Technology Watch at CES
Theme : “Best of CES”

David Becker / GETTY IMAGES NORTH AMERICA / AFP

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ABSTRACT

The "Best of CES" technology watch mission aims to highlight the most emblematic and unexpected elements of this CES 2018.

The aim is to question the emerging trends that emerge from this event while keeping in mind that the CES is a gigantic "laboratory of ideas". Indeed, companies do not necessarily come with a commercialization-product goal but some come to understand the reaction of the public regarding their products or technologies.

The applied methodology was carried out in three steps :

1) Upstream of the show: study of present companies, study of CES nominees unveiled analysis of keywords trends on Google ...
2) During the show: study of trends, analysis of company profiles, study of press articles (specialized or not) …
3) After the show: analysis of collected data, analysis of press articles (specialized or not), edition of the report …

Technology Watch

To mention the best elements and trends of CES 2018 can not be coherent without a relative sectoral division. So, in this report, we have chosen to highlight the main trends of this CES 2018 in the following themes : Automotive, Artificial Intelligence, HealthCare, Audio & Music, Drone & Photography & Stabilizer & Video, Smart Home & Smart Energy & Smart City, Robotics, Virtual Reality & Augmented Reality.

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THEME : Automotive

It is possible to summarize the presence of automotive stakeholders on this CES 2018 with the following idea: who will be the first, the most innovative on connected vehicles and autonomous vehicles?

It can be noted that car manufacturers have almost all the same speech on the subject of the autonomous car: the technology is almost ready (2020 for some manufacturers) but the implementation of the commercialization will be slow with the need for a legal framework adequate.

However, this unrestrained race is made possible only to the various partnerships that concluded the car manufacturers with each other, with the telecom operators, with the chipset manufacturers …

Nissan : focus on the "brain to vehicle" tech (B2V)

Nissan unveiled research today that will enable vehicles to interpret signals from the driver's brain, redefining how people interact with their cars. The company's Brain-to-Vehicle, or B2V, technology promises to speed up reaction times for drivers and will lead to cars that keep adapting to make driving more enjoyable.

Via ABC News, a Nissan spokesperson indicated that the brain-to-vehicle tech is pushing back against autonomous vehicles by ensuring that drivers won't become obsolete. By wearing specially designed helmets and sensors, the B2V will theoretically be able to anticipate the driver's movements ahead of time. For example, the car will automatically begin turning the steering wheel or accelerating based upon the data from the driver's brainwaves, which is interpreted in real time.

Thus, the car can react from 0.2 seconds to 0.5 seconds faster, for commands such as brakes or steering. And it remained imperceptible.

Rinspeed : Snap Concept

Intended for an urban environment, the latter has a chassis and a body dissociable. The chassis can thus be integrated on various structures. "Bodywork" can take the form of delivery vehicles, public transport vehicles or mobile homes. As for the bodywork, it can be elevated thanks to telescopic legs, which release the platform, it can go to recharge alone, to be replaced by another with the full battery.

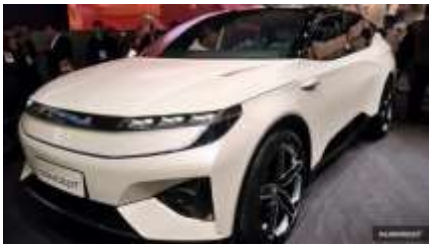
The chassis is driven by an electric motor of only 51 kWh, the equivalent of 69 horsepower, and boasts acceleration from 0 to 100 km / h in 5 seconds. Rinspeed estimates that the speed will peak at 80 km / h and that the autonomy will be 100 kilometers on a charge. Inside, no control or steering wheel, there is cockpit for four passengers. Each has three screens. Windows are designed to display information inside and outside. Driving is autonomous.

As usual, Rinspeed has appealed to many partners: 4erC and Esoro for design, ZF for electric motor, Osram for lighting, Gentex for blackout, and Harman for HMI and autonomous driving level 5 (100% autonomous in all conditions, without human intervention).

So we can summarize the product of the Swiss Studies Office of Frank Rinderknecht by this analysis : it is a vehicle consisting of a platform capable of moving autonomously, on which it is possible to set up several interchangeable bodyworks.

Byton : Byton Concept

Byton, a young Chinese automaker, unveiled its first 100% electric and autonomous SUV concept car. The manufacturer plans to arrive on the Chinese market in 2019 and Europe in 2020.



With his first model, Byton intends to compete with Tesla. And for this, the Chinese start-up promises an autonomous driving level 3 (level 4 scheduled for 2020, via an update). This SUV will also be loaded with technology. The manufacturer announces three cameras arranged in the amounts of the car to identify the driver and his passengers and thus unlock the car and propose custom settings. The manufacturer also announces an artificial intelligence to adapt to the habits of the people inside.

Once installed in the car, the first detail that is obvious to us is the huge screen of 125 x 25 cm (a diagonal of 127 cm - 50 inches) embedded in the dashboard. It is controllable by gestures and voice via the integration of Alexa (Amazon voice assistant). Byton also focuses on occupant health. The SUV will be equipped with various sensors, such as measuring heart rate, blood pressure or even weight thanks to the pressure sensors built into the seats.

To top it off, passengers will also enjoy a built-in 5G connection to the car to browse and stream content while driving.

The car will be available in two versions (basic and higher version). According to the manufacturer, a fast charging station will provide 80% of the charge in 30 minutes.

Toyota : e-palette

Toyota envisions the e-Palette concept as an open-source mobility solution for varied tasks ranging from delivery services, ride sharing, and retail shopping.

Autonomous, connected and shared, it is designed to operate 7 days a week and 24 hours a day. Able to move people, goods or both at the same time, it is a new alternative to public transport and fits in the heart of the smart city.

Technically, the Toyota e-Palette consists of a platform comprising battery and electric motor, surmounted by a cubic body maximizing the interior space. Its length can vary between 4 m and 7 m to meet the maximum possible applications. Indeed, Toyota anticipates that its concept car, will be available in three different sizes, to meet the needs of all companies around the world. The Japanese manufacturer delivers the same "platform" to all its partners (Pizza Hut, Amazon, Uber ...) It is then up to them to customize the interior of the Toyota vehicle.

However, it will wait to see these Toyota e-Palettes on every street corner ... The Japanese brand hopes, indeed, to perform the first tests of these vehicles in the early 2020s and eventually provide mobility solutions to athletes participating in 2020 Olympic and Paralympic Games in Tokyo, Japan. Case to follow.

NVIDIA : autonomous car technology

The company is a major player in the field of graphic processor sales, and is now positioned as a "future-big" in the intelligent and autonomous car sector.
NVIDIA does not want to position itself as a car manufacturer but as a global partner able to provide computational solutions that will serve as a brain for the autonomous car.

The most important announcement made by NVIDIA is the release of the Pegasus card, a computing card (large as a license plate), dedicated to fully-level 5-level vehicles, featuring two Xavier SoCs and two new generation GPUs, enough to handle 320 trillion operations per second.

NVIDIA also indicates that "all these calculations must be done with several levels of redundancy to ensure high security and the needs of a car without a driver are easily 50 to 100 times higher in terms of calculation than most cars. advances available to date "

In terms of partnerships, NVIDIA has already signed with Uber and VOLKSWAGEN on autonomous car solution issues for the first and AI-based virtual co-pilots and augmented reality for the second.

THEME : Artifical Intelligence (AI)

Overall, artificial intelligence was really the transversal theme of CES 2018 (new wave of connected objects, voice and personal assistants, automotive sector …).

Besides how not to mention the CES 2018 without mentioning the omnipresence of the Google ecosystem ? (in focus the Google Home personal assistant).

Voice assistant was therefore very present on this CES 2018 with many brands and many technologies : Google Home, Apple Siri and HomePod, Microsoft Cortona, Samsung Bixby and last but not least, Amazon Alexa.

Very Clearly the fight is between *Google* and *Amazon* !
The two assitants find themselves in "embedded solutions" in many devices of different brands: LG, Sony, Onkyo, Pansonic, Toyota, Lexus, Philips, Sonos …
Two figures illustrate this open war between the two firms: Amazon has confirmed that it has already sold more than 20 million *Amazon Echo* (connected speaker boarding the digital intelligent voice assistant Amazon Alexa) between June 2015 and September 2017 when at the same time Google has sold a *Google Home* every second since its launch in October 2017. The problem for Amazon is the delay in the field of smartphones where Google and Apple have a major lead.
To catch up, Jeff Bezos's firm announced the release of Alexa Mobile Accessory Kit: a new platform that allows manufacturers to easily integrate Alexa and benefit from the features of this artificial intelligence on their products : watches, headphones and activity tracker.
In general, the Google assistant will be more and more present in the products in 2018.

A new category is born during CES 2018: speakers equipped with a screen in the same way of *Smart Display*. All of these new speakers (JBL Link View and Lenovo Smart Display) are currently equipped with Android Things, the operating system of Google dedicated to connected objects. This perspective adds a few features to a classic Google Home, such as watching YouTube videos or video calls on Google Duo. These new items have one goal: to prevent Amazon Echo from being successful! One way to prevent Amazon from taking control of the market, which remains the leading consumer connected speakers in the United States.

Fortunately, AI is not represented only by the voice command on this CES 2018. Indeed, AI was also represented by the different technologies put in place to allow the coordination of connecetd objects in the house 2.0. Today, with the arrival of AI in this area, we see the emergence of "intelligent" systems that learns by themselves by analyzing the tasks that users manually do to automate them.

By 2020, no less than 21 billion connected objects[1] could be in circulation, nearly 30 per household[2]! The multiplication of these objects in our daily lives will make their use humanly unmanageable. Artificial Intelligence holds the key by allowing them to make the right decisions at the right time without asking their owner.

Thus at CES 2018, we were able to discover the French start-up *CareOS* which proposes to specialize in the "orchestration" of these connected objects in a particular room: the bathroom! The purpose of this company is to preserve the confidentiality of the data collected locally through mirrors or connected toothbrushes, for example. The possibilities are limitless : touchless interaction, facial recognization, AI for makeup, augmented reality, skin analysis, voice command, 4D visualization, voice command, smart lighting …

Another example is the French start-up Ween.ai, which obtained an innovation award on this CES 2018. The adage of the company is very simple : “the goal of the smart home is not to heat at 20 ° C or vacuum, but to do it at the right time”. The main challenge is to adapt to the daily schedules of the user who constantly change.

Unlike the traditional learning system, ween.ai learns habits in all places frequented by the user. Indeed, every 10 minutes, the system recalculates according to the location of the user as well as his habits. Thus, specializing in real-time predictive planning for all places of life, ween.ai is the first solution in the world based on Artificial Intelligence that makes objects autonomous.

The promise of the company is simple: "Experience an unprecedented experience a custom comfort without effort ".

It must be understood that tomorrow AI will be present in all product areas.

This is the case of *LG electronics* with its ThinQ IA. At LG, the AI goes through the Dualcool ThinQ air conditioner Stand Inverter Air Conditioner systems that can be controlled by voice. The DeepThinQ AI system sends air to the people detected in the room.

In services sector, a noticeable trend is support for multilingual automatic translation. On this point we can mention the company *Fluent.ai* and the start-up *Orfeo* with the OrfeoVoice (innovation award).

[1] Gartner Study, Internet of things 2017
[2] GFK Study, Les attentes des Français autour de la maison connectée 2015

To conclude this part, it's important to mention the emotional AI. At CES, this technology is demonstrated via video sensors that detect and analyze the emotions of users (especially at home). The emotions detected and analyzed then make it possible to adapt the lighting, the proposed contents ...

This is the case of the start-up *Emoshape* able to capture the emotions of users. The bet of the company is the following : EMOSHAPE predicts that before the end of this century humans will talk more to sentient machines than to other humans. The use of emotion remains a fundamental need for humans, one that cannot be addressed by today's emotion technology. To this end, Emoshape has developed an electronic chip capable of synthesizing twelve human emotions for artificial intelligence systems.

THEME : HealthCare

Technology is putting healthcare directly in the hands of consumers. From remote monitoring products, to wearables to diagnostic solutions, the healthcare industry is embracing new tools and technologies to enhance the patient experience.
According to CTA, Health care is a trillion-dollar business and a critical issue for consumers. Technology is playing a critical role in today's healthcare access and delivery and high-tech is transforming preventative and personal healthcare and playing a role in limiting the use of pharmaceuticals.

It can be very interesting to listen to and review the intervention of *Dr. Renee Dua* on this subject during the Samsung Next. This woman is the co-founder of Heal, a company who brings a licensed, background-checked pediatrician or family doctor to people, on-demand, on perfect schedule, for $ 99 or in-network with the insurance.

➔ To review this intervention : https://www.youtube.com/watch?v=l_vRbP-7giM

For French readers, La Poste presents its new e-health application. This digital health area gathers data to which patients and professionals have access (GP, hospitals, specialists ...). The application "*LaPoste eSanté*" can be downloaded for free on a smartphone. It can collect data from connected objects (blood pressure monitor, scale, insulin pump ...) and send alerts in case of problems. This digital health record records vaccinations. The application allows a home follow-up of the patient after an intervention or the order of meals at home.

Nokia launches its sleep controller, *Nokia Sleep*, a fleece strip to place under the mattress to analyze its sleep. Thanks to sensors, the device records the falling asleep, the paradoxical and deep sleep phases, the respiratory rhythm ... The device is connected to an application that provides information to improve sleep and can even offer advice for better to sleep (sale price less than 100€ this summer) !

KinéQuantum, based in Paris, offers virtual reality software for physiotherapists' patients. A helmet takes the patient into a virtual space to help him make movements. It allows a rehabilitation in autonomy.

Philips is interested in the possible interactions between a razor and a mobile phone with the *Philips Serie 7000 S7921/51*. This razor can be connected in Bluetooth to a smartphone or tablet equipped with the Philips Smart Shaver application. The idea is to propose to the user to shave while taking care of his skin. First, you need to configure the application by indicating some of its "epidermal" characteristics: softness of the skin, presence of blackheads, scars, redness, ingrown hairs ... No need to be assisted by a dermatologist, everything is adjusted by sliding his finger along a ruler. The power of shaving, as well as its duration, are then modulated according to the information provided. the shaver Serie 7000 S7921 / 51 is equipped with a motion sensor. It analyzes the shaving method of the user; the application can then give him valuable advice, telling him to print a fast circular motion, or to limit the passage time on certain areas. After shaving, it is necessary to answer a few questions so that the parameters are adjusted for the next session. According to Philips, thanks to this shaving coaching, the user gradually acquires good reflexes and good methods to minimize skin irritation.

THEME : Audio & Music

In the audio and music sector, the trend is clearly to improve existing technologies. Nevertheless, some companies are resisting and bet on introducing disruptive innovations!

It is impossible to approach the audio & music sector without highlighting the success of the start-up *Enhancia* with the MIDI ring Controller. The connected ring is capable of controlling musical effects through predefined movements of the hands. Thus, while using a keyboard, the musician can freely add different variations to the notes played by a simple movement of the hand. For instance, keyboardist can add a vibrato by wavering the hand. Finally, musicians wil enjoy more freedom and more possibilities in their composition.

In recent years, the problem of reducing external noise is essential for manufacturers of headphones. This trend was very visible at CES 2018, like the start-up Orfeo. The company starts from the observation that the world is full of sound and, sometimes, it can be hard for your voice to be heard and hard for you to hear others.
So, Orfeo has created headphone products designed specifically to improve your ability to communicate, the *Orfeo Voice* (innovation award). When speaking to or through your phone, Orfeo Voice eliminates all the noise around you, delivering only your words. the product of the company was tested on the CES with the example of a phone call from a soundproof cabin in which a nightclub atmosphere was reproduced.
To realize it: https://www.youtube.com/watch?v=NpG-kEFM5o0

But the technology that has been shaking the world of audio for some time now is, without a doubt, the Hi-Res technology (High-Resolution). This term refers to a set of files and devices delivering or managing a sound quality superior to the CD (16 bits). We talk about Hi-Res when the files are encoded in 24 bits, as in the recording studios. These files allow you to obtain a sound rendering closer to the will of the engineers in the studio. Roughly, the more bits there are, the more information there is. Hi-Res technology is therefore aimed at a passionate audience and this element has been understood by the French company *Qobuz*. The Qobuz streaming platform is both a streaming and download service that targets not only an audience of music lovers, who will be seduced by its catalog of Classical, Jazz, World-music, or music lovers who want to enjoy the best possible sound quality via the service Sublime plus (streaming audio hi-res), but also lovers of art and culture, who wish to enjoy a cultural vision of musical heritage since the French firm produces its own content editorial including album reviews, presentation of artist discographies, biographies and exclusive photographs as well as numerous videos.

Satisfying athletes becomes an increasingly important element for audio and music professionals (Apple, Fitbit, Polar, Samsung or TomTom) who have understood that amateur and professional sportspeople love to be able to play sports while being musically well accompanied, especially in the jogging sector.
This is the case of the company Garmin which adds to its catalog of connected watches for sportsmen a model able to accompany them for a practice in music without forcing them to bring their smartphones. The *Garmin Forerunner 645*, offers all that one is entitled to expect from a GPS watch, adding an internal memory to store up to 500 pieces of music. So just connect Bluetooth headphones to perform music training sessions. Songs can either be transferred from a computer or downloaded for offline listening from compatible streaming platforms. Other elements deserve to be highlighted such as GPS, cardio frequency, performance measurements and analysis, 7-day autonomy without GPS and Garmin Pay compatibility.

Anyway, the real innovation of this CES in terms of audio and music comes from the French company Funky Sound Studio with the *Debussy headphones*. The start-up has taken the gamble to enter on the ultra-competitive field of high-end headphones with three prototypes : “Prelude” ($500), “Clair de Lune” ($1.500) and “Nathaniel” ($5.000). Headphones are gold-plated and velvet-lined but the best is yet to come. Indeed,
On the outside of the headsets stands a OLED screen, which is inside a 4G / Wi-Fi chip. The revolution of Debussy is to want to make the headset totally autonomous of its listening support. The user can enjoy his music streaming on Spotify or Deezer - or on a personal playlist, since the object has its own internal memory of 32 GB. And no need to remove his headphones to change his or her launch a music application! With voice recognition and a smart assistant, everything is controlled by voice or finger directly on the screen. Bluffing! (the fundraising campaign on Kickstarter begins next March).

THEME : Drone, photography & Stabilizer, Video

The drones could well be more numerous in the years to come according to a PWC France study, the global market is estimated at more than 127 billion dollars.

Overall, the recreational civil drone sector has not presented major innovations. On the other hand, the CES has demonstrated the emergence of the professional drone.
The first notable use is the inspection of inaccessible infrastructures (large buildings, electric dams, wind turbines). One can note a big potential in the sector of the energy with in particular the thermal cameras that can identify the problems of overheating within the structures. In the construction sector there is the presentation of drones, equipped with lasers, to perform surveys to produce a 3D map of the scene of the drama.

Drones are also widely used in agriculture to map and monitor crops...
Yamaha makes a lot more than motorbikes, outboard engines, and watercrafts. At CES 2018, they were showing off a new drone, the *YMR-01*, for pesticide application in the agricultural industry. Since the nineties, Yamaha had been using the R-Max remote helicopter (https://www.youtube.com/watch?v=ydfPzqaNkuA) to do the same but a drone should be easier to fly and therefore offer a larger market for Yamaha to cater to. The YMR-01's design features coaxial rotors and a lightweight carbon body to enable continuous spraying of one hectare per flight, delivering a spraying quality comparable to Yamaha Motor's industrial-use unmanned helicopters. The benefit of the YMR-01 drone over the R-Max unmanned helicopters will be most notable in smaller fields where the larger helicopters are harder to fly.

Everyone knows the drone that is usually destined to fly but a new trend to emerge during this CES with underwater drones. One question, simple gadget to the James Bond universe or real utility?
This is the case of the company PowerVision which presented the PowerDolphin, considered as the first drone of this new generation. "The PowerDolphin is a new lifestyle robot that is not only suitable for water sports, photography, fishing, and other enthusiasts or rescue and scientific researchers, but also provides a new perspective of life to adventurous people," explained Wally Zheng, the founder and CEO of manufacture PowerVision, in a statement.

The first submarine drone has a 4K rotating camera with a double articulation at 215 °, as well as a battery with the announced autonomy of two hours. This will allow water sports enthusiasts to capture semi-submerged and underwater videos. In this case, the capture will be facilitated by the presence of adjustable brightness

headlights. In addition to the fun and cinematographic aspects, the PowerDolphin boasts impressive features making it useful for multiple uses. PowerVision announced a travel speed of up to 5m / s, more than twice as fast as Olympic records, useful for assisting sea rescuers.
It also carries a fishing rod with a range of 1000 meters (coupled with PowerSeeker detector technology), tow hooks, and can bring buoys, lifejackets and other equipment.
Scientists will appreciate them for its ability to scan the underwater soil, which will provide an accurate topographic image of the seabed.

In transport, we rely on drones to solve the problem of the "last mile". Everyone has in mind Amazon's experiments on the subject. Tomorrow's Factor may be a drone pilot. Air Space Drone (ASD) has designed and designed "FlySafe", a patented technology for the recording, identification and traceability (position, speed, altitude) in real time of UAVs in airspace. The company introduces a low-energy, 42-gram electronic system, enhanced by the addition of airworthiness management. Airbus Helicopters has selected FlySafe for its Singapore Skyways project for parcel delivery.

But the "transport-drone sector" is not just about delivering parcels. Indeed, tomorrow it is quite possible to imagine drones transporting people combining autonomous transport and taxi service.
This is the case of taxi-drone: the *Volocopter VC200 2X*. This drone combining the skills of two companies: E-Volo and Intel. The trade press praised the performance of the aircraft that hovered during the Intel press conference. "Imagine taking out your phone, opening an app and planning your own air taxi ride," said Brian Krzanich, Intel's boss at the press conference.

Clearly the machine is intended for urban use on short trips and limited altitudes, to relieve congested centers by car traffic. However, Dubai is waiting for its first fleet of flying taxis for 2022.

To finish on the subject of the leisure drone, it is difficult to coexist with DJI (world leader in recreational drone), but Yuneec has not said its last word. At CES, the "other" Chinese specialist in this market presents three new products (a follow-up to the impressive Typhoon H that made its debut two years ago, and two first entries into new categories for the company).
➔ https://www.theverge.com/2018/1/9/16867090/yuneec-typhoon-h-plus-firebird-fpv-hd-racer-drones-ces-2018

Regarding the photography sector, innovation was clearly on the side of stabilizers for cameras and smartphones. Indeed, we must not dismiss the idea that the smartphone has become today a camera in full-blown.
So, as often innovation came from an industry leader with the DJI company who presented two types of stabilizers during CES 2018.

First, DJI presents its second version *Osmo Mobile 2*, the stabilizer that allows smartphone users to shoot and take moving photos. The Osmo Mobile 2 retains the 3-axis platform that is found in the drones of the

brand, as well as SmoohTrack technology that detects and compensates for camera movements. Lightweight (485 g), portable and collapsible, the device also has a universal mounting plate. The Osmo Mobile 2 will be available at a price of 149 €.

In a second time, DJI presents *Ronin-S*, the first one-hand camera stabilizer. The camera is available in two formats, compatible with SLR cameras and hybrids. The stabilization system is the same as that of the Osmo Mobile 2 thanks to a 3-axis platform. Various modes are offered to the user (Push mode, a Smooth Track mode that can be fully customized via the DJI Ronin dedicated application). The price has not yet been communicated.

Regarding video, the sector has presented multiple innovations in terms of gaming screens, screen resolutions, screen sharpness ...

The CES highlights the world of gaming and the challenges of the sector. This includes the *Nvidia graphics card* on the Big Format Gaming Display (BFGD) screens offered by all brands in the sector (Asus Rog Swift PG65, Acer Predator BFGD ...).

But of course, when we talk about screens most people think about television and the CES 2018 has announced many innovations in this sector.
In general, Ultra HD and HDR become more democratic; we see the arrival of 8k at some manufacturers (Sony, Samsung ...) but this innovation raises the question of utility while 4k TVs are not yet very popular. It is the same for the voice control which equips more and more televisions and pave the way to upcoming deals between TV, Amazon and Google manufacturers.

To highlight its OLED technology, *LG* create a 4k TV corridor. This tcehnology makes it possible to envisage the future of airports, concert halls, waiting rooms ...

To compete with OLED technology, Samsung introduced *The Wall*, microLED technology, in which each pixel is an LED. Far from being ready for the general public, this technology is already experienced by Samsung on a screen of 146 inches (3.65 meters) diagonally. It's just huge!

But the most striking innovation remains the presentation of the prototype of *roll-up TV by LG*. The 65-inch screen can fold and unfold as desired by the user to, for example, fit into a piece of furniture. The user could choose to take his TV completely or not from his furniture. Nothing forces him to unfold it completely in order to use it. When it does not display a live program, it could be very slightly unfolded to display contextual information such as the time, the next scheduled event or the weather. LG does not announce a specific commerzialisation date but suggests a 2020 horizon.

How to mention the screen sector, without mentioning the video projector?
Regarding this element we can mention the video projectors Sony and LG companies that are clearly the most innovative.

In the first place, let's talk about the Sony product with the *Sony LSPX-A1*. This video projector projects a 4k image whose laser light source reaches a brightness of 2,500 lumens for a lifetime of 20,000 hours (normally 10,000 hours for a UHP lamp). The contrast is striking with a level of 3000: 1 much higher than what is done on the market: 1200: 1. The ingenuity of Sony has been to design this device as a piece of furniture that becomes a real object of design. The furniture contain the audio system: a home theater. This device is sold at a price of $ 30,000.

In a second step, it is necessary to mention the product of LG which obtained an innovation award: *LG HU80K*. This is LG's first 4K UHD projector with its compact and practical case offers great image quality. Until now, projectors compatible with 4K images were heavy, expensive and difficult to install. LG has reduced the size of the projector without altering the quality and size of the image. The device designed is twice as small as what is done at the competition but remains the same price. The goal of LG is to create the cinema at home!

THEME : Smart Home/Smart Energy/Smart City

Smart City was one of the core topic of the CES 2018 and the promises of this sector are many: more ecological, more economical, more comfortable ... The goal of companies working in the field of smart city is to propose the city of the future.

The innovative technologies presented are in the areas of IoT, 5G connectivity, transportation and smart cars, energy and utilities, health and public safety, artificial intelligence and data analysis. Based on the IoT, it helps make cities safer, improve the quality of their services and reduce costs. Thus, streetlights, energy meters and surveillance cameras are connected and intelligent, sensors monitor air quality and others determine the available parking spaces, etc. What to change the way citizens interact with their municipality and their environment …

At this CES 2018, Bosch will be demonstrating that the smart city is already a reality. Stefan Hartung (member of the Bosch management board): “For a long time, the smart city was a vision. We’re helping make it reality.”

The supplier of technology and services presented innovative solutions and services for urban mobility and to connect working world as well as for smart homes and buildings.

At CES 2018, Bosch is presenting innovative solutions from the following domains: smart home, smart city, connected mobility, Industry 4.0, and sensor technology. These technologies make everyday life easier, more comfortable, and safer.

Smart solutions for better air quality, and for more security and convenience :

- Goodbye to air pollution: Climo measures and analyzes air quality in real time (new product)
- Goodbye to flooding: digital flood monitoring system keeps track of river water levels and gives flood warnings well in advance
- Goodbye to the search for parking: Bosch to offer community-based parking system in as many as 20 U.S. cities from 2018

The smart home sector has highlighted a search for home security (camera, lock connected …) and the connected objects (connected refrigerator including) of home appliances in particular.

Indeed, in terms of home security, Somfy presented the *Somfy Outdoor Camera*. The ambitions of the manufacturer are great: he intends to make the Outdoor Camera "the most deterrent outdoor camera", indoor siren and resort to artificial intelligence. This AI makes it possible to differentiate, via the many algorithms, an animal, a car or a human being, eliminating the risk of false alarms. Somfy goes further by offering Somfy Protect cloud access without buying a paid subscription. In case of motion detection, an alert is sent to the smartphone of the user receiving a photo and can retrieve a 10-second video stored in the cloud. Each video can be viewed and downloaded for free for 24 hours.

However, the area with presentations from all three sectors was outside the Convention Center where *Here and Virgin Hyperloop One* featured multiple innovations. Here and Virgin Hyperloop One in the smart city, mobility and mapping space to learn how the internet of things, mobility and mapping are colliding to power the autonomous world of the future. To go further on the innovations presented including the Hyperloop One: http://blakemiller.co/here-at-ces-2018/.

THEME : Robotics

Robots are everywhere at CES !

Overall, the sector reports the arrival of gifted robots, equipped with an AI allowing them to react to external elements or to a human intervention and especially to adapt to it! We can see suitcases that follow their owners, robot trolleys to carry customer shopping to the supermarket, a scrabble robot-player or a ping-pong robot-player.

Indeed, Omron company offered an incredible demonstration of its massive '*Forpheus'* robot, which uses artificial intelligence to help improve your pong skills and setup the perfect volley. The robot can recognize the person it is playing against, to create a personalized experience for different players.

It is almost impossible to summarize this sector in a few sentences because the applications are multiple. However, the major trend that emerges from robotics is to offer a new "pet", a new "companion".
Indeed, many companies have robots that follow and interact with their owners. This new field of possibilities allows to consider features and infinite sectors.

One of the most representative examples is the application in the service sector where robots

can be used in retirement homes to prevent safety and doctors in case of accidents (malaise ...) and may also interact with residents based on their passions for example. This is the case of the French company Blue Frog Robotics, with *Buddy*, who obtained an innovation award.

Another application is the robot as a new security agent. This is one of the characteristics of *Ubtech Walker*. "CES 2018 offers UBTECH the opportunity to unveil Walker, the future of consumer robots, worldwide," said John Rhee, UBTECH's general manager in North America. "We are excited to provide an overview of Walker's capabilities and to introduce our full line of robots that educate, entertain, assist and serve the public". The walker is a human-sized biped robot called Walker. The robot was supposedly designed to be a complete home butler that perform different tasks such as patrol a home (patrolling your home's perimeter, detecting motion and recording incidents with its integrated camera), act as an email or calendar assistant, and even play slow soccer with kids.

THEME : Virtual Reality (VR) & Augmented Reality (AR)

Virtual reality was one of the most popular technologies at the Las Vegas show and the show was an opportunity to see that this area continues to grow and excite people. The CES has been marked by numerous announcements from the manufacturers with a single credo: more immersion and realism. The watchword is to bring the general public and professionals to a successful immersion. The sector has been marked by announcements and novelties

concerning VR helmets, VR games, VR accessories and 360 ° cameras (especially for professionals with real estate agents).

The trend of this CES 2018 for virtual reality headsets has been the proposal of wireless solutions. HTC introduced a virtual reality helmet co-designed with Intel: the *HTC Vive Pro*. Intel's WiGig technology allows the headset to run wirelessly via an adapter: the *Vive Wireless*.

For VR accessories, it is important to mention the *Maestro* haptic gloves prototype, developed by the Contact CI start-up. These gloves represent the future of virtual reality because they allow to feel the tension, the texture, the pressure and the haptic return of the objects. In other words it will be possible tomorrow to touch objects in the VR.

Two elements highlighted the VR at CES 2018: the sport and the porn industry.

The creators of the site bodybuilding.com have received an innovation award for the *Black Box VR* combining virtual reality headset and bodybuilding machine. The principle is simple, in the form of mini VR games, players compete in an arena and to win it must be filled with physical effort. This element questions the future of sports halls in the years to come.

VR Porn, is no longer the order of the confidential in the field of virtual reality. It is part of these sectors that attract the general public. So it's not surprising to see large adult content groups investing heavily in the sector, like the famous VR Porn Naughty America site.

Augmented reality is often confused with virtual reality. Virtual reality immerses us totally in another world by using a helmet. Augmented reality confines itself, much less since it incorporates virtual elements in our real environment.

We all know Snapchat or Pokemon Go, but augmented reality is also aimed at children via the Kolibree French company which has developed an application for IPhone: *Magik*. The goal is for children to learn to brush their teeth in augmented reality. Even if the purpose is rather marginal, the interest for such innovations will become more and more important with the development of connected mirrors in AR.

The trend of augmented reality on this CES 2018 was to seek to convince companies / professionals. Everyone knows the *Microsoft Holens* which have already attracted many professionals but other companies and start-ups are planning to make a name for themselves particularly in the sectors of medicine, construction ...

On this subject, we can mention the helmets of the company Atheers: *Atheers Flex AR*, able to display content in AR with a resolution of 1080p. This augmented reality headset is t”ailor-made” for companies. Atheers innovation is to enable companies

to easily develop the necessary applications under the Android-based SDK. In other words, the company provides a turnkey solution.

Another sector of application: the automotive. Indeed, augmented reality makes it possible to propose new options in the vehicles and is really part of the roadmap of the car manufacturers.

The best example is the company Nvidia which has developed an application, *Nvidia Drive AR*, allowing the driver to have a display on the dashboard of the car, in real time, points of interest, alerts, driving statistics and navigation. The goal is to propose a new way of driving and a new experience for more safety.

Finally the 360 ° camera sector does not find a real place among the general public at the moment and is aimed at professional customers who find a very strong interest for this type of videos. The manufacturers have understood this element and try to offer 360 ° cameras for a professional use mainly.
This is the case for real estate agents who offer virtual tours using 360 ° videos, making the experience more immersive.

Go-Pro took advantage of CES 2018 to present the *Go-Pro Fusion* for 360 ° video capture. Equipped with 2 sensors with an opening angle of 180 ° positioned back-to-back, the Fusion records videos in 5.2 K and has an optical image stabilization! Go-Pro goes further by offering the application *Mobile OverCapture*, which allows to rework the content in post-capture. Technically, it will be possible to "refilament" at will the original 360 ° video, by reframing the video, set from the perspective and the desired zoom. Awarded with an innovation award, Go-Pro announces the camera for € 749.99.

THEME : What perspective for CES 2019?

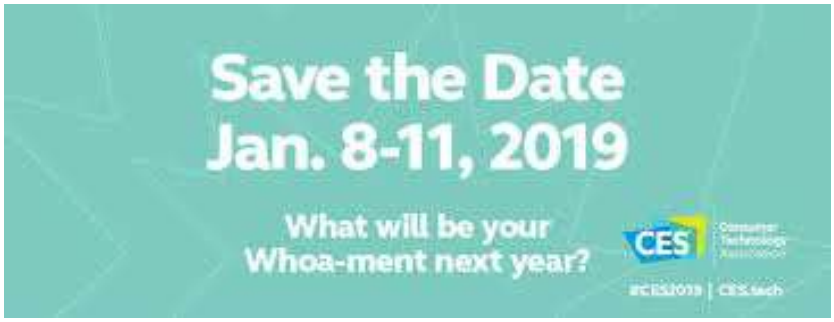
A start-up has talked a lot about it at CES 2018: Psychassec.
The problem? The booth did not show any technology but was promoting a new Netflix series. The streaming site has created a fake startup to promote its new Altered Carbon science fiction series. The

fake stand, futuristic aspects, presented the concept of immortality! To make people immortal by transferring their bodies to another body entirely artificially designed according to the desires of each one. Psychassec exposed a fake body ready to receive his future consciousness. Adequate to say that the idea of Netflix has left no one indifferent, the company even imagined a group of individuals are calling for a boycott for more credibility!
The attraction has monopolized some of the CES's attention, a real success for Netflix.
One question remains, does promotional entertainment have a place at CES?

Google has clearly invested on this CES with huge infrastructure and ubiquity in the city: outdoor stand on Central Plaza, visuals on the monorail of the city of Las Vegas, giant LED billboards in the city, stands GoogleHome in all the exhibition halls of the CES ...

This omnipresence and public acceptance sought by the giant of the web is done by an over-exposure advertising that denotes with the spirit of the show. The general idea is that the exhibitors raising the public interest with the quality of the technology or innovation presented. The "attractions" of Google were more reminiscent of the advertising of a mall, which can tarnish the image of the brand when its technology was already presented in many connected objects.

What future for the CES? To find out, go to Las Vegas in January 2019.



To go further

Innovation

➔ **BEST OF CES:**
https://www.lesechos.fr/tech-medias/hightech/0301130140253-ces-2018-ces-6-start-up-qui-nous-ont-marques-2144037.php
https://photo.capital.fr/les-innovations-du-ces-2018-de-las-vegas-a-ne-pas-rater-27496
https://www.fournisseur-energie.com/startup-energie-ces/
https://www.lesnumeriques.com/vie-du-net/ia-voiture-autonome-french-tech-qu-faut-retenir-ces-2018-a3497.html

➔ **QWANT :** The French search engine Qwant is taking advantage of CES 2018 in Las Vegas (Consumer Electronic Show) to present its music platform, Qwant Music.
Qwant is a search engine that respects your privacy and eases discovering and sharing via a social approach.
https://www.lesnumeriques.com/vie-du-net/moteur-recherche-comment-qwant-veut-attaquer-a-google-a3483.html

➔ **PANASONIC** : Panasonic has unveiled its vision of the car of 2030. According to the manufacturer, it will be in car-sharing, but above all technology-laden: autonomous mode, individual ventilation, screens in the windows …
https://www.lesnumeriques.com/voiture/ces-2018-panasonic-montre-sa-vision-vehicule-2030-n70189.html

➔ **AI is also ubiquitous in smartphones !** We can mention facial recognition (neuromorphic functions with FaceID on IphoneX), picture recognition (camera).

➔ **Drones**: to go further on the subject : https://www.youtube.com/watch?v=78zVycuvh-Q

➔ **RAZER LINDA PROJECT** : Razer, smartphone builder introduced Linda Project, a smartphone accessory concept: you install the Razer Phone in place of the trackpad and the accessory becomes a laptop.

➔ **TCL FRAME TV** : TCL's TV Frame TV takes the concept of Samsung's The Frame TV; it is thus supposed to merge into the interior decoration by becoming a painting.

➔ **SEGWAY-NINEBOT LOOMO** : hybrid Segway able to turn into a robot when we go down :
https://www.lesnumeriques.com/robot/ces-2018-loomo-mi-gyropode-mi-robot-quand-segway-rencontre-wall-e-n70155.html

➔ **SONY AIBO** : the dog-robot

➔ **NETGEAR ARLO SECURITY LIGHT** : security bulb
https://www.lesnumeriques.com/ampoules-luminaires-connectes/netgear-arlo-light-p42625/ces-2018-netgear-arlo-security-light-ampoule-securite-n70185.html

➔ **Connected Refrigerator** : https://www.lesnumeriques.com/refrigerateur/ces-2018-refrigerateurs-connectes-vedettes-ces-2018-n70437.html
➔ **Connected Lock** : https://www.lesnumeriques.com/objet-connecte/ces-2018-nest-sort-enfin-sa-serrure-connectee-nest-x-yale-lock-n70395.html

➔ **CORAVIN** : wine extractor : https://www.lesnumeriques.com/objet-connecte/ces-2018-model-eleven-extracteur-vin-connecte-coravin-n70353.html

➔ **OLDECOMM LIFI** : https://www.lesechos.fr/tech-medias/hightech/0301130140253-ces-2018-ces-6-start-up-qui-nous-ont-marques-2144037.php

➔ **SUPERSOLA** : https://innovation.engie.com/fr/news/interviews/energie-decentralisee/ces-2018---supersola-des-panneaux-solaires-tres-faciles-a-installer/8269

➔ **YOUTUBE** :

- https://www.youtube.com/watch?v=sKLdWzpvQlc&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=1&t=0s
- https://www.youtube.com/watch?v=35fLBSU_kno&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=2&t=0s
- https://www.youtube.com/watch?v=NpG-kEFM5o0&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=3&t=0s
- https://www.youtube.com/watch?v=hyApz1MMS-I&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=4&t=0s
- https://www.youtube.com/watch?v=B6NL3zDODyw&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=5&t=0s
- https://www.youtube.com/watch?v=8kWA03fDyE8&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=6&t=0s
- https://www.youtube.com/watch?v=WktWsBFInQQ&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=7&t=0s
- https://www.youtube.com/watch?v=v0YE-oRjp2I&list=PLBB9LDNvhnqW4TTIovp85OwynGerF-pc3&index=8&t=0s

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Appendix

Company	Illustration	Description
Ween.ai	ween.ai make objects autonomous	**Ween.ai** is a French start-up and is the world's first AI-based solution that makes your smart devices autonomous.
CareOS	care OS	**CareOS** is the first smart Health & Beauty Operating System for the bathroom. It connects your devices and services together to make them smarter.
LG Electronics	LG Electronics	**LG Electronics Inc.** is a Korea-based company principally engaged in the manufacturing and distribution of electronic products.
Huawei	HUAWEI	**Huawei** is a global telecom leader offering a wide range of products, including mobile phones, connected accessories, and broadband and home devices.
Fluent.ai	fluent.ai	**Fluent.ai** is a personalized intent recognition that learns from context, behavior, and speech, in any language. Its speech recognition engine expresses the flexibility to understand natural phrases reliably across languages, accents, and noise environments such as a smart home, connected car, wearable, or virtual reality ...
Orfeo	ORFEO SOUNDWORKS	**Orfeo SoundWorks** is an engineering-driven research & development company founded in 2015 to enhance the listening experience for everyone in the globe.Our business domain splits into noise-blocking Bluetooth earphones and B2B audio solutions.
NYC Emoshape	EMOSHAPE	**Emoshape Inc.** is dedicated to providing a technology that teaches intelligent objects how to interact with humans to yield a favourable, positive result. Emoshape emotion synthesis microchip (EPU) technology represents a massive leap for Artificial Intelligence, especially in the realm of self-driving cars, personal robotics and other major consumer electronic devices.
Nissan	NISSAN	**Nissan** Motor Company Ltd is a Japanese multinational automobile manufacturer and the company sells its cars under the Nissan, Infiniti, and Datsun brands. Since 1999, Nissan has been part of the Renault–Nissan–Mitsubishi Alliance and this alliance would be the world's fourth largest automaker. Nissan is the leading Japanese brand in China, Russia and Mexico. Nissan is the world's largest electric vehicle (EV) manufacturer, with global sales of more than 275,000 all-electric vehicles as of mid-December 2016
Toyota	TOYOTA	**Toyota** Motor Corporation is a Japanese multinational automotive manufacturer. As of 2016, Toyota is the world's largest automotive manufacturer. Toyota was the world's first automobile manufacturer to produce more than 10

		million vehicles per year which it has done since 2012, when it also reported the production of its 200-millionth vehicle. Toyota is the world's market leader in sales of hybrid electric vehicles, and one of the largest companies to encourage the mass-market adoption of hybrid vehicles across the globe.
Byton (Future Mobility Corporation)	BYTON	**Future Mobility Corporation** is a Chinese automobile company established in 2016 and incorporated in Hong Kong,[1] co-founded by former BMW and Nissan Motor executives. It announced its first proposed car under the new **Byton** marque in September 2017 and unveiled its first concept car to the public in January 2018.
Rinspeed	RINSPEED	**Rinspeed** is a Swiss automobile manufacturer and tuning designer.
DJI	dji	**DJI** is a Chinese technology company known as a manufacturer of unmanned aerial vehicles (UAV), also known as drones, for aerial photography and videography. DJI also design and manufacture gimbals, flight platforms, cameras, propulsion systems, camera stabilizers, and flight control systems. DJI is the world's leader in the civilian drone and aerial imaging technology industry, accounting for 85% of the global consumer drone market.
Intel	intel	**Intel Corporation** is an American multinational corporation and technology company. It is the world's second largest and second highest valued semiconductor chip makers based on revenue after being overtaken by Samsung, and is the inventor of the x86 series of microprocessors, the processors found in most personal computers (PCs). Intel supplies processors for computer system manufacturers.
Volocopter	VOLOCOPTER	**Volocopter** is the the first manned, fully electric and safe VTOLs in the world. It makes humanity's dream of flying come true and help cities resolve increasing mobility issues.
Sim4Health	SimforHealth	**SimforHealth** a recognized player in the field of digital simulation in health. SimforHealth offers an immersive, interactive and collaborative approach to health professional education that respects the ethical concept. "Never the first time on the patient".
Somfy	somfy	**Somfy** is an international group with operations in almost 60 countries. Somfy is the world leader in the automatic control of openings and closures in homes and buildings. For over 45 years, Somfy has allowed people to transform their living environments with automatic controls, by designing and developing solutions offering comfort, security and energy savings.
Legrand	legrand	**Legrand** is the global specialist in electrical and digital building infrastructure and provides a range of several hundred thousand catalog items

		subdivided into 7 major product categories, each under the responsibility (product marketing, research and development, manufacturing) of one of 7 Strategic Business Units (SBUs).
Wi-charge		**Wi-Charge** products offer wireless power for the wide range of consumer, industrial, medical and military applications. Wi-Charge's products are unique in their ability to deliver useful wireless power and seamlessly over long distances efficiently and safely.
Blue Frogs Robotics		**Blue Frog Robotics**, a French company dedicated to create innovative robots, designed BUDDY, a companion & social robot accessible to everyone.
Omron		**Omron** Corporation is an electronics company based in Kyoto, Japan. Omron's primary business is the manufacture and sale of automation components, equipment and systems, but it is generally known for medical equipment such as digital thermometers, blood pressure monitors and nebulizers. Omron developed the world's first electronic ticket gate, and was one of the first manufacturers of automated teller machines (ATM) with magnetic stripe card readers.
Virgin		
Here		
Hyperloop		
Nvidia (Metropolis)		
Bosch		
Sony		
Samsung		
Qobuz		
MarkForged		

Artec3D		
Kalray		
ZTE		
FundSquare		
Ford		**The Ford Motor Company** is an American multinational automaker The company sells automobiles and commercial vehicles under the Ford brand and most luxury cars under the Lincoln brand. Ford also owns Brazilian SUV manufacturer, Troller, and Australian performance car manufacturer FPV. Ford is the second-largest U.S.-based automaker (preceded by General Motors) and the fifth-largest in the world (behind Toyota, VW, Hyundai-Kia and General Motors) based on 2015 vehicle production.
QWANT		**Qwant** is a search engine that respects your privacy and eases discovering and sharing via a social approach.