italy, Portugal and Romania.

Logistics hubs are made available to brands and retailers to optimise the delivery of orders placed online. In the United States, Fabric is enjoying huge success with its warehouse automation and robotics solutions.

The company is also working with Walmart on a project to transform part of the stores into robotic warehouses to handle online orders, similar to what Ocado offers in the UK and France.

With the rise of online shopping, delivery services have also had to rethink themselves. In China, the various lockdowns have encouraged the rise of drones and autonomous delivery robots. In the United States, the Kroger and Walmart supermarkets are currently testing this type of autonomous delivery service. The autonomous robot delivery market is estimated to be worth over \$30 billion by 2030.



Source: getfabric.com



Source: Walmart

In Ireland, Tesco has tested drone delivery with the startup Manna. Google, through its subsidiary, Wing, has deployed drone delivery services in the state of Virginia. At Amazon, drone delivery still requires further safety testing. Jeff Bezos believes that Amazon Prime Air will be operational within four to five years. He said about drones on CBS on 7 March that "there is no reason they can't be used as delivery vehicles. We can do half-hour deliveries and carry objects of up to about 2.5kg. This covers about 86% of all items that we currently deliver.

According to a study by Euromonitor, almost 50% of Europeans would be inclined to have their goods delivered by these technological solutions if they could speed up delivery times.

WILL THE NEW RETAIL BE CONTACTLESS?

Whether it is Visa or Mastercard, the message is the same. With the pandemic, contactless payment has been favoured. The limit on the amount has been raised from thirty to fifty euros throughout Europe. Today, Visa has

announced that 75% of payment card transactions are contactless and that 78% of its users have changed their payment habits. In fact, 66% of them prefer shops that allow contactless payment. Obviously, all of this was done in a very particular health context.

Online payment is also changing with the "Buy Now, Pay Later" or BNPL trend. We already mentioned the Australian fintech Afterpay two years ago, which lets you buy a product online or in a shop and pay in several instalments without any fees. Afterpay now handles 15% of online payments in the Australian market and has launched its payment card, already used by two million Australian consumers.

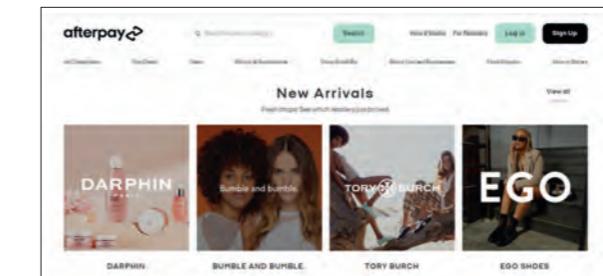
Afterpay mainly targets millennials and GenZ in Australia. Another successful player in the Buy Now Pay Later space, particularly in the US, is the Swedish fintech Klarna. Valued today at over \$31 billion, Klarna also offers multiple complementary services on its app, such as delivery tracking. It is slowly positioning itself to create



Source: Yanko Design

a super app dedicated to shopping, like Taobao or WeChat in China. With the current situation, this Pay Later trend will continue to grow and become a must in many sectors such as fashion, cosmetics, consumer electronics, home furnishings and even healthcare, as predicted by Nick Molnar, the co-founder of Afterpay.

But beyond payment, all the self-scanning solutions and mobile applications have also been highly successful. The primary objective for consumers is to spend as little time as possible in the store. As Dunnhumby demonstrated at NRF's Retail's Big Show, the less time consumers spend in store, the safer they feel. This is what explains the success of a player like Target in the US.



Source: Afterpay

When it comes to self-scanning, there were many solutions on offer for retailers at the shows we covered this year, but it was Live Area Scan & Go that caught our eye. This American startup offers a self-scanning tool embedded in the retailer's website, which means the retailer doesn't have to develop an app. To use self-scanning, the consumer can simply go to the website from their smartphone, without having to download an app. Once you have finished shopping, you can pay on the website in the same way as a traditional online purchase. According

to its creators, this solution is designed to simplify access to self-scanning while limiting costs for retailers.

But the benchmark in the field of self-checkout remains Amazon Go. Amazon has sold its concept to Hudson News, found in all American airports. The Seattle-based giant unveiled an even bigger store concept in 2020: Amazon Go Grocery. The aim of this concept is to validate the use of this technology in larger stores. Recently, it also took on Europe by opening its first autonomous store in London. Forrester sees Amazon Go as the concept that could one day wipe out the 7-Eleven convenience store in the US. More globally, Business Insider estimates that by 2024 there will be more than ten thousand autonomous retail outlets worldwide, from Amazon Go to Bingobox. In France, start-ups such as Belive.ai and Storelift are increasing the number of full-scale tests with retailers. Nevertheless, for the time being, autonomous store concepts remain mainly focused on food, hygiene and basic necessities.



Source: Afterpay

Whatever the case, the future of retail will be built around self-scanning and contactless transactions. Welcome to the era of "Touchless Retail".

WILL THE CIRCULAR ECONOMY SAVE TRADITIONAL RETAIL?

The climate challenges that humanity will need to face will most certainly require the economic world to reconsider its position and consumption will inevitably have to change. Around the world, many retailer initiatives are being implemented to optimise supplies, recycle materials, limit carbon footprints and even rethink business models. The retail world is multiplying initiatives for more responsible, sustainable and committed retail. And beware: future environmental crises will require far more profound changes in the world of consumption than those brought about by the Covid-19 pandemic! It is the entire value chain of the commercial world that must, from now on, define the models of retail that respond to the environmental, societal and ethical challenges of tomorrow.

RETHINKING PRODUCT MANUFACTURING

Of course, when we talk about responsible and committed retail, Ikea often comes to mind. The Swedish company has also started selling spare parts to extend the life of

its products. In 2020, fourteen million spare parts were ordered online from Ikea. This is essential if Ikea is to achieve its goal of having a positive climate impact by 2030.

In the United States, Lovesac, another furniture retailer, is having great success with its emphasis on eco-responsibility.

Here, products such as sofas and footstools are made from recycled plastic bottles and are guaranteed for life. They are fully customisable in terms of covers, which means you can change your style without changing your sofa. The use of plastic bottles is also found in the manufacture of Samsung's remote controls or in some of The North Face's textiles.

Products can also have a second or third life after their primary function. This is what the French



Source: Lovesac

THE TRADE OF THE WORLD AFTER WILL BE DONE AROUND SELF-SCANNING AND CONTACTLESS TRANSACTIONS

DIY store Castorama has been doing for several years with its eco-designed insulation product Métisse. It breathes life into old clothes such as jeans and transforms them into thermal or acoustic insulation. In 2019, two hundred and twenty-eight tonnes of clothing were collected from the shops to be processed into eco-designed insulation. The objective for 2021 is to collect two hundred and forty tonnes thanks to its partnership with Le Relais, a French specialist in clothing collection. Coming back to Ikea, it has taken the concept even further by working on the eco-responsible city of tomorrow, in partnership with the Swedish municipality of Helsingborg. The company will work with local authorities and residents to rethink the food supply around urban farms but also on the construction of eco-friendly houses.

At Meet Lia, which sells pregnancy tests in the US, the product has been completely redesigned to remove all plastic. Ultimately, the device is made from paper, can be flushed down the toilet and is 100% biodegradable



Source: Meet Lia

in less than ten weeks. While this may seem anecdotal, the plastic in pregnancy tests generates 1,000 tonnes of non-recyclable plastic in the US each year.

Another example that goes in this direction is the automotive world, with batteries. At the last Consumer Electronics Show, General Motors presented its project for cobalt-free batteries to limit the environmental implications of using this resource. In addition, the batteries are also more efficient and have a longer life span. Already today, technology must be designed to reduce humankind's impact on the environment. This eco-design dimension, promoted by the Ellen MacArthur Foundation, is one of the keys to succeeding in the fight against pollution and global warming. Brands need to rethink the design of their products to limit their environmental impact.

OPTIMISING RESOURCES

Another focus of the foundation's work is to work on optimising resources. This effort includes remanufacturing, recycling and reconditioning. Samsung offers to turn its TV packaging into accent furniture. This obviously reduces packaging waste. But why not take this logic to its logical conclusion and simply stop single-use packaging for online orders and the tons of cardboard boxes binned every year? This is what the Finnish start-up RePack is offering with reusable packaging. Once the package is received, the consumer returns it free of charge to the merchant's site. The startup is currently working with over 150 brands in Europe and North America.



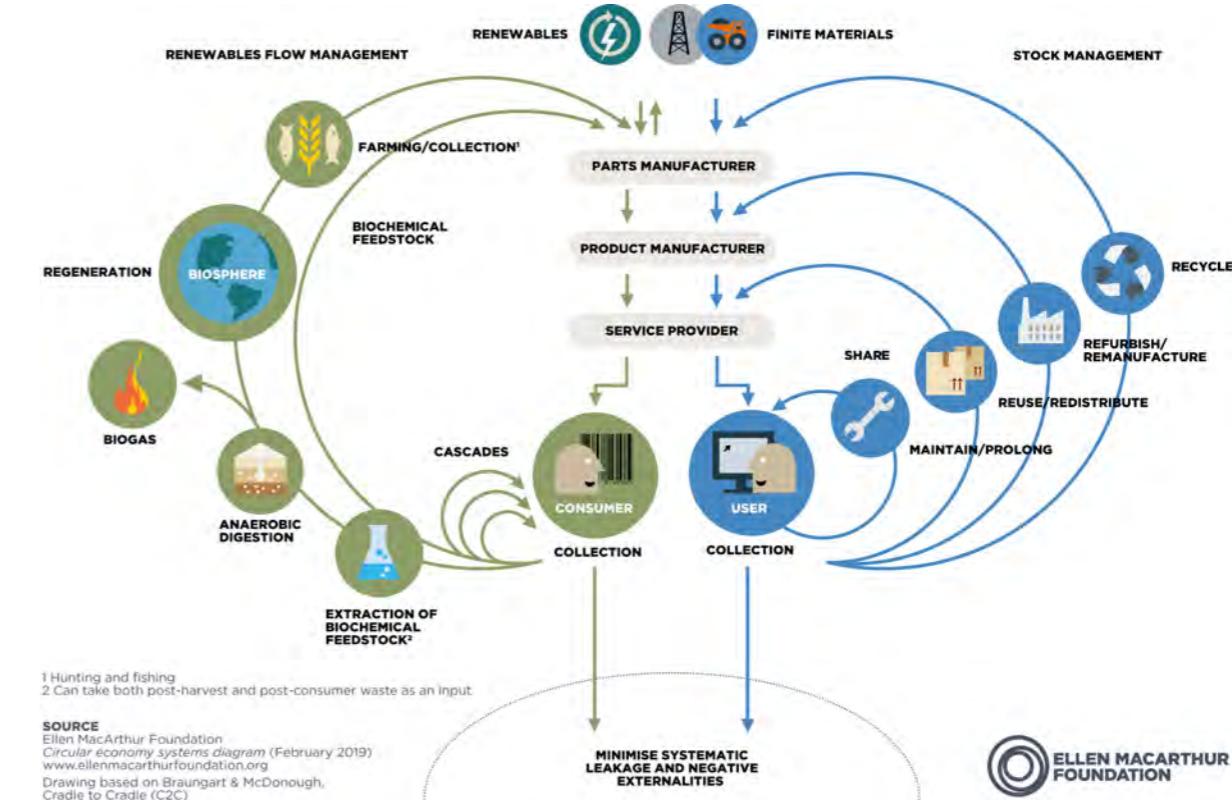
Source: RePack

In the digital world, energy consumption is a matter of debate, but innovative solutions offer energy recycling systems. This is what the Qarnot computing concept offers. The system is helping to rethink the energy consumption of buildings and warehouses. Indeed, the startup is proposing to use the heat generated by its computers as part of its Edge Computing offer to heat a building or water up to 60°C. It is a way to make professional buildings eco-friendly and to create homes that integrate data centres to optimise energy expenditure.

What if digital activity became eco-friendly by completely rethinking its structure and integration into the city of tomorrow? Nothing is lost, nothing is created but everything is transformed! It is time to rethink energy patterns to reduce or at least optimise humanity's needs.



Source: Qarnot



Source: Ellen MacArthur Foundation

SUBSCRIPTIONS AT THE HEART OF THE CIRCULAR ECONOMY

The circular economy must be at the heart of today's and tomorrow's economic models. According to analyses by the Ellen MacArthur Foundation, by adopting

the principles of the circular economy, Europe could achieve a net profit of €1.8 trillion by 2030, an additional €900 billion euros compared to the traditional linear economic model. The circular economy is not a utopia but a market of the future.

It is establishing itself in the retail sector with players such as Decathlon in Belgium. The sports retailer is testing a subscription offer, We play circular. The principle is simple: subscribe to products on sale that cost more than twenty-five euros. The subscription currently costs five euros per month for this test phase. It aims to understand the behaviour and needs of customers. For Luc Teerlinck, head of innovation and new business models at Decathlon, the objective is very clear. "If we enter into a dynamic of using our products rather than buying them to become owners, we enter into a dynamic that is incredibly virtuous for everyone involved. The more durable the products are, i.e. with long and eco-designed guarantees, the more they can be rented on increasingly long terms. So the financial profitability will increase compared to a sale. And this profitability will be shared with customers by reducing the price of the rentals and/or the quality of the services, and with the upstream chain to encourage them to produce more and more sustainably. It really is a magic formula: the more quality you produce, the lower the price.

THE FUTURE OF RETAIL WILL BE CIRCULAR, RESPONSIBLE AND ENGAGED

Luxury can also be subscribed to with Ralph Lauren. The New York-based brand has launched The Lauren Look, a \$125-a-month subscription offering access to a range of clothing including dresses, trousers and tops. Naturally, all this is accompanied by personalised suggestions from stylists.

The second-hand market is also changing rapidly, with many distributors seizing the opportunities offered by this market. At Ikea, customers can resell their old furniture. Carrefour Occasion, in partnership with Cash Converters, buys and sells second-hand products such as jewellery, smartphones and household appliances. Auchan has set up equivalent departments in forty of its shops. Decathlon has extended its second-life offer to products well beyond its traditional Trocathlon, with a website dedicated to repairing and reselling reconditioned products. La Redoute and Cdiscount have also launched an online offer to capture some of the €7 billion generated by the second-hand economy. The luxury sector has also jumped on the bandwagon, with brands such as Burberry and Gucci also offering second-hand goods.



Source: Carrefour

The future of retail will be circular, responsible and engaged at the risk of losing future customers, who are GenZ. Indeed, for 90% of this generation, companies have a duty to invest in the fight against global warming and inequalities (source Sprout Social). However, traditional retailers will need a great deal of flexibility to meet the expectations of circular retail. The circular economy does indeed encourage new entrants into the world of retail. Where incumbent retailers have to rethink themselves from the ground up, new players and, in particular, Direct To Consumer players, can build their value chain with the circular economy as their DNA.

MOBILITY

SOFTWARE IS THE NEW KING

Mobility: Software is the new king

Mobility is now designed in a multimodal and connected way, making software the vector of a profound transformation from the world of the automobile to that of services. Its players must make important choices regarding which technologies to install in the vehicle! Should you make a deal with the technology giants or become a software company yourself?

TESLA OR THE ADVENT OF "SOFTWARE"

If Tesla crystallises the advent of the electric vehicle, it has complete control over the software that drives its vehicles with lines of code developed by its own teams. At Web Summit, the German giant Bosch revealed that in 2010, a vehicle required ten million lines of code, one hundred million today and will require five hundred million for an autonomous vehicle in the future.

Several years ago, Elon Musk predicted that the car would be nothing more than an iPad on four wheels, setting the stage for a radical transformation of the automotive world. Elon Musk's company is the world's number one automotive company in terms of brand awareness and is worth over \$800 billion, four times more than Toyota. It sells nearly 10 million vehicles a year thanks to its technological advantage, particularly in batteries, customer interface and the assisted driving

system. Toyota engineers believe that Tesla is nearly six years ahead with its Autopilot system and electronic components.

The American firm is still considered as more of a "Tech" company than a car manufacturer. Moreover, software occupies 55% of Tesla's workforce, compared with 25% for traditional manufacturers, according to Boston Consulting Group.



The shortage of semiconductors in the global automotive industry has highlighted the pervasiveness of electronics in cars. 80% of semiconductor manufacturing comes from Asia, around two main players: Samsung of Korea and TSMC of Taiwan. According to the Semiconductor Industry Association, the US now accounts for only 12% of global production.

In France, Renault and PSA factories had to temporarily halt production due to insufficient supplies. In the US, the shortage could cost Ford up to \$2.5 billion. Previously, the automobile world was simple, pyramid-shaped, with a manufacturer who made the orders and worked with suppliers. Now, with the connectivity revolution (C-V2X or 'Cellular Vehicle-to-Everything'), the self-driving car and mobility, the dynamics are changing. It is now impossible for a manufacturer to control everything. Unbridled "softwarisation" is bringing new players into the picture and adding even more uncertainty to the sector.

Faced with this coming revolution, many long-term players have decided to make the foray into the digital revolution.

VOLKSWAGEN OR THE DIGITAL REVOLUTION!

The Volkswagen Group has embarked on a veritable digital revolution under the impetus of its CEO Herbert Diess, who, on taking over as head of the group in 2018, has decided to transform the group into a "software company". He foretold "We are looking forward to new competitors who will certainly accelerate transformation of our industry and bring in new skills. The incredible evaluation and thus the virtually unlimited access to resources inspire us a great

deal of respect [sic]. As I have already said, the most valuable company in the world will once again be a mobility company - it could be Tesla, Apple or Volkswagen".

In order to fulfil its ambitions, from January 2020 the German giant has brought together its engineers under a stand-alone division, Car.Software, whose stated ambition is to increase the proportion of software developed in-house from 10% to 60% by 2025. To achieve this goal, the division has promised to invest €7 billion and eventually employ ten thousand engineers.

The ultimate goal of the German group is to create its own "operating system", the VW OS, in order to be totally independent of Google, Amazon, Facebook, Apple and Microsoft's systems.

This "made in home" software must manage five essential components of the evolving vehicle of the future: connectivity and software, the intelligent cockpit, autonomous driving, energy consumption and the service platform.



Source: Volkswagen AG



Source: Volkswagen AG

In order to quickly reposition itself in the self-driving vehicle race, Volkswagen has invested in a Pittsburgh-based startup, Argo AI, for \$2.6 billion. The startup could therefore enable Volkswagen to deploy the first fully autonomous vehicles in Europe and the US.

To speed up deployment, Volkswagen plans to merge its entire intelligent driving unit in Munich with Argo AI.

RENAULT OR THE "SOFTWARE REPUBLIK"

Compared to Volkswagen, Renault is not to be outdone and in 2017 bought Intel's French R&D arm - 400 engineers specialising in software and connectivity.

In 2020, the French giant brought together two thousand engineers dedicated to software in a "software factory", the first product of which will be the 100% electric Mégane eVision, which will be released in 2022. The latter will be equipped with an infotainment OS called "My link" running on Android. Renault and its alliance

partners, Nissan and Mitsubishi, signed an agreement with Google in 2018.

Renault will be the first manufacturer to offer the full range of Google Automotive Services (GAS), i.e. access to the entire Google ecosystem (Google Maps, Google Play, Google voice, etc.), without requiring a smartphone.

Nevertheless, aware that the next step in software will be to develop new connected services and to be independent of the data giants, Renault is working internally in collaboration with Continental and Alliance on its own "car OS", called "FACE". At the same time, and with the same objective, Renault has announced the creation of a "Software Republique" in collaboration with Orange, Atos, Dassault System and ST Microelectronics.



Source: Renault

MERCEDES-BENZ IN SERVICE-ECOSYSTEM MODE

At the last Consumer Electronics Show (CES), Mercedes-Benz launched its MBUX Hyperscreen, a haptic display integrating a platform of services boosted by the artificial intelligence of its own OS (Mercedes-Benz Operating System - MBOS). Thanks to artificial intelligence, the display and operating system adapt fully to the user and make personalised and geo-contextualised suggestions. For example, you can ask "Hey Mercedes, what is the name of the restaurant on the left?" and the information appears on the respective display. In the very short term, we can see the integration of voice payment to confirm the booking. Mercedes-Benz would then be responsible for the entire service chain.



Source: Mercedes-Benz

GEELY OR THE DIGITAL MUTATION(S)

Geely, a major player in the Chinese automotive market, wants to establish itself in the industrial production of electric, intelligent and autonomous vehicles. The Geely Group, founded in 1997 in Hangzhou, also owns Volvo.

At the same time, the group is developing its own "sharing mobility" brands - Lynk&Co - and electric vehicles - Polestar - with which it wants to be a leader. Acquiring half the capital of Smart, whose range will be 100% electric in Europe, and Volvo, which will only offer 100% electric vehicles, are part of this strategy.

For Geely, 2021 is the year in which software and cars converge. Since the start of the year, the Chinese group has been forging partnerships with tech giants such as Baidu, Tencent and Foxconn.

On 11 January, Baidu, the Chinese Google, and Geely set up a joint venture focused on producing self-driving cars. Geely's contribution is its automotive design and manufacturing capabilities while Baidu will provide its autonomous driving software called Apollo.

On 13 January, Geely set up a joint venture with Foxconn, the world's largest electronics manufacturer and supplier to Apple. The two groups will co-produce vehicles and use their expertise to serve other manufacturers. Their first customer will be the Californian start-up Faraday Future, considered a future competitor to Tesla. Geely will provide technology and engineering to Faraday Future, taking a minority stake in the startup.

On 19 January, Geely partnered with Tencent in the areas of digitalisation, smart cockpits, autonomous driving and low carbon development. Tencent and Geely will be working on autonomous vehicles with service ecosystems for which the Shenzhen giant will be the major supplier.

Like Tesla with Starlink, Geely obtained government approval at the end of February to start manufacturing satellites to create an intelligent and complete "mobility ecosystem" needed for self-driving cars. China's National Development and Reform Commission (NDRC) has approved a licence for the Taizhou plant to start manufacturing by the middle of the year. Geely plans to start production in October and to reach a production of over five hundred satellites per year.

ALIBABA AND SAIC OR THE EMERGENCE OF THE "SMART CAR"

In parallel, Alibaba announced the creation of a car brand with SAIC Motors, China's leading car manufacturer. Together, the two partners founded IM Motors (called Zhiji Motors in China), a brand of high-end electric smart cars.

IM Motors benefits from Alibaba's operating system called AliOS as well as Alibaba Cloud to optimise its cars with a connected ecosystem.

In addition to integrating its AliOS operating system in numerous vehicles across China to offer contextualised services, Alibaba is also a dynamic



Source: IM motors

player in the car market! Alibaba owns Xpeng, which, along with Nio, is considered to be Tesla's counterpart in China. Finally, like Amazon with the purchase of Zoox, Alibaba has invested heavily in the young start-up AutoX (a Chinese manufacturer of self-driving cars) which already has self-driving taxis in the city of Shanghai. It is likely that this will come under the umbrella of Didi

Car (the Chinese Uber), an entity of Alibaba.

THE SELF-DRIVING CAR IS EVERYONE'S BUSINESS!

As mentioned earlier, vehicles are gradually becoming "smartphones on four wheels", thereby encouraging the rise of software companies in the existing market. The growing rumour of Apple entering this market is a perfect illustration.

With the purchase of Zoox for \$1 billion, Amazon is announcing itself as a future player in the self-driving

vehicle market. Through its co-founder Jesse Levinson, Zoox has reminded everyone that it was the first company on the market to obtain authorisation to provide autonomous transport services to the public in California, hence the launch, on 14 December 2020, of self-driving taxis in this state under the slogan "We're reinventing personal transportation — making the future safer, cleaner, and more enjoyable for everyone."

This announcement comes a month after Alphabet-owned Waymo announced its robot taxi service in Phoenix.

In this market, we must not forget the sector's great "historical" players! As mentioned before, Volkswagen has invested in Argo AI, General Motors has Cruise, Hyundai has Motional... All these historical giants are preempting this future growth market! These announcements confirm this trend.

At present, Waymo is probably the company with the most advanced and functional autonomous vehicles.



Source: Amazon/Zoox

FROM THE SMART CAR TO THE SMART CITY

For Amazon, in an era when time is becoming digitalised and accelerating, it is essential to optimise citizens' time, "to give them the time they need to live their life, rather than drive around town for their grocery shop". According to eMarketer, nearly half of Americans live within 30km of an Amazon warehouse. The launch of the Prime Now offer has shaken up market standards in terms of delivery, and encouraged historic players to innovate in order to stay in the race.

Taking advantage of increasing store closures and a flagging real estate market, Amazon Prime Now is opening warehouses in the heart of the world's largest cities to deliver on its promise! We are witnessing a real "logisticsification" of our cities in order to respond as quickly as possible to increasingly demanding customers! Amazon's ideal is to develop fully automated urban logistics centres called micro-fulfilment centres supported by its own electric and autonomous vehicles from Rivian, Aurora and Zoox going directly to consumers.

PANASONIC: FUJISAWA SUSTAINABLE SMART TOWN

At the Consumer Electronics Show, Panasonic explained how it intends to use augmented reality technology in its future vehicles. This technology differs from so-called "head-up displays", which usually show images in a small box projected close to the base of the windscreen. Panasonic's technology offers a small system which makes a large field of vision possible across the whole windscreen.

For the Dutch group's innovation director, future wind-screens "will no longer be just a piece of glass". Underlying this statement is his confirmation that augmented reality will make it possible to establish new ambient services related to the external environment.

The field of possibilities is large, more so with the emergence of smart cities, where the requirement will be that everything is connected. It will be possible to integrate all forms of information in real time (commercial, weather, traffic-related or alerts from the smart home).

All Panasonic technologies from Smart car to Smart home are tested in a smart city called Fujisawa Sustainable Smart Town.

This new ground of a city thus becomes a real open-air laboratory for the Japanese giant!

A network of sensors continuously collects data in real time on the physical environment. The variety of sensors available (camera, 5G etc.) will make it possible to measure everything instantaneously. The physical space is being rewritten in digital data, making it possible to drive the urban environment to second base via Artificial Intelligence!

This platform will make it possible for residents to access public services just as easily as private ones. Fujisawa Sustainable Smart Town aims to be a veritable matrix. It will feed the smart city with data and support the multiple service applications on citizens' various devices: smartphone, smartwatch, voice assistant, etc. It is on this digital framework that a large, rich and complex ecosystem will be grafted, which will coordinate and connect the various Panasonic services.

TOYOTA: 'WOVEN CITY'

In 2016, the Japanese giant Toyota recruited a former Google employee, James Kuffner, to develop an open OS called "Arene" which is the basis of its "Woven City" inaugurated mid-February 2021.

Initially, this town of two thousand inhabitants will be occupied full-time by Toyota employees and researchers. They will be able to test and develop technologies such as autonomy, robotics, personal mobility, intelligent homes and artificial intelligence in a real-world environment.

In this context, Toyota will include its autonomous E-Palette vehicle, already presented at the latest editions of the Consumer Electronics Show. As a reminder, the E-Palette is a multi-service platform (Automated Mobility as a Service) for citizens living in a smart city.

Completely autonomous, the vehicle will make it possible, in particular, to transport individuals from their home to stores, but also to bring the stores to them.



Source: Panasonic

Woven city promises to optimise the transversality of the vital functions in a connected city! The project's ambition is to create innovative solutions in order to reduce energy waste, fight pollution, eradicate city congestion and through this last point, ease parking problems. With this type of approach, the smart city gives birth to smart subsets: vehicles, shops, hospitals, buildings, homes, etc. Everything is designed to facilitate the lives of city-dwellers who themselves are augmented through their ambient connectivity!

For Akio Toyoda, "The automotive industry is clearly in the midst of its most radical phase of development, at a time when electrification, connected driving, and autonomous driving are making leaps and bounds. Constant vehicle improvement remains a priority for Toyota. But we're also looking to develop mobility solutions that will help each person make the most of life. On our level we're taking part in improving society for the next hundred years at least. For us, this new city marks a great step forwards for sustainable mobility. It proves that we're continuing to diversify beyond conventional cars and vans, by adding value, notably in customer service."

Armed with sensors measuring pressure, temperature, acceleration, speed, etc., cars are now mines of information that can support new business models and new growth drivers for car manufacturers and the partners they will bring on board in the ecosystems created in this way!

Like at the previous two Consumer Electronics Show, you can continue to see attempts by carmakers to break free of their confines as suppliers of vehicles. They want to collect data on the use of vehicles so they can utilise it. Their stated goal is to sell as many services as possible through a subscription model, going as far as to design the cities of tomorrow, if not the vehicle itself.

HEALTH

DIGITALIZATION OF LIFE

Health: Digitalization of life

The health crisis is accelerating and reshaping the existing health system, leaving room for new entrants. Whether tech giants, distributors, startups, etc., numerous candidates are positioning themselves or have accelerated further in the health sector. Some are not scared to get involved in the debate and to be the guarantors of our daily lives.

As the CEO of Alan, a young and promising French health insurance startup, puts it, "our ambition is to play a fundamental role in society. We are a health company and insurance is part of our offer. But in the end, we think we can become an app that is part of people's daily lives and that will bring together the elements needed to manage their daily health."

On the startup side, HealthTech has raised nearly \$14 billion, an all-time record. The digitalisation of healthcare has been going strong since the arrival of Covid-19. Telemedicine penetration in the United States increased from 11% in 2019 to 76% in

**BY 2023,
THE GLOBAL
E-HEALTH MARKET
WILL BE WORTH
\$235 BILLION**

2020. This digitalisation of medicine has significantly benefitted start-ups such as Teladoc, which is now valued at over \$1 billion.

With more than 35 billion connected objects worldwide by 2021, the Internet of Things (IoT), soon to be boosted by 5G, is continuing in its conquest. By 2023, the global e-health market will be worth \$235 billion (according to Frost & Sullivan) and will be largely driven by the democratisation of IoT. According to Allied Market Research, medical IoT is expected to have a net value of \$136.8 billion worldwide by 2021, representing 40% of all connected objects.



Source: CES

The other major factor accelerating the digitalisation of healthcare is legislation. La FDA (Food and Drug Administration) and the EMA (European Medicines Evaluation Agency) have issued a standard on the categorisation of health objects. This standard frees a large number of connected healthcare devices from certain legal constraints. It thereby makes them more actionable and usable by the medical bodies.

Covid-19 will certainly accelerate the widespread use of wearables, especially those promoted by the digital giants. Indeed, the Covid-19 pandemic has prompted researchers to explore the usefulness of these connected objects in monitoring infectious diseases.

In January 2020, the Scripps Research Translational Institute (San Diego Medical Research Institute) announced that it had built a model to track the seasonal flu epidemic by continuously monitoring data

such as heart rate, sleep duration and physical activity using feedback from over two hundred thousand Fitbit (acquired by Google in 2019) connected watches across the US.

Satisfied with these results, Script launched a programme called "Detect" (Digital Engagement & Tracking for Early Control & Treatment), a nationwide health study to detect viral infections, and in particular Covid-19, as early as possible. This study seeks input from the general public. Anyone wearing a watch or connected object measuring heart rate (Apple Watch, Fitbit, Garmin or Oura) can register.

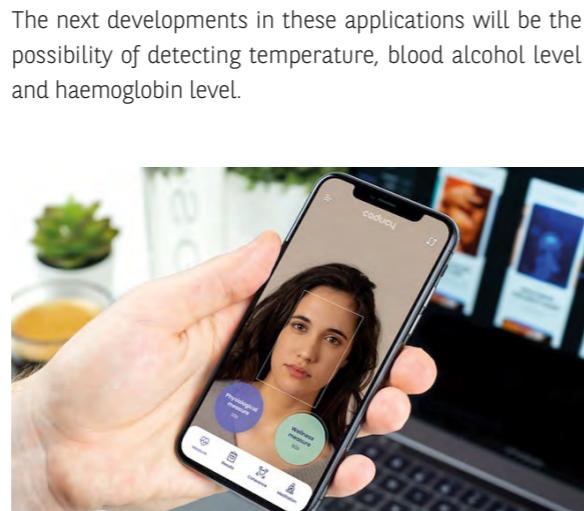
Google's acquisition of Fitbit, its investment in the Finnish start-up Oura and Amazon's launch of the "Halo" connected bracelet and related research to combat Covid-19 have reignited discussions about the potential of connected objects in the health sector.



At Apple's last keynote on 15 September 2020, the Apple Watch Series 6 was one of the show's flagship announcements, highlighting the health aspect! It will be equipped with an oximeter capable of measuring the level of oxygen in the blood (SpO2) in 15 seconds. A key indicator in the fight against Covid-19, the detection of oxygen saturation levels is essential. Indeed, some Covid-19 patients do not feel breathless (so-called "happy hypoxics") despite their oxygen levels starting to drop. It should be noted that normal blood oxygen saturation (the amount of oxygen carried by our red blood cells) is normally between 95% and 100%. Below 90% is hypoxia and below 80% is severe hypoxia.

HOME SWEET HOME “HOSPITALS WITHOUT WALLS”

While teleconsultations will certainly continue to make inroads into people's daily lives, there are questions about the reliability of the information provided to the doctor in the absence of consultation tools such as a stethoscope or blood pressure monitor. Only the patient's description and the doctor's interpretation via camera are taken into account!



Source: i-Virtual

The technologies used, photoplethysmography (PPG) or Transdermal Optical Imaging (TOI), allow us to explore blood vessels in a non-invasive way. The common principle is to illuminate the skin more precisely (the upper cheek area of the face) so that a photoreceptor can measure the small changes in light intensity associated with the blood supply to the tissue. Through facial blood flow and reflux, a lot of information is obtained such as oxygen saturation (SpO2), respiratory rate and heart rate, which are very precious signs for the apprehension of Covid-19.

Because these devices are effective for real-time monitoring, they could play an important role in detecting and managing chronic diseases, and guarantee our future medical teleconsultations.

The next variation or physical integration of this solution could be your bathroom mirror with integrated telemedicine.



Source: Watech

Also based on this technology, Nuvilabs, a South Korean company, has developed a food application that accurately measures the type and quantity of food on the plate. Through this, it offers food waste reduction solutions and health services based on food quality. Based on personal eating habits based on the daily collection of data from the consumer (quantities ingested or remaining), it is possible to suggest a personalised diet.



Source: Nuvilabs

Because toilets are in direct contact with two key sources of data - our skin and our waste - they also offer opportunities to analyse our health in real time! Presented in mid-January, Toto's new smart Wellness Toilet directly analyses your faeces and urine in order to detect, at a very early stage, diseases such as cancer, urinary and intestinal infections and kidney stones. This connected toilet sends the data to a laboratory and/or doctor to establish a medical diagnosis.

Available by the end of the year, it can also advise you to eat more fibre when it detects problems in your diet.

Israeli startup Healthy.io, whose smartphone app is FDA-approved, allows users to perform urine tests at home. Healthy.io combines the smartphone camera with image recognition and artificial intelligence technologies to turn smartphones into clinical grade scanners capable of analysing urine test strips.



Source: healthy.io

The new connected toothbrush promoted by Philips (Philips Teledentistry) reflects these developments. It can report inflammation of the gums, enamel degradation, and suggest, for example, toothpastes, suitable mouthwashes, or even schedule consultations at a dental clinic in sync with your diary.



Source: Philips

NEW HEALTH ECOSYSTEMS

Covid-19 has undermined many health systems, particularly in the US. According to CEO of New York-based health insurance startup Oscar Health: "The biggest problem with the American health care system is twofold: on the one hand, it is too expensive; on the other hand, it is still too complicated ... What I expect is an individualised health care and insurance system where you can pay a certain amount... almost a subscription for your health".

This wish is already a reality in China. Jessica Tan, Co-CEO of Ping An Insurance, and Liao Jieyuan, CEO of WeDoctor Group (whose main shareholder is Tencent), presented at Websummit 2021 their different platforms where health, under the guise of AI and IoT, combines with individualised insurance.

The numbers are striking! In March, Wedoctor launched its "Fighting Covid-19" service internationally, with 230 million users in 220 countries.

A total of 73,000 medical experts provided free online services, providing over 180 million consultations on the platform.

As a reminder, Wedoctor and Ping Doctor (Ping An Insurance) is the integration of a whole digital ecosystem around health. Wedoctor is already 4,000 hospitals and 200 million patients.



Source: Wedoctorgroup

AMAZON PRIME HEALTH IS BECOMING MORE ACCESSIBLE

Across the Atlantic, Amazon is continuing to innovate with the launch of Amazon Care and Amazon Pharmacy, Health Insurance (Haven) and a range of

The ambition of these Chinese giants is to deliver individualised and real-time health monitoring (and insurance-related services, etc.), carried out by the IoT and AI, as demonstrated by the scheme advocated by Liao Jieyuan CEO of WeDoctor Group.



"Halo" connected bracelets. Finally, as announced at the Web Summit by Mario Schlosser CEO of Oscar Health, the Seattle giant is closer than ever to launching "Amazon Prime Health" a subscription service for personalised health.

Since mid-March 2021, Amazon has been extending its Amazon Care telemedicine service to the entire US population. Developed eighteen months ago, this platform brings together individuals and health professionals.

With its acquisition in 2019 of Health Navigator, a start-up specialising in telemedicine, Amazon put in place the cornerstone of Amazon Care, a virtual clinic for Seattle employees, launched in late September 2019.

Amazon Care offers its employees four options:

- Videoconference consultations;
- A dedicated private messaging system;
- Home visits from medical personnel;
- Prescription drugs and the possibility to be delivered by PillPack (now Amazon Pharmacy), an online drug distributor.

It makes it possible to book a virtual medical consultation, or to make an appointment with a doctor, similar to Doctolib in France. The Covid-19 health crisis has accelerated Amazon's efforts in this area. The deployment of Amazon Care allows the American giant to ride the wave of teleconsultations, which has been growing steadily since the pandemic and which could become a common practice for patients even after the crisis has passed.

Here is a reminder of Amazon's recent advances in the field of health. The creation of 1492, its medical research centre, the purchase of Pillpack (an online pharmacy), and the creation of its Comprehend Medical cloud, capable of processing millions of unstructured

data elements aimed at healthcare professionals (prescriptions, pathology reports), and defining a personalised diagnosis for patients. Meanwhile, its Comprehend Medical cloud has been approved by the HIPPA, the US equivalent of the General Data Protection Regulation (GDPR) for medical data.

This year, Amazon also filed a patent for Alexa. This allows them to determine whether users are sick, by analysing their voice. It also includes the automatic launch of a remote medical consultation via Amazon care. In the last versions, this assistant incorporated a video screen to deploy equivalent solutions but based on facial recognition.

At the end of 2020, Amazon launched Halo, its data-hungry health monitoring bracelet. It can measure body fat percentage, listen to the user's emotional state and monitor heart rate and numerous other activities. One of the largest electronic medical records companies, Cerner, said that Halo users will be able to upload the information collected by the device to their doctors' medical records, starting with the Sharp HealthCare system in San Diego. Insurer John Hancock has partnered with Amazon to offer its members a free Halo and a three-year membership in exchange for data.

In the light of various announcements and Amazon's patents in healthcare, Amazon Prime Health will soon be ready! We're prepared to bet that Amazon Prime Health will soon be included in Amazon Prime, or possibly the future launch of Amazon Prime Life!

Amazon Prime health



Source: Echangeur

#PROSPECTIVE

RETAIL AND HEALTH OR THE \$3.8 TRILLION MARKET

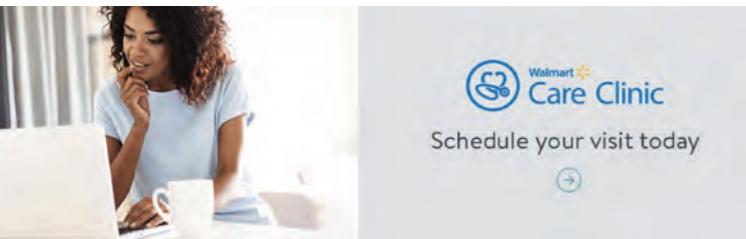
In the US, supermarkets have become an integral part of the vaccine strategy. The movement has been accelerating since the inauguration of Joe Biden, whose initial goal was to vaccinate 100 million Americans in 100 days. The target was reached and increased to 200 million people vaccinated. At the heart of this success are retailers such as Walmart, CVS, Walgreens, Costco and Publix, which are taking part in the vaccination programme.

WALMART HEALTH

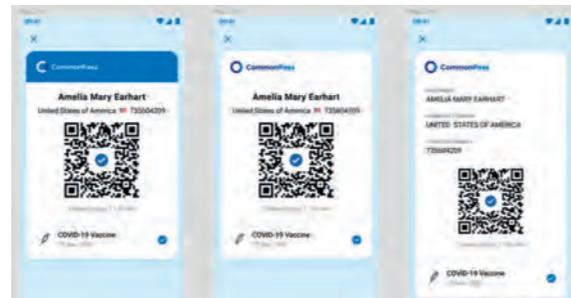
With this in mind, Walmart benefits from a considerable advantage in that it is already a brand with more than 5,000 stores in the United States, able to support the setting-up of a clinic. As a reminder, Walmart reaches 140 million shoppers each week, or four out of ten Americans. Walmart currently offers the vaccine in about 1,000 pharmacies in 22 states, or one in five shops in its network, and each supermarket vaccinates up to 85 people daily. People vaccinated with the US giant will be able to receive a health passport, which will accelerate the adoption of digital vaccination identification information.

Walmart is working on this with Health Pass developed by Clear, a security company that uses biometric technology to confirm people's identities at airports, and CommonPass, developed by the Commons Project Foundation. JetBlue and Lufthansa are already using the CommonPass application to verify negative viral test results before boarding certain flights.

Walmart is therefore becoming the first large-scale vaccine administrator committed to giving people a secure and verifiable record of their vaccinations!



Source: Walmart



Source: retailtouchpoints

Walmart has also partnered with DroneUp to provide drone home deliveries of Covid-19 test kits in the Las Vegas area from September. The service is free of charge and can be arranged within a 1.6 kilometre radius of the local store and the time of delivery of the kit is sent by SMS.

In September 2019, the American retailer opened its very first clinic in Dallas, called Walmart Health, and now has about twenty of them throughout the US.

These health centres offer a wide choice of medical services performed by professionals: basic medical consultations, analysis, X-rays and electrocardiogram, optical health, hearing counselling and nursing etc.

One of Walmart's objectives is to become a major player in the area of health. This approach is all the more legitimate in a country where health insurance and social security coverage is far from being universal.

Patients can book appointments and consult prices on the Walmart Health website. This site indicates that the clinics offer "Quality medical care at low prices you'll love" with "no insurance required".

At the same time, and in the same vein, Walgreens has used Nuance's Artificial Intelligence-driven digital assistant to extend Covid-19 vaccine appointment booking to consumers beyond the retail giant's web portal.

Best Buy Health has even partnered with Apple to launch a "lively app" that keeps you connected to Best Buy's health services.

In October 2020, Walmart partnered with Medicare Advantage insurer Clover Health for its first health insurance plans, which will be available to 500,000 people in eight Georgia counties. According to Sean Slovenski, Senior Vice President of the health and well-being

division of Walmart US, "we see these as being a crown jewel of what we want to accomplish in the physical world, in the home, and in the virtual world as well," He points out that the organisation could reduce prices on lab tests and dental cleanings by between 30% and 50% simply by cutting out middlemen.

As mentioned previously, Walmart benefits from its reputation and the public's trust, and has a considerable advantage in that it is already a brand with more than 5,000 stores in the United States, able to support the establishment of a clinic. Walmart proudly points out that 90% of Americans live within ten miles of a Walmart shop.

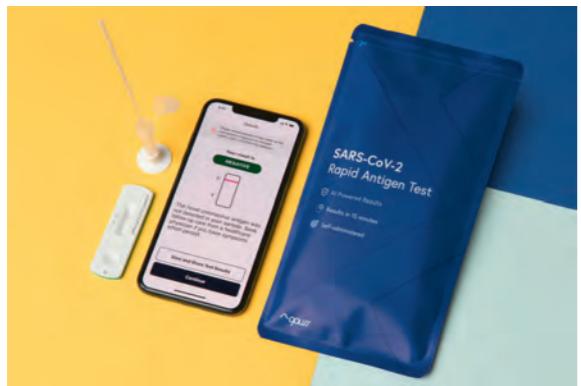


Source: Best Buy

KROGER HEALTH

The other US retail giant Kroger offers one million vaccinations a week through its Kroger Health entity, which has more than 220 clinics.

Since mid-March, the American giant has wanted to market a connected Covid-19 antigen test designed by Cellex, a specialist in biological tests, and Gauss, a small Californian start-up specialising in computer vision-based obstetric and surgical safety devices. The kit has just been submitted to the US Food and Drug Administration for marketing approval.



Source: Gauss/Kroger

Remaining on the health front but this time on the prevention side, Kroger has launched a programme that provides each consumer with personalised dietary recommendations with the help of a nutritionist from Kroger Health. The objective is to take into account consumers' pathologies and allergies to guide them in their choices at the point of sale. The programme also

includes the use of Kroger's OptUP mobile app, which rates food products in the shop according to their nutritional value and allows users to track their progress in improving their diet over time.



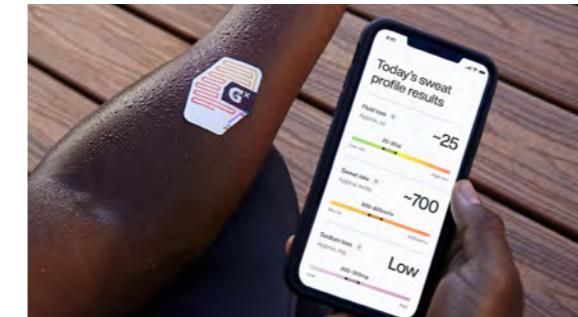
Source: Gauss/Kroger

In parallel, the objective for digital giants will be to develop a whole series of increasingly precise sensors through their smart watches (Fitbit, Apple Watch), to monitor the presence of certain molecules in the blood, and therefore, for example, to ensure that a user is following their prescribed medical treatment.

This process could be taken up by retailers already heavily involved in health.

At a lower level, Gatorade has launched a Gx Sweat patch which measures sweat levels in order to adapt water intake during and after exercise. The single-use patch is attached to the forearm and measures sweat and sodium levels. By scanning the code on the patch, the Gx app displays the user's "sweat profile" and recommendations for improving performance by adopting better hydration habits.

The data collected by the Gatorade app will also be stored in Garmin Connect and Apple's HealthKit databases.



Source: Gatorade

The spread of healthcare devices is just beginning, as is the multitude of DNA tests, whether for optimising our daily lives, diagnosing a genetic predisposition to pathologies, or suggesting the ideal diet. Everything is moving towards being taken over by private groups. American retail giants, like Amazon, are confirming their presence in the field of so-called "4" medicine: predictive, preventive, personalised and participatory. In a country where social security coverage is very low, the Amazon Prime offer or that of Walmart or Kroger will be increasingly successful in the years to come.

In summary, while the world continues to count on traditional public health measures to combat the Covid-19 pandemic, in 2021 there is a wide range of connected technologies that can join the fight. We are about to enter the world of ambient intelligence where communicating objects coordinate to provide us with services and make our lives easier.

According to Amy Webb, we will move from the IOT to the YOT, or the You of Things, making our bodies a real network of real-time health information.

These new entrants are establishing the most intimate possible form of dialogue with consumers, and there's no turning back. Healthcare will make them into a trusted third party, and will decisively complement their product and service offerings to create, in a real and a literal sense, a lifetime package.

Faced with this new global crisis that we are going through, where a state of emergency is the order of the day and where technology is omnipotent, questions of ethics and privacy will then emerge!

THE FUTURE AS-A-SERVICE



The Future as-a-Service or the era of ambient commerce

Although the breakup is still ongoing, commerce has been crystallising its new leaders over recent years: the American GAFAM - Google, Amazon, Facebook, Apple, Microsoft - and Chinese BATX - Baidu, Alibaba, Tencent, Xiaomi.

For the past ten years, each edition of Commerce Reloaded has showcased their advances in all the key sectors of our daily lives. Dominant models of commerce in ferment and the playing field for a multitude of actors, they are contributing to completely redrawing the map of commerce and its vocation. We will come back to Alibaba and Rakuten which are the most integrated and advanced service ecosystems in the world today and represent the future of an Ambient Commerce.

Nevertheless, this map is increasingly disputed and, as we have already mentioned in previous years, the "company as a service" is everybody's business!

ALIBABA, THE LIFE PARTNER OF THE CHINESE

The galaxy Alibaba spans multiple sectors: finance, retail, cloud, Smart City, IOT and healthcare. With its financial arm (Ant Group), its ambient retail (O2O) embodied by its various retail platforms (Taobao, tmall, etc.), its cloud computing (Alibaba cloud) and IoT offer (AliOS Things),

its health entity (Alihealth) and Smart city (Brain city) is becoming inseparable from the lives of millions of Chinese people.

ANT FINANCIAL, THE MATRIX OF THE EMPIRE

Founded in 2014, Alibaba's financial arm, Ant Group (already the world's 10th largest bank in terms of market capitalisation) has managed to revolutionise mobile payments with its Alipay app, which has become the preferred payment method for 55% of the Chinese market (800 million active users), where almost 90% of the population uses an electronic wallet. Although unlike in Western countries, payments do not generate profits in China, they are primarily a source of customer data, making it possible to refine contextualised service offers or, more concretely, to aid the cross-selling of credit and savings products. Digital payment marks the beginning of a continuous and long-term customer relationship thanks to the range of information collected.



Thanks to the wide range of customer data collected on its platforms, Alibaba wants to develop personalised services in its physical shops like Freshippo, its ultra-connected flagship store, a symbol of New Retail and the O2O (Online-to-Offline) model, which now has more than 200 sales outlets. Alibaba is convinced that the use of its digital 'Alipay wallet' will break codes by making the customer journey more fluid: fewer check-outs, greater use of 'scan pay go', 'smile to pay' and more interaction via augmented reality and product recognition. Terry Von Bibra, Alibaba's European manager, didn't hesitate to redefine the consumer: "The consumer does not care about online and offline"; "No customer in the world gets up in the morning and says 'I am going to buy some shoes online.' The success stories of Taobaolive and Freshippo are perfect illustrations of this.

MANUFACTURING AND LOGISTICS

While New Retail is primarily a symbol of ambient retail, Alibaba wants to move faster in the back office and in production. On 24 September, Alibaba unveiled its Xunxi Digital Factory, part of its "New Manufacturing" programme, whose matrix is consumer-centric

production by leveraging cloud computing, IoT and Artificial Intelligence, or Alibaba cloud. For example, you have a tailor-made production method, based on real-time consumer data and market trends, aggregated from Alibaba's various trading platforms (Alibaba.com, Hema, AliExpress and Taobao, etc.). Alibaba wants to spearhead consumer-to-manufacturer (C2M)! According to them, this shift forward will reduce production costs by 20% to 30%!

Alibaba has its own logistics entity, Cainiao, which has to handle 200 million parcels every day. In addition to its automated warehouses, its fleet of aircraft and its drone deliveries, the company has just launched an autonomous delivery system, 'Xiaomanlv', which can carry around fifty parcels at a time and cover a hundred kilometres in a single load. These have been extensively tested during lockdown.



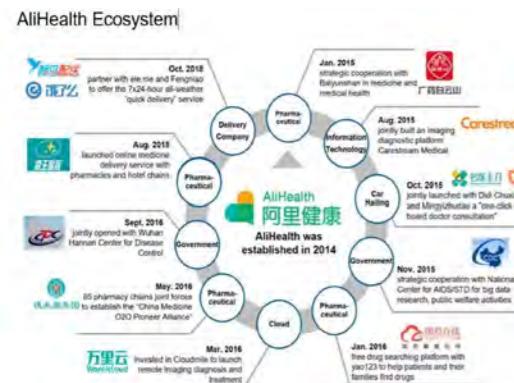
Source: Alibaba

TOURISM

After transforming retail and consumption, Alibaba is revolutionising tourism with Fliggy, its worldwide hotel booking platform integrated with Alipay. Similarly, Alibaba has created its own hotel, FlyZoo Future Hotel, in which robots serve meals, respond to guests' needs and where all formalities are carried out via Alipay and a facial recognition system. In September, Fliggy partnered with the Louvre Museum to broadcast a live virtual tour of the palace and its famous masterpieces.

HEALTH

Alibaba is also a health entity in its own right, covering all areas from research to medical consultation and home delivery of medicines. For example, via the Alipay app you could get a free teleconsultation during the pandemic. Even more iconic, Alihealth was instrumental in developing the colour-coded health passport system called Alipay Health Code that millions of people used every day during the Covid-19 pandemic.



Source: Gao Feng analysis

Upstream, Alibaba, under the name Alibaba Cloud, has developed an Artificial Intelligence system capable of detecting Covid-19 on a CT scan of a patient's chest in 20 seconds, with a presumed accuracy of 96%. The system was built using images and data from 5,000 confirmed Covid-19 cases and is reportedly already being used by at least 1,000 health facilities in China.

SMART CITY

Launched initially in September 2016 by Alibaba Cloud, City Brain is mainly used to improve circulation flow, forecast live traffic and detect traffic flow incidents. The data comes from video cameras. To date, traffic offences have been reported with an accuracy of 95%. According to Jing Zhi, Assistant Head of Public Security in the Zhejiang province, the system manages more than 110 autonomous alert capabilities and 1,300 AI-controlled traffic lights.

Alibaba has introduced City Brain in 23 other cities including Suzhou and Guangzhou in China, and some cities in Malaysia. It is working to move from managing the urban



Source: Alibaba

flows of existing cities to building the cities of the future where education, culture, environment, health (Alipay Health Code) and social scoring are the flagship projects.

The Chinese giant has set up an urbanisation laboratory with the XiongAn municipality, to help its transformation into a digital town. As a reminder, the government charged Alibaba with creating the smart city of tomorrow! According to Yang Baojun, president of the Chinese Academy of Urban Planning and Design, "all the levels of change in the city will be operated by Artificial Intelligence"

AUTOMOTIVE

In addition to integrating its AliOS operating system in numerous vehicles across China to offer contextualised services, Alibaba is also a dynamic player in the car market! To do this, Alibaba owns Xpeng, which, along with Nio, is considered to be Tesla's counterpart in China. Finally, like Amazon with the purchase of Zoox, Alibaba has invested heavily in the young start-up AutoX (a Chinese manufacturer of self-driving cars) which already has self-driving taxis in the city of Shanghai. It is likely that this will come under the umbrella of Didi Car (the Chinese Uber), also an entity of Alibaba.



Source: Alibaba

Finally, as mentioned in the Mobility section: Software is the new king, Alibaba announced the creation of a car brand with SAIC Motors, China's leading car manufacturer. Together, the two partners founded IM Motors (called Zhji Motors in China), a brand of high-end electric smart cars. IM Motors benefits from Alibaba's operating system, AliOS, as well as Alibaba Cloud to optimise its cars with a connected ecosystem.



Source: Alibaba

SMARTHOME AND AMBIENT SERVICES

Alibaba plans to invest 10 billion yuan (\$1.15 billion) to accelerate the integration of Artificial Intelligence and its Internet of Things supported by its smart speaker, Tmall Genie. These enhancements will include the integration of Alipay mini-apps as well as more content and services from Alibaba's wider ecosystem covering entertainment, healthcare, online shopping, education and of course the smart home.



Source: Alibaba

In the end, Alibaba combines all the components of ubiquitous presence in everyday life based on the power of its AliOS and the massive use of its Alipay wallet!

RAKUTEN, OR THE EMPIRE OF SERVICES

Rakuten is a Japanese giant with global ambitions, with a presence in more than forty countries and whose name is woven into the jerseys of FC Barcelona and the Golden State Warrior (NBA). Just like Amazon and Alibaba, the Japanese giant offers an empire of

services, operating in more than 70 different sectors including finance, health, retail and telecoms. Rakuten has 1.5 billion members worldwide. It is present in the lives of 90% of the 128 million inhabitants of the Japanese archipelago. If you're looking for the most successful platform, it is not the US or China that you'll find it. The answer is in Japan and is called Rakuten!

The Rakuten empire was born from the ambition of one man, its president Hiroshi Mikitani, who created the Rakuten Ichiba trading platform in 1997, which became the first Japanese e-commerce site.

Very quickly Rakuten created a whole ecosystem of services centred on data and subscription. The first brick was the launch in 2002 of 'super points', i.e. loyalty points combined with 'cashback', which encourages customers to purchase regularly on the platform. To date, on 6 March 2021, more than 2 trillion 'super points' have been used since 2002, i.e. more than €15.6 billion that can be exchanged, even for bitcoins or Ethers since the end of 2019.



Source: Rakuten

Alibaba Ecosystem



Source: L'Echangeur

The other matrix of the Japanese giant's service ecosystem is subscription or, more precisely, the unique identifier that allows members to move and consume in a fluid manner via the multiple Rakuten products and services.



Source: Rakuten

The Rakuten Ecosystem is present in every area of daily life:

- E-commerce with its main marketplace Rakuten Ichiba (10th largest in the world) and also Rakuten France (formerly Priceminister).

In order to increase the number of merchants on its platform, Rakuten Ichiba has set up a comprehensive support service to local businesses by offering payment methods (Rakuten Pay, Edy etc.), optimised pickup solutions (Rakuten ready), the creation of their website etc.



Source: Rakuten

As in Japan, and more particularly during the second lockdown, Rakuten France is offering to help small merchants via the Rakuten Academy. It also offers the possibility of creating your own website and benefiting from click and collect on its platform free of charge as well as a reduction in commissions to 5% (i.e. a reduction of more than 50%) for categories affected by store closures.



Source: Rakuten

According to its CEO for France Fabien Versavau "in view of the crisis where only 25% of French retailers have an online operation, the health crisis has led to an acceleration in consumption via online platforms. In figures, this translates into more than 40% of account openings during lockdown at Rakuten."

- Logistics: Rakuten Super Logistique has its own logistics fleet and recently, based on its own 5G network and in



Source: Rakuten



Source: Rakuten

partnership with the Chinese company JD.com, it is automating its entire logistics process from the warehouse to automated delivery (drones, self-driving vehicles and robots).

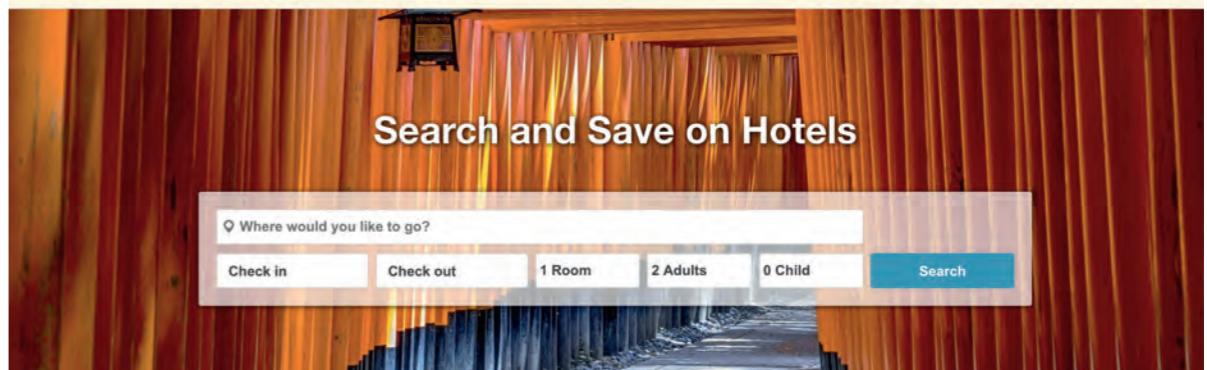
- Banking (Rakuten Card, Rakuten Bank, Rakuten Securities). Rakuten continues to invest in this sector by developing

Rakuten Travel

[Hotels](#) [Cars](#) [Features](#) [Things To Do](#)

Notice: Important message regarding COVID-19

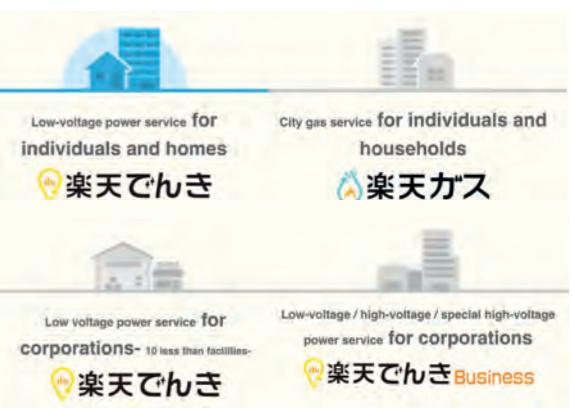
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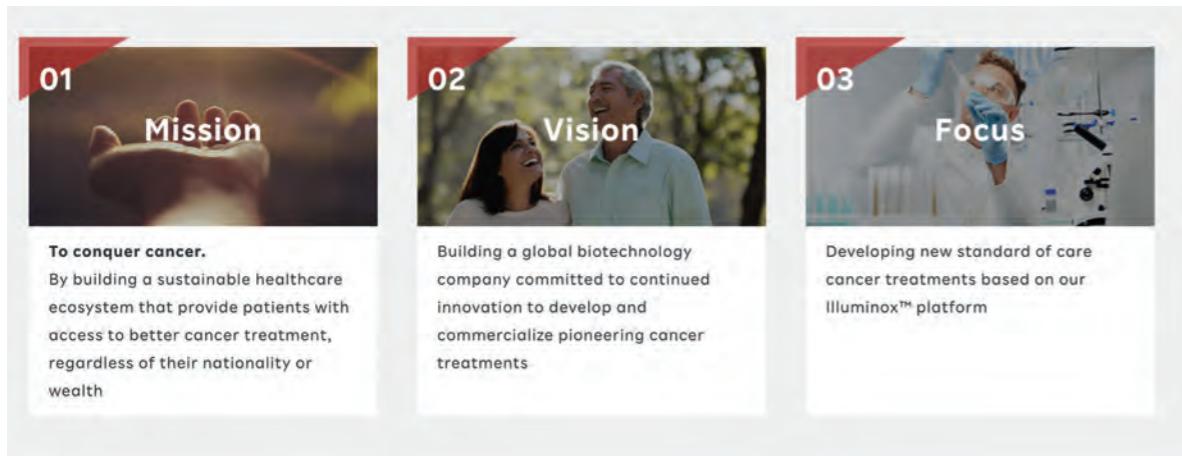
Source: Rakuten

its services: Bank (online banking), R Pay (payment system and mobile payments), Cards (credit card) or Edy (prepaid card). To date, the Japanese giant is the leading issuer of bank cards in Japan. In 2016, Rakuten launched its financial products on the European market (Rakuten Bank Europe).

- Tourism (Rakuten Travel, Rakuten Stay etc.).



- Energy: Rakuten is a supplier of electricity and gas throughout Japan (Rakuten Denki and Rakuten Energy).
- Health: Rakuten Medical is a leading entity in cancer

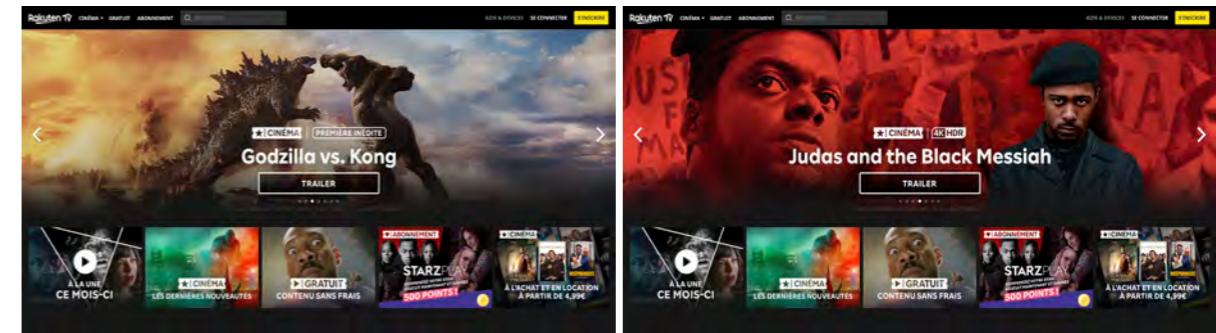


Source: Rakuten

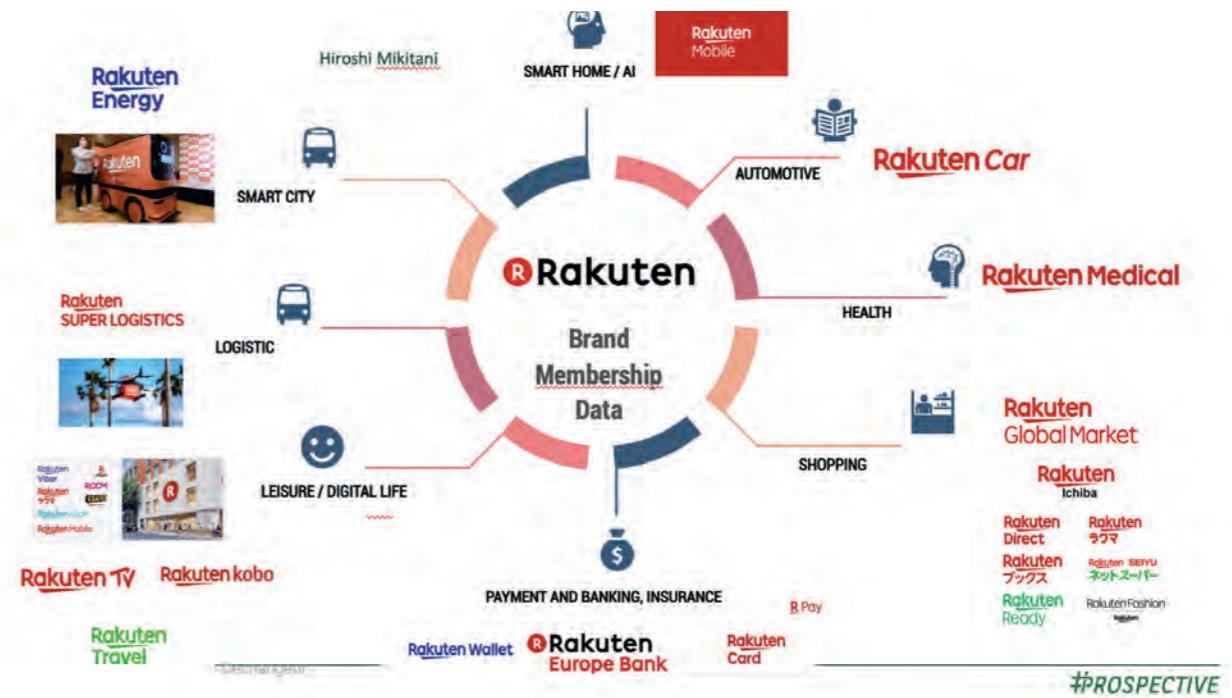
- The automotive and mobility sector with Rakuten Car, which has invested in Lyft in the US, Uber's direct competitor. Rakuten Car also offers a whole range of car-related services, including vehicles sales.
- Digital media and content: In addition to acquiring the Canadian audio book platform Kobo and the Israeli messaging service Viber, the giant has created its own media channel, Rakuten TV and Rakuten Viki, the equivalent of Netflix or Amazon Prime in the US.

research. It recently launched an 'Illuminox' platform in the field of cancer therapy and treatment. Rakuten medical is also an international biotechnology company.

To accelerate the growth of its galaxy of services, Rakuten has just launched its own MVNO (mobile virtual network operator) based on its own infrastructure and by deploying its own 5G network. This network will be hosted in its own cloud, making it a "virtualised radio access network" (vRAN), a world first. Using less physical infrastructure than its competitors (NTT Docomo, Softbank, KDDI,) the Japanese giant offers packages at a very low cost. As the owner of its 5G network, Rakuten's ambition is to offer a real service package in the short term, of which the mobile package could be the entry point.



Source: Rakuten



Source: Rakuten

EVERY "COMPANY AS-A-SERVICE"

Super-apps were first developed in China, where a few players understood the specific needs of customers and benefitted from a favourable environment in which to flourish. The WeChat super-app has reached one billion monthly active users. Furthermore, Ant Financial CEO Eric Jing revealed that Alipay and its global e-wallet partners had collectively served 1.2 billion users worldwide by the end of June 2020. These two super-apps are now an integral part of the Chinese mobile system. They both offer services that cover our daily lives: from food delivery to carpooling to financial services such as payments. Today, any company or sector that is aware of this ambient commerce is trying to follow the Chinese ecosystem model embodied by the 'Super app'.

MOBILITY AS-A-SERVICE

Although the automotive sector is entering the world of 'software and services' at full throttle (see Automotive: Software is the new king'), mobility players, whether in ride sharing, home delivery, etc., seem to be initiating the spread of 'mobility as a service' supported by the 'Super app'

Gojek, an Indonesian startup that began as an app to connect motorbike delivery drivers with their customers, has quickly evolved into a "super-app" offering a wide range of services, from food delivery, to health and leisure services, to financial services. Through this ecosystem of services, Gojek reaches 38 million users from all over South East Asia every day.



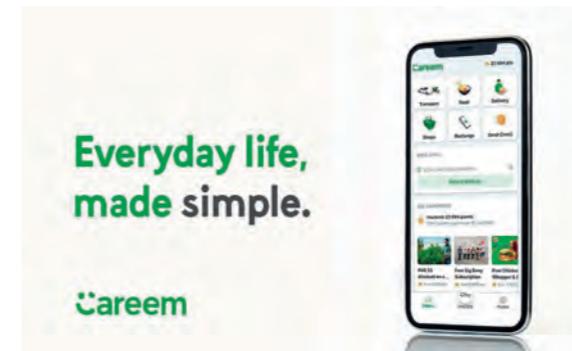
Source: Financial Times

With its Go-Pay payment service, the company processes nearly \$12 billion in transactions and covers over 500,000 merchants.

Facebook and Paypal have invested in Indonesian unicorn Gojek in its latest funding round, joining Chinese tech giants Tencent and American Google. The startup is now valued at over \$10 billion!

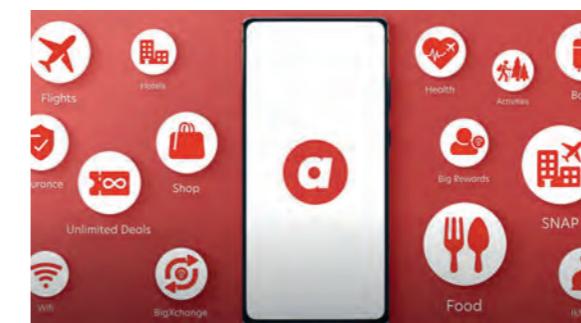
Indonesian startup Gojek and its Singaporean competitor Grab may merge soon. In addition to its services, Grab has partnered with Citi to integrate the latter's "Quick Cash" consumer credit offer into its mobile application in a completely transparent manner. The two startups are currently in talks to complete what could be the largest tech merger in Asia.

Also in mobile service apps, Careem in the Middle East was acquired by Uber for \$3.1 billion in 2020 and in the same vein as Gojek offers a wide range of related services to its existing business.



Source: Careem

Still in mobility but this time in air transport, it is AirAsia which at the end of 2020 launched a super app called ASEAN which beyond the intrinsic tasks of a travel app, offers more than fifteen services the main components of which are travel, e-commerce, food, health and payment modules.



Source: AirAsia

AirAsia's 75 million users can either pay with one click or use their BIG Points (accumulated various ways in the app) to purchase the different services offered.

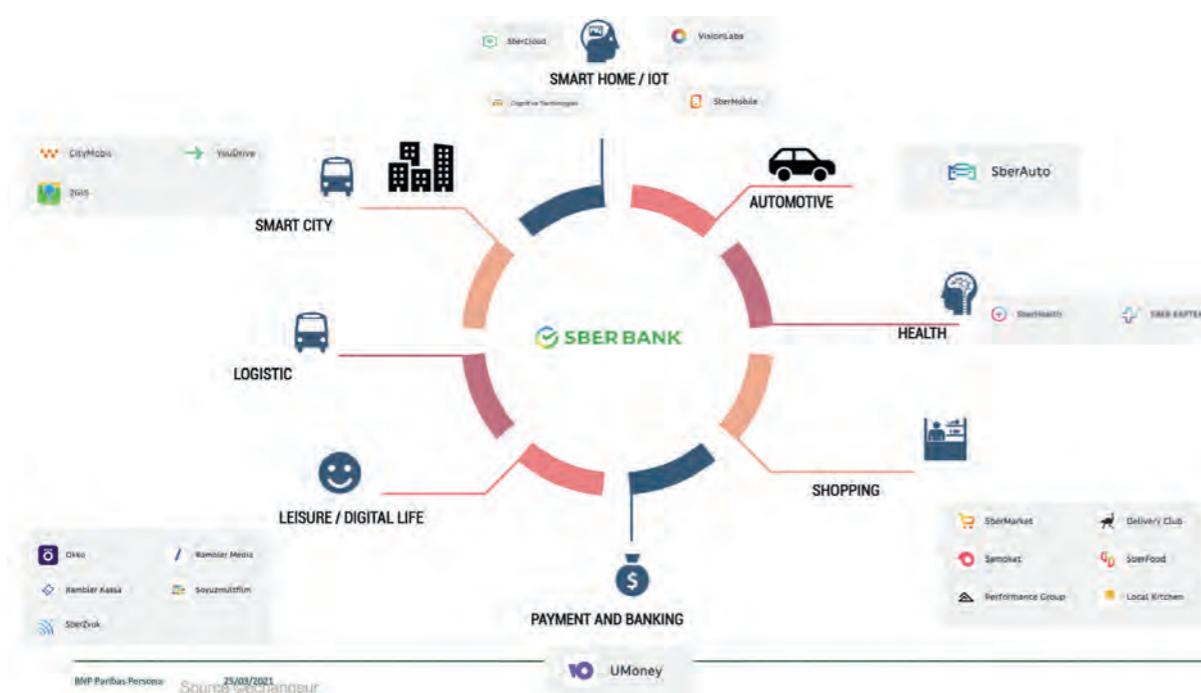
Since 2001, AirAsia has operated a network of over 140 destinations from 25 hubs in 22 markets. AirAsia has only been involved in e-commerce and fintech for the last two years.

In an environment where air transport is suffering, CEO Karen Chan sees the construction of this ecosystem as a new growth opportunity: 'We need to start focusing on growth. If we look at the airline for the next maybe 12 to 24 months, it would be about cost containment and rationalisation. AirAsia.com as the platform is purely about growth.'

BANKING AS-A-SERVICE

Earlier this year Ana Botin, CEO of Santander, expressed her concerns about the integration of finance by ecosystems such as GAFAM and BATX, "regulation now favours tech companies that intermediate financial services over banks".

According to the Bank for International Settlements (BIS), by 2020 tech giants and fintechs would have extended \$795 billion in credit worldwide.



Source: l'Echangeur

Instead of taking a wait-and-see attitude, some banks have started to initiate their ecosystemic transformation!

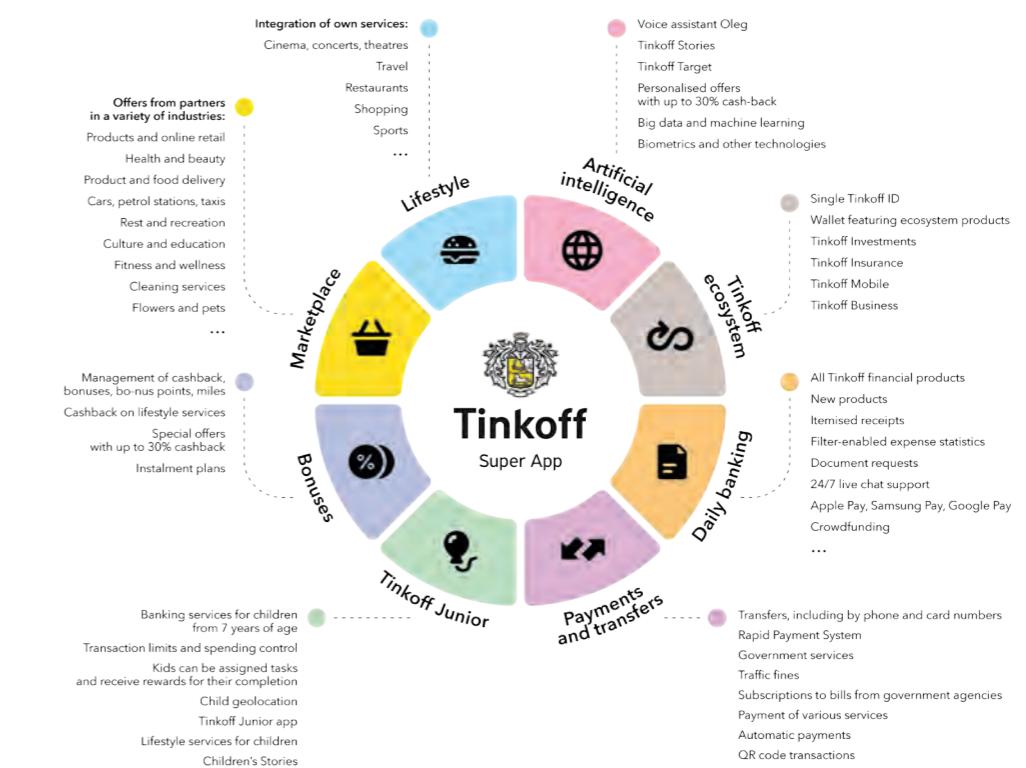
After the end of its historic collaboration with Yandex (considered the Russian Google), Sberbank, whose slogan is "convenient services for everyday life and business", wants to become an aggregator of services for its customers. To do this, the Russian bank is rapidly modernising its infrastructure to digitalise its 100 million customers. It has also launched its own cloud which aims to become the equivalent of Amazon Web Services (AWS).

For its CEO, Guerman Gref, "more than a financial assistant, we have become a life assistant that responds to all your urgent daily tasks".

This is the result of the inexorable dissolution of contact between the bank (in its generic sense) and its customers, to the benefit of new players (GAFAM, Neobanks, super apps, etc.) that provide them with the experiences they want, in which the financial component is only a means of achieving a more service-oriented objective!

Under their new umbrella brand Sber, "Sber is more than a bank", financial activities interact with a wide range of services impacting all aspects of our daily lives, as richly as with Rakuten or Alibaba (see image below).

Like Sber, the Russian bank Tinkoff, bought by the Russian giant Yandex, which has 10 million customers, in addition to its financial tools on its platform offers new health, beauty, tourism and automobile services and its own M-commerce shops!



Source: Tinkoff

To integrate as many new services as possible, Tinkoff has made a whole set of APIs available to integrate as many third-party 'mini apps' as possible, such as WeChat in China. In addition, a payment module is directly integrated into the messaging system, making it easy to transfer money, share a receipt for an expense, and ask participants contribute to a group purchase. To improve the customer experience, Tinkoff has integrated a virtual concierge that can take care of all sorts of small tasks related to everyday life.

RETAIL AS-A-SERVICE

Last year we analysed retailers Walmart and Suning who, by moving into the industry of life, are not seeking to reproduce the characteristic patterns of large historical conglomerates. Like digital marketplaces, they are attempting to weave converging ecosystems. This year, let's take a look at Cdiscount, a major player in the French E-commerce market, which is constantly adding new services like Amazon does.

CDISCOUNT

The Casino group, through Cdiscount, is adding new services to its original business, distribution, daily.

**GOOGLE, AMAZON,
YANDEX, RAKUTEN
AND SAMSUNG...
ALL WANT TO BE
PART OF OUR LIVES**

Like Amazon and Alibaba, Casino is involved in a variety of different sectors: energy, health, banking, urban mobility, insurance, cloud, mobile packages, travel, etc.



Source: Cdiscount

In four years, from 2017 to 2021, more than ten new services have been added to the initial offer.

As a reminder, Cdiscount is the second largest e-commerce company in France with ten million customers and a turnover of €2.2 billion for the year 2020. The Cdiscount platform is becoming a service aggregator.

Faced with multiform consumers, globalising the value of its offer makes complete sense. It is no longer a question of limiting yourself to your own product or sector when taking into account the living environment is key. It's now about addressing different facets of life.

Google, Amazon, Yandex, Rakuten, and Samsung all want to be part of our lives, and they are doing so by imposing their own rules! For every one of these,

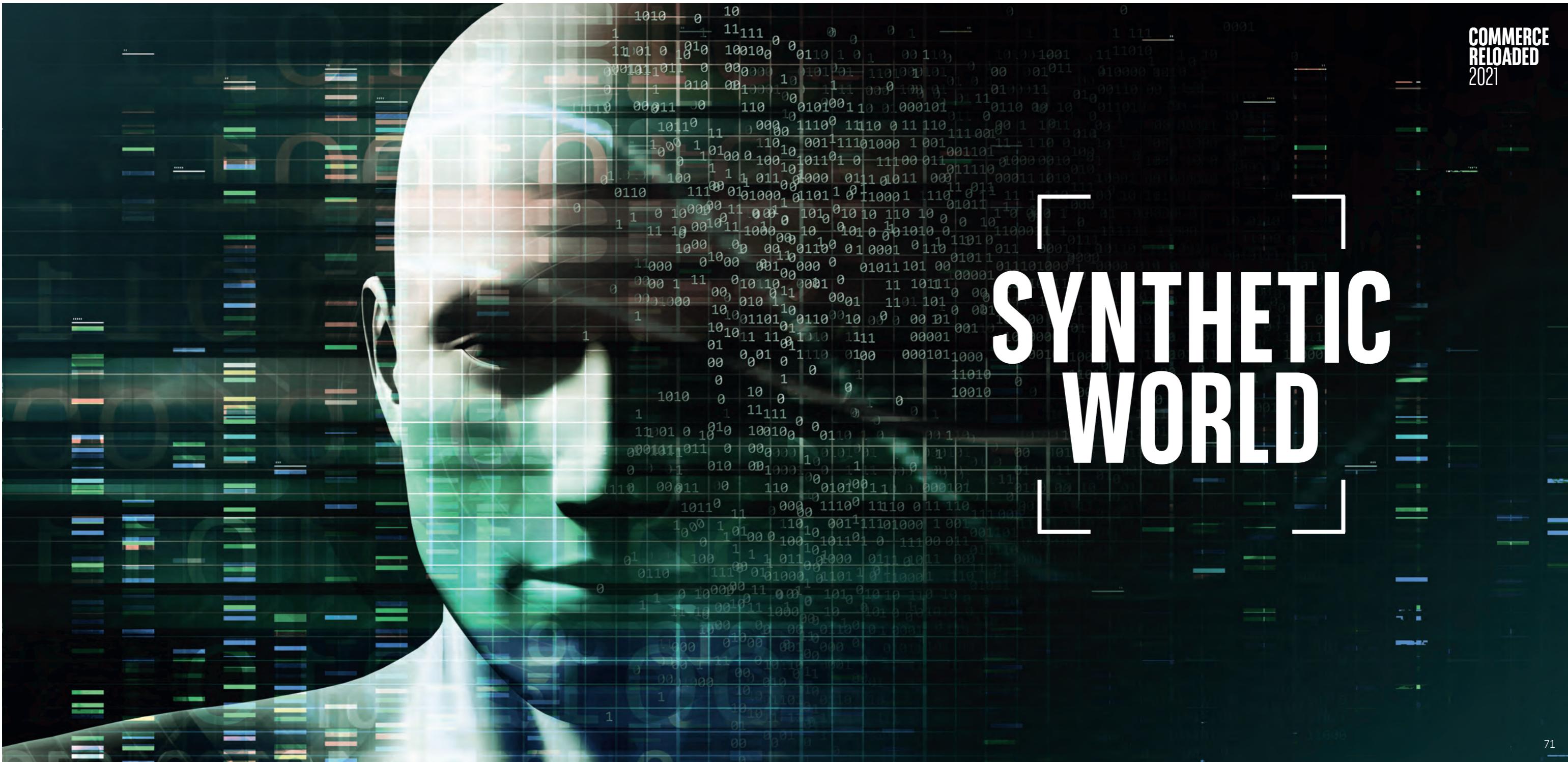
each with an audience of several thousands of millions of users, their field of potential grows. Our "home", "car", or "health" data can offer them the means to centralise and monitor all data relevant to our everyday lives. Finance, shopping, deliveries, entertainment, etc., they are all in the process of joining together, fluidly and naturally, to benefit, and also capture, users.

By entering the life industry, banks and neobanks such as Sreb, Paytm and Tinkoff, mobility and transport players such as Gojek, Grab, Uber and AirAsia, retailers such as Walmart, Kroger, Suning and Cdiscount are trying to weave converging ecosystems where the ambient service will occupy a central place in our homes!



Source: Cdiscount

SYNTHETIC WORLD



Synthetic world

From living to digital, synthetic technologies are turning our consumer societies upside down. In the field of life, science has made enormous progress. Today, according to the UN, a 13-year-old girl has a one in two chance of living to 104. Such a demographic shift will have a huge impact on our consumer ecosystems. At SXSW, the head of geriatrics at Mount Sinai Hospital in the US clearly advised brands to create the position of 'Chief Elder Officer'. Retail must be prepared to welcome new products from research laboratories and to see the emergence of new consumer drivers.

On the other hand, science is revealing new solutions to the challenges faced by humanity. The cellular world could become the new black gold of tomorrow's food industry, energy production and real estate.

At the same time, hyper-digitalisation will lead to an unprecedented rise in synthetic content. Like the world of film, we will have to ask ourselves questions about this matrix-like world that is being developed using algorithms. Will we be living in a virtual world? Will we still be able to discern the real from the fake on digital platforms?

SYNTHETIC BIOLOGY TO CHANGE THE WORLD

Synthetic biology combines engineering, computer science and biology. This allows scientists to create,

alter, optimise or divert organisms at the cellular level. The world has recently discovered this discipline with the rise of messenger RNA vaccines to combat Covid-19. Synthetic biology opens up a science fiction paradigm in which human cells will be able to recombine to heal themselves without our needing to take medication. This new organic dimension will above all impact the food industry by creating new foods. Food that is also more climate-friendly. And what if tomorrow it was our DNA that decided what we eat for us?

WHAT IS THE FOOD OF THE FUTURE?

At the start of the Covid-19 pandemic, food supply chains came under strain, particularly in meat packing plants in the US. This is a blessing for plant-based meat, which has gone from being a media buzz for well-off hipsters to a tangible reality at the point of sale. Brands such as

Beyond Meat and Impossible Foods have taken advantage of this to place their products in fast food chains and supermarkets. A multitude of startups and traditional food companies have joined the fray offering consumers more and more meat substitutes around a marketing positioning combining healthier but also more environmentally friendly food.



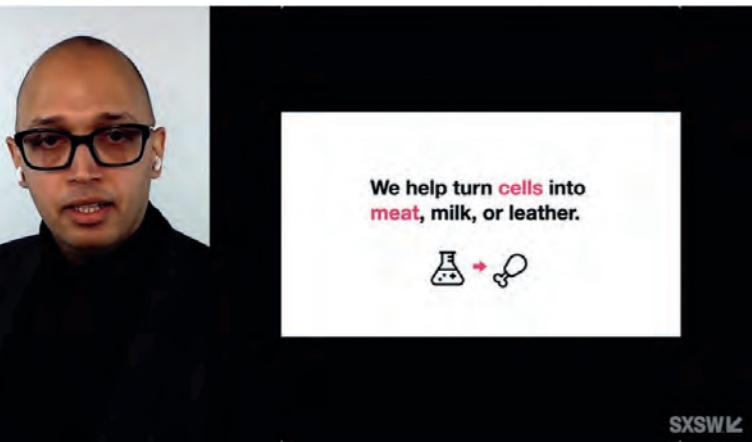
Source: Impossible Foods

NotCo, a Chilean plant-based food company, is a perfect example. It uses algorithms to analyse the molecular structure of certain foods such as beef, milk or eggs to create plant-based alternatives. How? By comparing this molecular composition with those of plants to find similarities. Its algorithms then identify several combinations of plants to best mimic the colours, textures and tastes of food. Its latest product, NotMilk made using AI, cabbage and pineapple, uses 92% less water, 74% less energy and emits 74% less CO₂ than ordinary milk. NotMilk is now available from the American retailer Whole Foods Market. NotCo is also NotBurger, NotCream and NotMayo; a chickpea-based mayonnaise created four years ago that has already captured 12% of the mayonnaise market in Chile.



Source: NotCo / l'Echangeur

But more fundamental innovations entered the food market last year. This is the case with cell culture, which produces food from animal cell cultures. In practice, this technology makes it possible to offer consumers products that are molecularly identical to animal products without having to kill animals. It all started in Singapore with the American startup Eat Just, which received approval from the Singapore Food Agency to sell its cell culture products in the restaurant 1880. So, in Singapore you can buy a 'cellular' chicken fillet! Other players to watch include Finless Foods, which makes fish fillets from stem cells, and MeliBio, which produces organic honey in the laboratory without the need for bees. Future Fields, a Canadian start-up dedicated to cell culture, wants to reinvent agriculture around biology by creating and structuring a sector dedicated to cell agriculture.



Source: futurefields.io

This is an emerging trend that will rapidly accelerate if the growth in investment in this sector is anything to go by. Although in 2020, US investments in FoodTech startups dedicated to plant products increased by 175%, those concerning cell culture exploded by 760% according to Pitchbook.

DNA - NEW CUSTOMER DATA FOR RETAIL

It is clear that with the pandemic the link between our food and our health has been highlighted more than ever. The Israeli startup AlgoCart has understood this and is building a platform to provide each consumer with personalised food recommendations. The aim is to create a search engine that can be integrated into Walmart, Sonae, Rewe or Carrefour websites to take into account the pathologies or allergies of consumers.

AlgoCart

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Source: AlgoCart

A consumer with a heart condition will only be able to buy products that are appropriate for their condition. Eventually, the startup wants consumers to be able to integrate their blood tests and health checks into its solution so that its artificial intelligence can go even further in personalising their food. According to AlgoCart founder Yuval Canfi, in the next 20 years or so, the genetic profile of consumers will also be taken into account to influence food purchases.

Two years ago, we talked about DNAnudge, a British start-up that helps consumers choose their food according to their DNA profile. They offer a solution in the form of a connected bracelet. The DnaBand combines the health data it captures with DNA testing. A test kit is provided to allow the user to send their genome to the manufacturer. Once tested, users can start using the smartphone app, DnaNudge, or wear the DnaBand on their wrist to scan over 500,000 food and drink barcodes. The objective is to assess the suitability of products according to their personal genetic profile. This is called nutrigenomics. Nutrigenomics makes it possible to link an individual's DNA profile with the impact of diet on their body and health. It helps to learn which nutrients will be more easily assimilated by the body. There are small genetic variants that prevent vitamins or minerals from being metabolised correctly, necessitating a higher daily intake requirement for the body. Some of this can be detected in the genes. Every



Source: avg.com

**WITH THE PANDEMIC,
THE LINK BETWEEN
OUR FOOD AND OUR
HEALTH HAS BEEN
HIGHLIGHTED
MORE THAN EVER**

human being is different, and many of the reasons for these differences can be found in our genes.

This trend is gaining momentum among the food giants.

Numerous players including Genopalte, Ubiome, AGS Fitgene, LIFEdatal Pathway Genomics, Mapmygenome and DNAfit are preempting this market.

A few years earlier, Nestlé, through its Nestle Wellness Ambassador programme, launched a personalised nutrition programme in Japan using artificial intelligence to tap into the DNA of its customers. Members also receive



Source: Genopalate

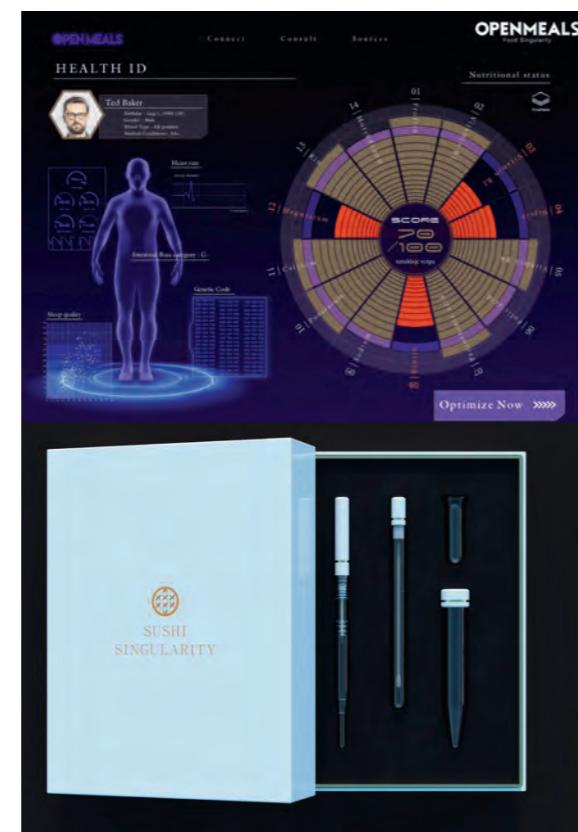
a kit to provide Nestlé with a blood sample and DNA to help refine recommendations for conditions such as cholesterol or diabetes.

Also in Japan, the Sushi Singularity project, a restaurant opened in 2020, combines genomics, 3D printing and the art of sushi to create a unique and personalised dining experience. People who want to experience this new way of working will receive a medical analysis kit containing several pipettes a few weeks before their booking. They have to send the kit to Sushi Singularity, which will take care of making customised sushi, printed in 3D cubes.

Algocare, a South Korean company, even goes so far as to offer a connected dispenser for personalised nutrition that distributes just the right amount of nutritional tablets to users by analysing their health data.

This merger of health and retail is still in its infancy. As the old adage of business says, the more data you collect about an individual, the more companies can understand them and tell them about them. Here, it is no longer about our so-called personal data, but

about DNA guaranteeing the origins which form us! In 2021, will we see an increase in cross-sector collaborations where health will be embodied in our DNA? This will be the first ingredient to better understand users and citizens, and to offer them more suitable products.

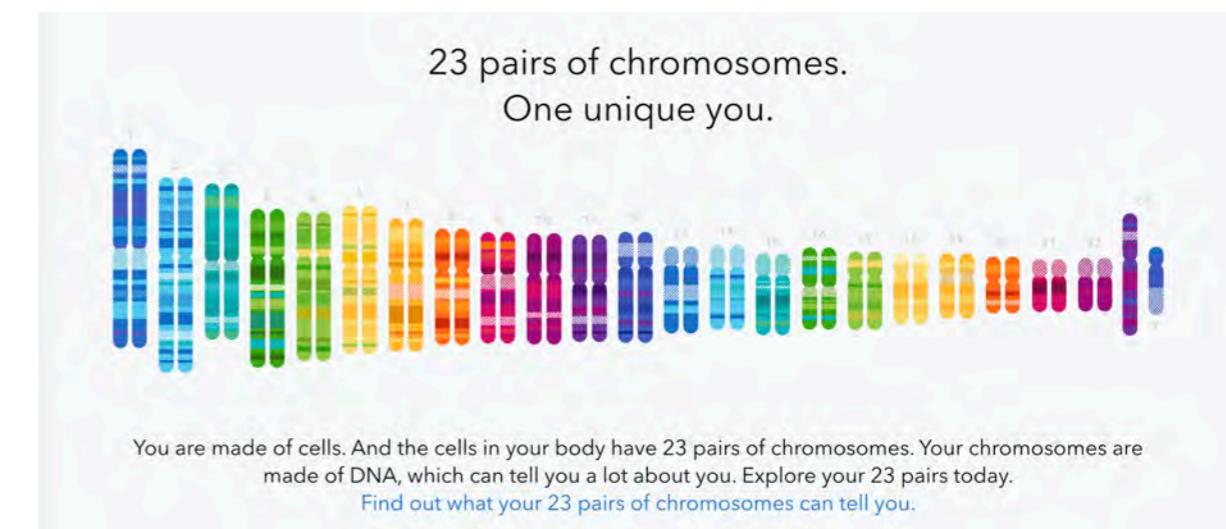


Source: Sushi Singularity



Source: AlgoCare

According to the start-up Open Meals, which initiated the project, "hyper-customisation will be a common criterion for the meals of the future. On the basis of DNA, urine



Source: 23andMe

and intestinal tests, everyone will have their own health ID. This identity will be analysed and a nutritional match will be calculated to meet nutritional requirements using biometrics."

Similarly, beauty and wellness are sectors where DNA testing is already well established. Over five years ago, Japanese cosmetics giant Pola Apex launched a DNA testing service to help customers find the right anti-ageing cream. In Sweden, the start-up Allel offers a range of over 16 DNA tests for cosmetic use. A real ecosystem has been created in just a few years for the use of genetic data in the context of beauty and well-being advice.

The widespread availability of DNA tests and DNA sequencers at low cost, between €100 and €150, is accelerating, as shown by the market leader 23andMe.

Known worldwide for its DNA testing, it is now the largest research database containing millions of human genotypes. During the pandemic it launched the largest genomic study to measure the correlation between genetic inheritance and the intensity of Covid-19 symptoms.

Recently, 23andMe, in collaboration with Airbnb, has been offering trips tailored to your genetic make-up.

This heralds an increasing involvement of our DNA in our daily lives, like DnaNudge in the UK and IcarbonX in China (mentioned in the last Commerce Reloaded).

Since the end of 2019, Apple has been offering its employees DNA screening and analysis (with its partner Color Genomics) at its various 'AC Wellness' clinics. The future ambition is to provide personalised advice and treatments to the general public based on their DNA and other data collected and cross-referenced in real time thanks to connected devices (Apple Watch, Apple EarPods, etc.). The user will be able to see all this data in a simplified and understandable interface.

Moreover, European consumers seem ready to hand over their DNA. A Euromonitor study states that 21% of European consumers say they are willing to donate their DNA in order to receive personalised products tailored to their genetic profile. Regulations differ greatly from country to country, but every year minds are opening up about genetic manipulation. The ethics of 2030 will certainly be very different from those of 2021. It is possible that the guarantors of our DNA will be a player like Amazon or Walmart; both companies

are currently investing heavily in the health and genomics sector.

From food to health to well-being, our genetic profiles could become the main drivers of consumption in a decade.

DEEPTECHS TO SAVE US ALL

Despite better nutrition, science needs to prepare for the future environmental crisis. Solutions are emerging all over the world, from the living world. It is in this respect that DeepTechs or disruptive innovations give hope. A hope made possible by the infinitely small.

The major issue behind these innovations is obviously the fight against climate change. To achieve this, a new generation of nuclear power plants could be created with molten salt reactors, a technology that provides greater stability and eliminates many of the risks associated with nuclear power. It is a major step forward that makes it possible to consider closing thermal power plants while making nuclear power a clean energy source in the long term.

The abandonment of fossil fuels is also possible through life science. Bioethanol can be produced using microbes and yeast. It is a question of transforming cells into a production plant. The cells are already capable of producing bioethanol, medicines or food in the laboratory. Chemistry and biology at the scale of the nanoparticle can even create new materials and compounds. What if the cellular world came to correct human errors concerning the environment?

In the field of health, the latest technological advances such as stem cell fusion and gene therapies could enable humans to live much longer than a mere 100 years. Indeed, biotechnology is coming to the aid of human beings to combat chronic diseases and develop personalised medicine. Stem cell research has made so much progress in recent years that it is now possible to transform stem cells into adult cells, but also vice versa: adult cells can be transformed back into stem cells, for example from our own blood. These advances hold the promise of creating tailored, individualised, personalised and optimised health for all of us. Today, the costs of achieving this kind of scientific feat are astronomical. But machine learning could make such solutions economically accessible in the future.

These technologies will be beneficial if they develop, spread and are adopted around the world. We therefore already have to think about the internet of 2040, an Internet that could be quantum. An internet of shared computing power offered by quantum computing that will open up avenues previously reserved for science fiction.

Quantum computing is beginning, a quantum network that could be a reality by 2030 according to some experts. Thanks to this network, the full power of quantum computers would be made available to the user community, power to better secure sensitive data

or to find new medications faster. Mastering quantum computing is a race between countries. In this field, as with Artificial Intelligence, China and the United States are currently the countries that file the most patents. In view of the potential offered by quantum control, this technology constitutes a veritable geopolitical asset. This computing will allow DeepTechs to take control of the world and help mankind meet future challenges.

**GENE THERAPIES
COULD ENABLE HUMANS
TO LIVE MUCH LONGER
THAN A MERE
100 YEARS**

DeepTechs hold out the hope of a better world by addressing the challenges facing humanity. Its future belongs more than ever to the infinitely small, from the cell to the atom!

SYNTHETIC MEDIA AT THE HEART OF OUR LIVES

Synthetic media has been in the spotlight for the last two years or so, whether it be news anchors as virtual avatars in China, synthetic voices on voice assistants or, more generally, media content creation involving artificial intelligence. Synthetic media will be able to change the paradigm of content creation, communication, storytelling and therefore influence the consumer relationship at a time when e-commerce is exploding. But at the moment, in the world of synthetic media, everyone is talking about deepfakes, whether they are playful, manipulative or even dangerous.

DEEPFAKES TO CONTROL THE WORLD

Synthetic content creation is booming. Face-change apps such as Reface or Doublicat are very successful. The latter indicates widespread use of content created and altered by algorithms.

Today, algorithms can copy an individual's voice to make it say what you want in a video. It can also be made to speak several languages with the tone of its voice. This was done with David Beckham as part of a campaign to fight Malaria in 2019. A few weeks ago a new awareness campaign was launched, this time featuring an ageing David Beckham. In this context, the



Source: Malaria No more/CNN



Source: Reface

use of technology is positive, for the common good, which doesn't pose any ethical problems.

Deepfakes are also used to generate faces of people who never existed. For example, they make it possible to anonymise video testimonies of war victims instead of simply blurring them, while retaining the visual emotion in the face. Recent reports by the BBC show that viewers are more affected by these virtual faces than by blurred ones.

However, these same technologies are also used for criminal purposes or to manipulate information. According to Pindrop, a provider of call centre solutions, voice fraud in the US was worth \$14 billion in 2020. Fraud is on the increase due to the democratisation of access to synthetic voice technologies. A simple recording of our voice

lasting a few minutes allows the algorithms to create a vocal double.

Individual reputations can therefore also be attacked by deepfake technologies. In 2018, actress Natalie Portman found herself caught up in a humiliating situation on the Reddit network. Her face had been integrated into adult film footage. Today on the Dark Web, for only a few dollars, it is easy to put your worst enemy in the place of a pornographic film actor.

Unfortunately once the damage is done, it is very difficult to undo, even if it has been proven to be a deepfake video. This is especially true during election periods when time is of the essence. Deepfake will therefore become a real weapon of manipulation and political propaganda in the years to come. A weapon that could endanger even the oldest democracies. Just look at the rise of conspiracy theories since the beginning of the health crisis in 2020!

FROM VIRTUAL INFLUENCERS TO DIGITAL IMMORTALITY

MOTHERBOARD
TECHBYVICE

I Paid \$30 to Create a Deepfake Porn of Myself

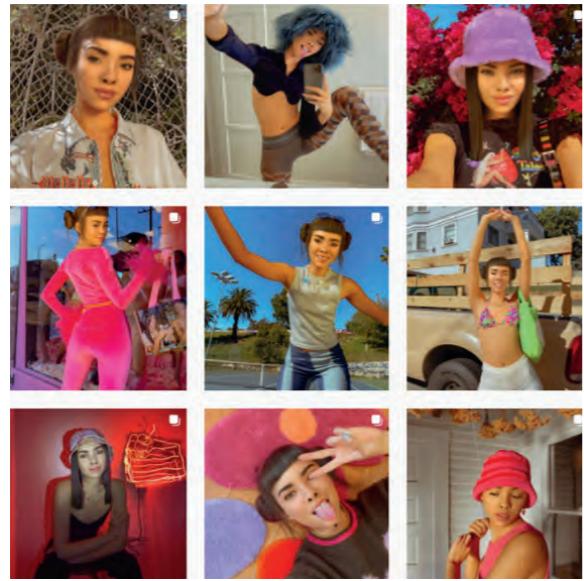
An inside look at the world of custom-made deepfake forums, and the motivation of people who make them.

By Evan Jacoby

December 9, 2019, 3:00pm [Share](#) [Tweet](#) [Snap](#)

Source: vice.com

There are already virtual influencers such as Lil Miquela, an avatar followed by 2.5 million people on Instagram and which brands like Prada use to promote their products. Real singers even record music with her. In Japan, a man married the virtual J-Pop singer Hatsune Miku, a real superstar.



Source : Instagram @lilmiquela

The film industry is also seizing on synthetic media, and not just for animated films. The humanoid robot Erica, created by the Hiroshi Ishiguro laboratory, will be the star of a science-fiction film, the shooting of which began in Japan, had to be stopped because of the Covid-19 crisis. Its release will be a world first! For the first time, a robot will be the main star of a film. Erica learned how to act from the data collected on acting and put through the machine learning mill.

At the Consumer Electronics Show 2021, LG presented its products with the help of a synthetic avatar or influencer called Reah Keem. It promoted the new Gram range of lightweight laptops and the UltraFine OLED Pro 4K monitor.



Source: Syfy

The world of modelling is also being turned upside down by technology, as shown by the arrival of the virtual supermodel Shudu, a model who has just promoted Rihanna's make-up range. Shudu even appeared in the Australian version of the fashion magazine Vogue. Some fashion experts predict that virtual models could replace their human colleagues. Logically, they have perfect bodies, don't complain and cost much less.

Sony has gone so far as to present a solution for virtualising its artists, so they can perform concerts in virtual worlds. The first was with the digital double of the singer Madison Beer. In some way, this virtualisation makes artists immortal. Their avatar could therefore continue to sing with their synthesised voices even after they die. Beyond singers, the same can be said for actors. Ethan Hunt from Mission Impossible could forever be played by Tom Cruise or at least his digital double. But will artists still own their image during their lifetime and after their death?



Source: @shudu.gram

TOWARDS A DIGITAL TWIN

The notion of a digital double is not new. A digital twin is simply a piece of software that copies an attribute of the physical world. Many companies use digital modelling to work on various projects, from building an engine to developing medicines.

In healthcare, a French start-up like ExactCure uses digital twins of patients to develop the best possible treatment. Digital duplicates are used to visualise and simulate interactions with the patient according to their pathologies. A patient's digital twin will also allow doctors to train before an operation, for example, to perform a complex procedure.

Chevron expects to save millions of dollars in maintenance costs for its oilfield equipment by using digital twin technology. Deployed by 2024, it will enable it to model and anticipate the maintenance work to be carried out, for example, on its oil platforms. In Formula 1, digital twins of race cars are already used to prepare and model race strategies and practice repairs. This partly explains the success of a team like Mercedes-AMG Petronas in recent seasons.



Source: Tibco

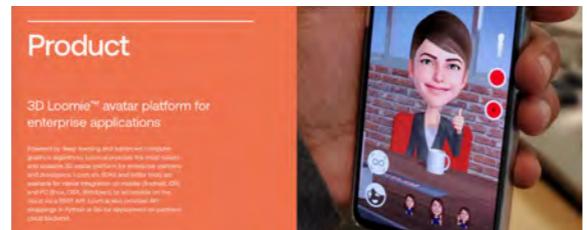
Cities are also affected. Singapore has its own digital duplicate to model its future urban developments. Amazon is synthesising entire neighbourhoods of American cities to train its autonomous robot delivery algorithms.

On China Central Television, the human hosts were joined by an artificial copy of themselves. Future applications of this type of technology being promoted by Samsung's subsidiary Neon will enable the creation of remote teachers, financial advisors and even virtual doctors for telemedicine. These virtual agents will be directed by artificial intelligence and will show empathy through image recognition and semantic analysis. They will then be able to adapt their speech and advice to the emotional state of their listeners.



Source: China Central Television

Tomorrow we will even be able to create our own digital doubles, twins that we can send to meetings on Zoom instead of us. This is what the American startup Loom.ai, which was bought by Roblox, the video game platform, began offering a few months ago. Thanks to artificial intelligence, our avatars might just as well give us a summary of the discussions.



Source: loom.ai

Our avatars could also go shopping for us in a virtual shopping centre. With the pandemic and the rise of online shopping, consumers may have to shop in digital copies of their supermarket and then be delivered to their homes. Our digital twins would then do this shopping, much like the Laval Virtual 2020 event where participants had an avatar in a virtual world to access the event's talks. It's an incredible way to rethink the applications for the user experience in retail.



Source: l'Echangeur / Laval Virtual

It is also a way to move towards digital immortality and to continue to live in a virtual universe as presented in the now legendary film Ready Player One. A more existential question stems from the rise of these synthetic technologies: are we really alive or just mini-programmes in a much more complex software programme?

This is a question that is easy to chuckle about, but is currently the subject of very serious studies in Japanese, British and American universities. The result is that there is a 50% chance that we are in a computer programme!

International Journal of Quantum Foundations

An online forum for exploring the concepts of quantum field theory and quantum gravity

You are here: Home ~ On Testing the Simulation Theory

Published by International Journal of Quantum Foundations on June 17, 2017 | 1 Response
Volume 3, Issue 3, pages 78-99

Tom Campbell [Show Biography], **Houman Owhadi** [Show Biography], **Joe Savageau** [Show Biography], and **David Watkinson** [Show Biography]

Can the theory that reality is a simulation be tested? We investigate this question based on the assumption that if the system performing the simulation is finite (i.e. has limited resources), then to achieve low computational complexity, such a system would, as in a video game, render content (reality) only at the moment that information becomes available for observation by a player and not at the moment of detection by a machine (that would be part of the simulation and whose detection would also be part of the internal computation performed by the Virtual Reality server before rendering content to the player). Guided by this principle we describe

Source: International Journal of Quantum Foundations

CONCLUSION

Hello,

It is 11:30am,

I am writing to you from my practice in the psychology of virtual and real identities. Which means I'm writing from your future. Many of my clients are undergoing neurological re-education suffering from an unbalanced virtual ego-superego relationship. The only remedy is to reconnect to Reality!

Remember, the 2020 pandemic hit us hard, reminding us of the uncertainty of our Real world? From there, everything accelerated, becoming the stem cell of the Reality from which I speak. We are now where you will be in twenty years.

I am writing to you from a world in which your genetic code serves as a social identifier to access your life platform! These platforms manage every aspect of your daily life: housing, energy consumption, food, mobility, health, leisure, clothing and much more. Thanks to your genetic profile, Amazon hyper-personalises your food by offering you its nutrigenomic services via its cellular farming services that have replaced the farmers of old. There are only a few remaining for the purpose of tourism. And Walmart,

in partnership with the logistics entity of Space X, 3D prints your meals on demand, always according to your DNA profile.

On the health side, the gene therapy promoted by Amazon to live beyond a hundred years and become a Super Prime Life member has reached its first billion users! Besides, seniors have become the main vectors of economic stability and global consumption in this Real world!

In 2030, I discovered the political group, the 'Synthetics,' on Twitch via a completely virtual political influencer. Thanks to them I discovered the debates on regulating the attention market, became aware of digital identity and the tax exemption for digital purchases considered at the time as less energy consuming (NFT, Skins etc.).

Their proposed law to integrate Elon Musk's avatar into his civil status was taken up, who since 2038 has been president of the virtual republic Fortnite Nation, South Africa and the first investor on Mars. Surprised? Let me tell you how he got there...

Following the 2020 pandemic, the extension (or even integration) of sensors to our bodily, domestic and professional surfaces, combined with the power of AI, was the major objective of our technology giants at the time (GAFAM and BATX).

The goal was to invent a new world, a world with infinite possibilities. The millions and billions were no longer human beings with their individual or family preoccupations, difficult month ends, unexpected sorrows, unexpressed hopes, but prototypes. What was important for these masters of the algorithm was to be able to capture all the behavioural habits that could be analysed, encrypted, calculated and structured.

There was no limit to transforming the world into data and the uses that could be created from it!

Elon Musk, then president of SpaceX and Tesla, had created a new company called Neuralink, whose mission it was to develop new human machine interfaces implanted in the brain. According to him, it was urgent to hybridise our brain with electronic chips before AI turned us into pets!

This democratisation of brain chips, coupled with synthetic media, initiated brain manipulation. Ideologies were replaced by instantaneous emotions to which we are now all attached by a community of emotions, rather than of interests.

The chips initially launched by Neuralink and Elon Musk, were reserved for South Africa in 2035 when he came to power. Today, South Africa is the world's leading power, dominating the political world on Earth

and in space thanks to its space mining capabilities. With its grip on metal and rare earth resources, it has freed itself from international trade treaties and made Africa the continent of the future.

The rest of the world, wanting to free itself from dependence on suppliers of metals and rare earths, has managed to free itself in part from a capitalist model, moving towards a circular economy.

Finally, an entire community has been built around the desire to find a balance between their real identity and the need to develop other digital lives with the common good in mind! It's fascinating, and I'm already considering a new life transition.

I need to go, my 11:50 client has arrived.

Isabella

06/06/2040

Echangeur BNP Paribas Personal Finance for further joint collaboration

Founded in 1997, the purpose of Echangeur BNP Paribas Personal Finance is to analyse and anticipate the future of commerce to inspire BNP Paribas Personal Finance and its partners in the commercial world.



Based at the headquarters of BNP Paribas Personal Finance in Levallois Perret, France, its showroom is dedicated to sharing and ideation. The site embodies the analyses made by Echangeur experts across the world.



CONSUMER TRENDS,

thanks to a vast biennial survey now available in several European countries. Consumer behaviour is meticulously scrutinised so as to always better understand customer uses and journeys.



TECHNOLOGICAL DEVELOPMENTS,

thanks to a selection of startups, inspired by the coverage of global events, NRF New York, CES Las Vegas & Shangai, SXSW Austin, Vivatech Paris ... and exchanges with the digital ecosystem in close connection with the world of commerce.



THE NEW CUSTOMER EXPERIENCE,

thanks to the scripting of best practices from the world of commerce and international store tours (New York, Paris, London, Berlin, Barcelona, Shanghai etc.). These drivers for ideation are all strengthened by this in-the-field feedback and prolific discussions with the world of retail .

The insights are conceived and selected by the Echangeur to implement lean innovation. They offer the right breeding ground for letting go and creating the conditions for change. They favour informed transformation when decisions are a matter of sense and arbitration. Each year, more than a hundred brands from the world of international retail benefit from this support.

>>>>> [@ECHANGEUR](http://WWW.ECHANGEUR.FR)

For more than 20 years, BNP Paribas Personal Finance Echangeur has been an intersection bringing together French and international economic players from all walks of life: banking/insurance, agri-food, retail, automotive, media, pharmaceuticals and more.

They all meet together in Club Echangeur, a place for sharing and discussing ideas, both physically with the showroom, and digitally.
On the programme:

IN THE PROGRAM:

- Participation in the Commerce Reloaded & Innovez Service Centric conferences,
- Reading trend reports,
- Accessing weekly webinars,
- Analyses of customers and brands via the Access Panel for Belgium, Spain, France and Portugal,
- Discovering breakthrough innovations: services, stores and technology,
- Discussions with a network of fifty international startups,
- Visiting inspiring stores in Europe, USA and Asia,
- Discovering the key global technology trade shows,
- Organising keynotes and workshops on request.

Interested?

Join Club Echangeur and invent tomorrow's retail together.
Link to the QR.



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Did you enjoy the Commerce Reloaded experience and would like to share it with your employees?

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GUILLAUME RIO



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