

Smart Cities

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Abstract

“Smart cities” was one of the **core topic of the CES 2018**. One may wonder why. As cities grow faster and faster, they have to cope with new challenges. **How to provide all citizens with safe and reliable resources? How to manage and protect an ever growing flow of people? How to make cities more inclusive and be pleasant places to live in?**

The answer to those three questions seems to rely in one single term “smart”. Cities have to be **more knowledgeable** to be able to be **efficient in their resources, infrastructures, transports and dwellers management**. First and foremost they need to **collect data** about their environment; second, they have to **process** it to, third, be able to take suitable **real-time actions**. As it is commonly said, **cities are smart if they can See, Think and Do**.

In charge of a technology watch mission about smart cities at the CES 2018, I followed a **three steps approach**:

- Before the CES, I **identified** all the **start-ups** and **companies** presenting innovations that could help cities address their main challenges.
- Second, I **met** them in order to **understand** deeply their **products, offering** and underlying **technologies**.
- Third, I **summarized** the stakes and **drew a picture** of the **trends of the sector**.

According to my “on the field” inquiries and my readings, I noticed **five main trends**:

- **More sensors to collect more data on cities.** [More and more companies develop cutting-edge sensors.](#) [The objective is to](#) enable data collection in real-time about resources delivery, waste management, gas or water leaks, car flows, transports, air and acoustic quality.
- [Smart applications and platforms for better optimize cities’ resources management](#): thanks to data collection numerous companies are developing applications to manage crowds and vehicles flows as well as energy consumption.
- **Innovation in data protection and citizens’ security.** As cities tend to be more and more connected they are extremely vulnerable to cyberattacks. Hence various companies develop state of the art programs that aim at securing all sorts of data.
- **New clean individual, collective and autonomous vehicles to complement public transports and replace polluting vehicles.**
- **Smart culture.** Cities would not be that smart if they could not empower citizens. Hence the development of applications and the use of virtual reality to make culture accessible to all.

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1. New tools to optimize citizens and resources management in cities

As 66% of the population is expected to live in cities by 2050¹ and as the state of the climate is alarming, **acting for a better management of resources and people is crucial**. One way to do so is to **collect data** about consumption, data on the functioning of distribution networks and on urban mobility. How to do so? By **introducing sensors** on various grids, meters and devices

At the CES 2018, there were no breakthrough innovations concerning sensors technologies. The stakes and the innovations relied much more on finding a way to **aggregate, process and protect** the information collected. Thus we will pay a close attention to the **platforms** and **applications** displayed at the CES.

1.1 The technologies

The most used sensors are the **Lidar sensors** “laser detection and ranging”. This technique enables to **measure the distance to an object** by calculating how long light beams take to come back to their emission point after being reflected by an object. Such a technology is mainly use for 3D real-time perception systems applied to autonomous vehicles, vehicle safety systems, 3D mobile mapping, 3D aerial mapping, and security. The four leading companies, present at the CES 2018, are the following ones:

- **Continental AG**, the world’s fourth-largest manufacturer of tires, a leading German automotive manufacturing company. Hi-res 3D flash LiDAR, SRL-CAM400 sensor module and SRL-1/SRL 1C are some of its leading products.
- **LeddarTech**, a Quebec company, provides advanced detection and ranging systems that are based on patented technology.
- **Quanergy Systems Inc**, an American company. Its 3D time-of-flight LiDAR sensors are designed to meet mass commercial deployment criteria in various markets. Some of its popular products are the S3 solid-state LiDAR sensor and M8-1LiDAR sensor.
- **Velodyne LiDAR**, an American company, provides a full range of sensors, capable of delivering the most accurate 3D data in the market. The French NAVYA is using Velodyne's real-time 16-channel 3D VLP-16 LiDAR Pucks for its autonomous vehicle.

Numerous **biosensors** are used to identify **gas leaks** or to measure **air quality** by quantifying the concentration of the most toxic gas in the air. The California based companies, **SPEC sensors**, and **AerNos** are the main manufacturers of cutting edge chemical sensors.

If biosensors and Lidar sensors were not particularly new to the CES, the “Spy Can” designed by the French **Blue Whale Company**, appeared to me as an impactful innovation. What is the Spy Can? It is **the first autonomous SMS driven smart valve that detects water leaks or overconsumption and shuts off automatically water inflow**. In case of shut off the water grid manager receives a SMS that tells him exactly where the leak is situated and the exact actual water flow. To reopen the valve, a simple SMS saying “open” is necessary. Such an innovation is an opportunity that cities and individuals must seize to **avoid wasting water**.

¹ World Urbanization Prospects, United Nations 2014
Smart cities technology watch at CES 2018
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As mentioned above, **what was really at stake** at the CES was not on the hardware side but on the **software side**. **How to provide** cities, communities and individuals with **connected digital platforms** and **applications** that **aggregate, process data** and **enable people to take relevant actions**?

1.2 Platforms and applications to manage resources and people in real time

- **Large scale platforms for cities**

The French company **OpenDataSoft** designed **platforms dedicated to middle size collectivities** (between 60m and 130m inhabitants) which **gather all sort of data available at the State level in one hub**. Thanks to state of the art algorithms, OpenDataSoft software make **collected data interoperable and shareable** via a powerful **API**. This platform is especially dedicated to American cities as urban data is not centralized at the collectivity level. What is available on this platform is information about population, air quality, average price of apartments...

In partnership with Quanergy, **Cisco**, the American multinational specialized in networking hardware and telecommunications equipment, launched the **Cisco Kinetic for Cities**. Cisco's challenge is to **develop numerous partnerships with companies that manage IoT devices** from the lighting, parking, traffic, waste management, and Wi-Fi deployments to then **sell to cities integrated platforms** with plethora of solutions and application programming interfaces (API) to manage resources, infrastructures and urban mobility in real time.



- **Mapping**

To take actions it is convenient to be able to **visualize what is going on**.

The British company *Living Map* launches **connected maps that locate all IoT assets** and **give** users rich **real-time information** about what is going on around them. This technology is suitable for all types of facilities from museum to airports as well as cities.



Air quality maps have emerging at the CES 2018. The idea is to be able to identify the main polluted places and to take actions accordingly. *Elichens*, a French start-up, set out a technology that analyses, geo-localizes and **maps air quality “in real-time”**.



If I had already eared about mapping air quality before the CES, I have been surprised by the possibility to **measure and map noise**. The French start-up *Atmotrack* displayed a new sensor that along with air quality can measure noise levels. Such an innovation can be an **incentive for city to take actions** in certain areas to diminish the noise and make the later more pleasant to live in.

- **Applications**

Collecting data is one thing, processing it and turning them into starting points of action is another one.

- **Home and building automation**

Platforms that enable remote and local IoT devices monitoring are flourishing. What is really at stake in home and building automation is the **compatibility between the wireless communication technologies of each connected device**. As **there is not one unified communication protocol**, products manufacturer gathered in various alliances which do not

have the same certification processes. Hence the existence of different platforms using a particular category of objects. **The Z-Wave protocol** is by far the world market leader with a base of 2100 products. **IOTAS**, a start-up from Portland, provides a **platform and a home application** functioning with Z-Wave products. Property managers and residents can control all unit lights, outlets, fans, door locks and thermostats. Moreover IOTAS set up a partnership with Google and Amazon making their control **applications compatible with voice assistants** (Google Assistant and Alexa).


Another notable start-up in the sector of home and building automation is **Ubiant**. If this French start-up uses a smaller products base, Quickmoved certified object, it has designed a state of the art **platform using artificial intelligence**. Its platform, “Hemis”, is able to **cross-functionally manage the temperature, light and air quality in line with an energy consumption target**. Moreover, thanks to Hemis Community platform, **each building can communicate with one another** and can **adjust its energy storage or consumption according to the other buildings’ needs**. As renewable energies are more and more integrated directly into buildings, being able to manage their intermittency at a building community level is a significant step forward.

- Urban lights




With the integration of various types of sensors, it is possible to optimize urban lights management. For instance the Taiwanese company **Liteon** designs street lights that are able to switch on only if they detect an approaching car. Thanks to a platform and an application, collectivities can manage each street light independently.

- Waste management

Waste is often the “forgotten” aspect in smart cities. However their management is key to cities and companies. **Green Creative**, a French start-up, designed R3D3, a connected sorting bin able to recognize, automatically sorts and compacts cans, disposable cups and plastic bottles. Thanks to its compression R3D3’s storage facility increases tenfold. By upgrading the quality of sorting, R3D3 enables to improve recycling. Moreover, as a connected device, it sends alerts to service providers only if the filling thresholds are met, avoiding useless travels.




Storage capacity
3 containers of 40L each :

-  x 300
-  x 100
-  x 400

Dimensions

Height.....	1,13 m - 3,7 ft
Diameter	0,61 m - 2 ft
Weight	70 kg


Safety
CE Certified

Connection 
WIFI or 3G (as an option)

Power consumption

In standby mode	20 W
In operation	70 W

Power supply
230 V/50 Hz - 110 V/60 Hz

Made in 
Green Creative designs and produces its machines in its factory, in France.

2. Innovation to improve public transports and replace polluting vehicles

As cities are to be more and more crowded, there is a real need in new, clean and secured means of transportation to **avoid congestions and pollution**.

Three noticeable trends:

- **Efficient mobility.** Thanks to geo-localization and sensors, new applications have emerged to optimize citizens' trips and to ease the urban traffic.
- **Clean, autonomous and secured vehicles.**
- **Collaborative mobility.**

2.1 Efficient mobility

- Passenger information and management

How to ease citizens' trips? By providing them with information in real-time about public transports and dematerialized ways to pay their travels.

Two French start-ups, *MyBus* and *Mytechtrip* set up applications that:

- **track public transports** and give passengers real-time timetables,
- provide **interactive maps** where one can see all the nearby stops and the vehicle, position
- **calculate** the shortest way to get to one destination,
- make available **e-tickets**.

For transports managers, *Mytechtrip* designs a real-time centralized platform for passenger information management allowing to broadcast messages on all media in place in case of unexpected events.



Mybus app

- Intelligent parking

Efficient mobility is closely linked to intelligent parking. Two complementary start-ups stood at the CES Eureka Park: the Candian *Rumbo Mobile* and the French *Parkki*.

The Rumbo Mobile Parking solution consists in **replacing old parking poles by solar-powered wireless terminals** that transmit live parking vacancy data to the cloud for users. They can detect vehicles in an area of 7 meters around them. Moreover, thanks to Rumbo Mobile's **application**, users **can reserve in advance a parking spot**.

More interesting is the Parkki's solution. Thanks to sensors installed on street lights that analyze up to 100m around them (80 parking spots on average), Parkki offers an economic system that provide drivers with all information about potential vacancies in their

perimeter. Compared to the American company *Fybr* which places sensors on each parking spot, Parkki is a much efficient solution given the fact that one sensor covers 80 spots. Moreover, the driver can easily be led to the most suitable available parking location via a mobile app knowing the availability in real time.



Parkki sensor & app for parking spots

2.2 Clean, autonomous and secured mobility

- Individual mobility

Numerous cities do not have enough funds and space to build new transport infrastructures. Hence the development of ever cleaner and compact vehicles and charging solutions. However, for the time being, most of them **are not affordable** for everyone.

Ujet, a subsidiary of the Russian groupe Ocsial unveiled a **foldable electric scooter with a removable battery** (ranging from 70km to 150km) that can be charged in 2 hours via standard outlets; onboard-computer, and an app for notifications and geolocation parking. It can go up to 45km/h and weighs 43kg. However with a purchasing price estimated close to 10 000 \$ it is **reserved to the upper class**. As Ujet, *Immotor*, an American company, launched the Immotor Go luxury scooter with a **strong emphasis on design and foldability** costing 1 500\$. Genze, a company owned by Indian automaker Mahindra, developed **state of the art e-bikes**, ultra-light (20kg), with an autonomy of nearly 50km and a removable battery chargeable in 3,5h . Again, with an average price of 1 900\$ **those innovations are too expensive to reach a large public of consumers**.



Ujet foldable scooter



Immotor Luxury Go

- Autonomous shuttles

At the CES 2018, the French autonomous vehicle company *Navya* presented the **first self-driving cab**, reaching 80 km/h and having space for six passengers. If the technology is impressive, what is really at stake is to **provide a complement solution to existing public transport** in urban areas. As Christophe Sapet, *Navya*'s CEO underlines, "young people today do not necessarily have their driving license and are less attached to the concept of owning their own car. What is important for them is to have **mobility solutions that are operational 24 hours a day, 7 days a week**, ensuring their safety and well-being at a reduced cost". Riders will be able to hail the cab, day and night, open the door with a dedicated app and pay via their smartphones. According to Jacques Aschenbroich *Valeo*'s CEO, within two years, autonomous shuttles and cabs will be circulating in cities on marked and secured lanes.



Navya Autonom Cab

- Security innovations

Security is an important aspect of urban mobility. As there are more and more bike accidents due to riders' distraction or lack of visibility, innovations are needed to **make cycling experience more pleasant and safer**. Winner of the CES 2018 Smart Cities Award, the French start-up *Velco* designed a **connected handlebar**, the Wink Bar, which can be attached to any bicycle and control from your smartphone. This product enables GPS-assisted navigation, geolocation of your bike in case of theft or loss, intelligent integrated headlights and a cyclist's performance-measuring application. However, **the cost is quite prohibitive**, 279€.

Drivers' drowsiness is one of the main causes of car accidents. The Chinese startup *Steering AI* set up an advance driver-assistance system which detects drowsiness. To be able to do so, the start-up collected data on steering behaviors of trucks drivers and set up drowsiness steering patterns. When falling asleep, drivers tend to do specific movements. Identifying and quantifying the driver's level of fatigue, AI's **Smart Steering Box** will warn the latter by playing him a particular sound.



- Charging infrastructures

As Amanda Daflos, Los Angeles Innovation Team director, put it at a CES conference: “We are going through an infrastructure crisis”. Indeed, fostering electrical mobility means investing in charging facilities. The two main stakes for cities are the following:

- Multiplying charging points
- Building adequate and strong grids that can withstand demand peaks and quick charging solutions

If companies such as the American *Chargepoint* and the French *Electric-Loading* are developing fast charging stations, delivering up to 400kW, enabling to **full charge a vehicle in 25 minutes, few cities and urban areas can supply such a level of power**. Hence, the necessity to build stronger grids fueled by renewable energies.

There are **two other hindrances to the development of electrical vehicle**:

- the **compatibility between the power** delivered by the charging station and the car battery
- the **compatibility of the cables and sockets** that link the car and the charging station.

Indeed, not all charging stations are compatible with all types of cars. To solve those two issues, *Continental*, the American automotive supplier, presented at the CES 2018 a **wireless inductive charging system** and a **new battery “AllCharge”**. Parked on inductive charging points, electrical vehicles will receive small bursts of charge throughout the day and won’t need cable to plug-in. As for the AllCharge battery, the latter enables electrical vehicles to **use any charging stations** whatever the charging rate, type of current or voltage level.

2.3 Collaborative mobility

In France, on average, private cars remain parked about 95% of the time². Nowadays, **people are less and less attracted by owning a car**. They are **looking for services immediately available and flexibility**. Hence, the development of car-sharing platforms. If car-sharing platforms have existed for a while, the **novelty** at the CES 2018 was the launching of applications and platforms that enable people to **rent cars or parking spaces without meeting each other’s**.

The French start-up *Park Match* has created the “Airbnb” of the private parking lot. ParkMatch enables space owners to rent their parking space to other individuals. How does it work? Both owners and renters buy a connected remote control that is able to copy whatever parking remote controls. Thanks to an app, renters locate and book a spot for the time period they want. Such a parking solution should make citizens’ life easier.

The other innovation comes from the French start-up *Koolicar*, which set up a “car box” that geo-localizes and calculates the distance covered by the vehicle rented. The box enables **avoiding all “exchange key meetings”**. Indeed, Koolicar provides renters and owners with a digital badge that allows them to open the car and get the key stowed inside. Thanks to an app, owners can set up real-time renting timetables and renters can chose the vehicle and the renting times they want.

² ADEME, « Optimiser ses déplacements », 2014 et « Enquête Nationale sur l'Autopartage », 2017 ; neologis.fr, 2011 ; étude du BCG, 2016



Parkmatch remote control and app



Koolicar box and app

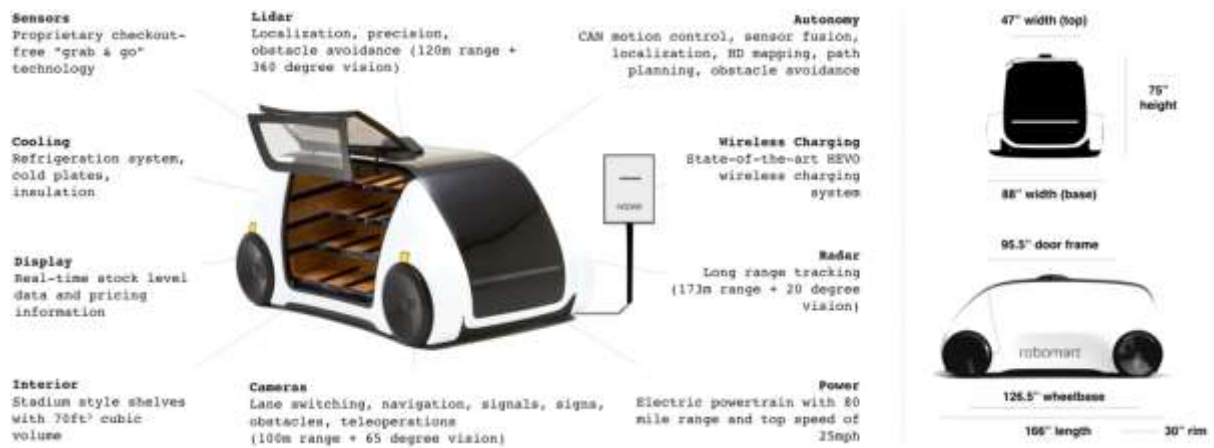
3. A new generation of services aiming at making citizens' life easier

One of the main smart city drivers is to **ease citizens' daily life by integrating connected devices into private and public spaces.**

Smart delivery is about to be one of the new battle fields. For instance, *Toyota* showcased its **e-Palette** automated, electric, customizable, vehicle that can be used for delivering pizzas along with transporting people. The stakes around smart delivery transpire in the sealing of the **e-Palette Alliance** which gathers huge companies such as Toyota, Amazon, Didi, Mazda, Pizza Hut and Uber. Smaller actors are trying to go quicker than big entities by focusing on **food delivery**. *Robomart*, a Californian start-up, displayed its **self-driving store** at the CES. Fully autonomous, this green vehicle equipped with a cooling system can drive up to 130km at a speed of 40km/h to bring the food you ordered on your favorite shop website. Once at your doorbell, you just have to "grab and go". Thanks to a detection system, you will be charged according to what you grabbed. A project pilot is to be launched in California this summer.



Toyota e-Palette



Robomart self-driving store

If the innovations described above are supposed to diminish commuting, they do not **respond to the "receiving" issue**. To tackle this very issue, the French company *Decayeux* designed "**Mycolisbox**", **smart electronic parcel boxes**. The connected boxes made in steel are strong and secured by a digital code. How does it work? After buying a product, the consumer reserves a box available in the area where he wants his parcel to be delivered. Then, both the deliverer and the consumer receive a code that allows them to open the box. Such an innovation enables people to be delivered everywhere 24H/7.

Robots are to be more and more present in public and private places to help direct people. By using deep-learning and artificial intelligence processes, the Russian start-up *Promobot* designed a robot that is supposed to help people with navigation, for instance, in airports, by telling them the way to their flight. The French start-up *Event-Bots* launched its first two robots Tiki and Maava with a strong emphasis on events organization markets. Tikki and Maava are able to welcome and orientate people as well as advising them in shopping processes.



Promobot

4. The development of “smart culture” to foster culture accessibility and renovate tourism

Connected devices are not the only way to make cities become smarter. Using IoT and virtual reality to make them be more knowledgeable and more inclusive is a great opportunity.

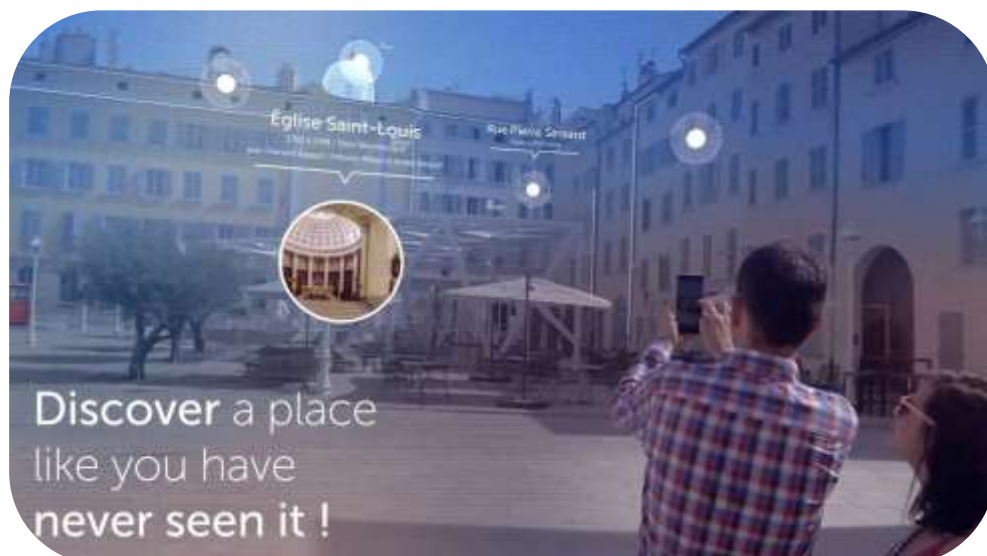
4.1 Culture accessibility

Opera is often considered as one the most inaccessible part of culture. First and foremost, opera performances are extremely expensive and second it is something that cannot be appreciated without upstream education. How to make opera accessible to all? By using virtual reality. At the CES, the Rennes’ Opera offered opera immersions during a performance of Carmen. Thanks to ESI Group 3D virtual reality and Noise Makers technologies, people are under the impression of staying on the stage of the Rennes’ Opera, among the singers and the musicians. As Rozenn Chambard, Secretary General of the Rennes’ Opera puts it, “**virtual reality is an efficient way to democratize the most inaccessible parts of our culture** by providing people from all social backgrounds with immersive experiences”.

If it is important for cities to invest in culture, **it is essential to wonder whether cultural innovations can bring both knowledge and revenue**. A business model relying uniquely on public subventions is risky. Thus, French companies like *Shortedition*, that offers people free shortstories in public spaces, and *Timescope*, which uses virtual reality to make people see what public places looked like hundred years ago, might have some difficulties to build up a sustainable and scalable business models.

4.2 Smart culture and tourism opportunities

By **combining virtual reality and smartphones** it is now possible to **address the needs of a new generation of tourists** who want to have all the pieces of information instantaneously about a monument standing in front of them. The French start-up *Archistoire* reinvented paper guides by designing an application that provides **interactive and immersive explorations of cities** main points of interest. You just have to point your smartphone at a monument or a place you want to know about and you will be able to virtually enter into it, to see it hundreds years ago and to access to authentic stories and exclusive information.

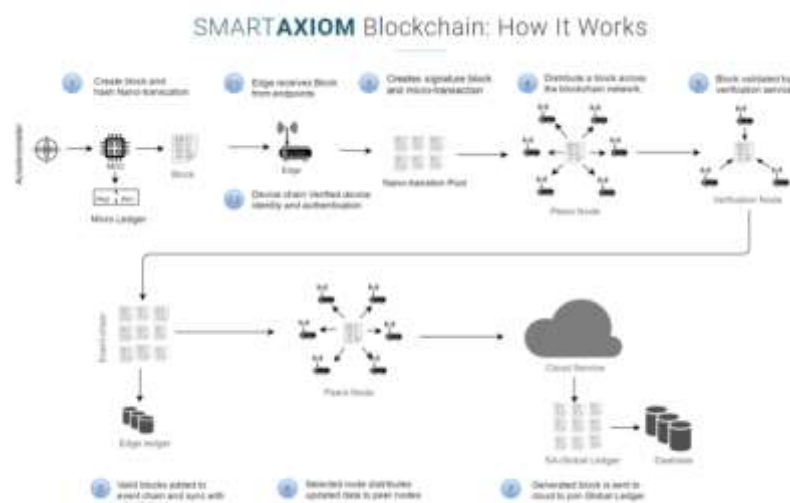


5. A booming market : cities' security

As cities become smarter and smarter they **become extremely vulnerable**. Indeed, if every IoT device is an entry point for hackers, **what could happen to an entire smart city in case of cyberattack?**

5.1 Security and data protection

The main challenges for companies and cities are to find ways to provide data confidentiality, detect threats and react immediately. Solving such issues is the mission that the American start-up **SmartAxiom**, in partnership with IBM has decided to handle by designing the SmartAxiom Blockchain Fortress, an integrated security decentralized software that does not rely on a centralized authority.



5.2 Citizens' safety

As cities and public spaces are more and more exposed to sporadic attacks and environmental threats, **it is essential to contemplate efficient ways to manage crowds**. The Dutch start-up **Ucrowds** set out a piece of software that runs **real-time crowd simulations**. According to Roland Geraerts, co-founder of the company, this very piece of software makes it possible to **determinate evacuation times in complex buildings, evacuation ways and processes during mass events and to improve the crowd flow in cities**. By simulating the behavior of 15 000 autonomous and social pedestrians reacting to an event in real-time, Ucrowds' software are incredible opportunities for ever growing cities to set up relevant security measures.

Drones were particularly present at the CES. Companies showcased drones that deliver long flight times with high payload capacities and high definition images. Their main uses are: agriculture monitoring, disaster management, resource management, infrastructures inspection and borders security. The American company **Autel Robotics** showcased one of the most state of the art drones, the "Kestrel" that can fly nearly 2 hours and covers up to 100km at about 65km/h.



Kestrel drone

Digital keys and **biometrics devices** are revolutionizing security processes.

The French start-up ***Kmaster*** designed a Bluetooth locking system that turns people's smartphone into secured digital shareable keys.

As no two human irises are alike, the American company ***EyeLock*** developed a technology that collects more than 240 iris characteristics and generates a unique encrypted code of each iris. Then to authenticate people, it matches the encrypted code with peoples' eyes. EyeLock's dual-iris authentication method is far more efficient than facial, voice or fingerprint recognition processes. Only DNA is more accurate.

Appendix

Company	Illustration	Description
Continental AG https://www.continental-automotive.com		Leading German automotive manufacturing company specialising in tyres, brake systems, interior electronics, automotive safety and other parts for the automotive and transportation industries
Leddar Tech https://leddartech.com/fr/		LeddarTech develops LED detection and ranging solutions for object recognition and distance measurement applications
Quanergy Systems Inc http://quanergy.com/		Quanergy is the leading provider of solid state LiDAR sensors and smart sensing solutions.
Velodyne LiDAR http://velodynelidar.com/		Leading developer of Lidar Sensors Autonomous Cars, Safety, & Mapping
SPEC sensors https://www.spec-sensors.com/		SPEC Sensors makes high-performance, reliable, small and low-power gas sensors for the Internet of Things.
AerNos http://www.aernos.com/		AerNos develops nano gas sensors to detect air quality, food spoilage, chemical warfare, disease detection. AerNos sensors can be embedded into Internet of Things (IoT) devices, wearables
Blue Whale Company https://www.bluewhalecompany.fr		Company specialized in connected smart devices that detect water leaks and overconsumption and shut off automatically water inflow
OpenDataSoft https://www.opendatasoft.com/		OpenDataSoft makes platforms that simplify the publishing and processing of their cities data, open data, and internal data
Living Map https://www.livingmap.com/		Living maps designs connected maps that locate all IoT assets and give users real-time information about what is going on around them
Elichens https://www.elichens.com/		ELichens provides services and sensing solutions for hyper-local air quality
Atmotrack http://atmotrack.fr/		Atmotracks is a real-time air quality and noise mapping service
Icohup https://www.icohup.com/		Company developing air quality and radioactivity sensors (Rium).
ACloud https://www.a-cloud.fr/		Designs a solution that absorbs noise in busy environments. Saving data, it also alerts when environmental parameters deteriorate.
IOTAS http://www.iotashome.com/		IOTAS designs platforms to monitor home IOT devices
Ubiant https://www.ubiant.com/		Designs platforms able to cross-functionally manage the temperature, light and air quality in line with an energy consumption target
Site 1001 https://site1001.com		Site 1001 provides a cloud-based software platform to provide building intelligence for facilities professionals,

		building owners, managers, and operators.
Liteon https://www.liteon.com/en-us		Liteon is a computer storage devices company that primarily manufacture consumer electronics
Green Creative http://www.green-creative.com/		Green Creative designs a new generation of connected bins which sort waste and warn when there are full
MyBus https://www.mybus.io		Mybus develops applications to track public transports, give passengers real-time timetables and e-tickets solutions
Mytechtrip https://mytechtrip.com		MyTechTrip develops passenger information management tools for transport networks
Rumbo Mobile http://rumbomobile.com/		Smart parking solution
Parkki https://www.parkki.fr/		Smart parking solution
Ujet https://www.ujet.com/en/		Subsidiary from Ocsial, which has developed a foldable electric scooter with a removable battery that can be charged in 2 hours via standard outlets.
Immotor http://immotor.com/		American company specialized in smart batteries for personal transportation devices.
Segway http://segway.com		Segway Inc. designs and manufactures personal electric transportation devices for consumers and businesses.
Genze https://www.genze.com/		GenZe is a division of the Mahindra Group, which focuses on e-bikes and e-scooter.
Navya https://navya.tech/		Navya, leading company in the autonomous and clean vehicle market.
Velco https://velco.bike		A French start-up that has designed a connected handlebar, the Wink Bar, with GPS-assisted navigation, bike geolocation and integrated headlights.
Steering AI http://www.steering.ai/		Steering AI is a Chinese company specialized in warning systems for fatigue driving and in management service platform for fleet to protect every driver.
Chargepoint https://www.chargepoint.com/		ChargePoint is the world's largest network of electric vehicle charging stations in the US, Europe, Australia.
Electric Loading https://www.electric-loading.com/		Electric Loading is a French company designing charging solutions for electric vehicles
Park Match https://www.parkmatch.eu/		Park Match, a French start-up, launching a car parking spots sharing solution between individuals without key exchanges.
Koolicar https://www.koolicar.com		Koolicar, a French start-up, launching a car-sharing solution between individuals without key exchanges.
Robomart https://www.robomarts.com		American start-up building self-driving stores.

Decayeux http://www.mycolisbox.fr/		The French company Decayeux designed “Mycolisbox”, smart electronic parcel boxes to make delivery easier.
Promobot https://en.promo-bot.ru/		Promobot is a Russian start-up which has created a robot designed to help people with navigation and capable of recognizing anyone.
Archistoire https://www.archistoire.com		Archistoire is a French start-up that has developed an interactive and immersive discovery app revealing cities' inside stories to visitors.
Esi group https://www.esi-group.com		French company specialized in virtual prototyping and immersive virtual engineering.
SmartAxiom https://www.smartaxiom.com		American company providing an IoT security solution that utilizes Blockchain technology to protect devices and data.
Ucrowds http://www.ucrowds.com/		Ucrowds is a Dutch start-up that has offers crowd simulation software to perform evacuation and crowd flow studies in big infrastructures or events.
Autel Robotics https://www.autelrobotics.com		Autel Robotics is an American company specialized in the sale of drone and aerial photography devices.
KMaster http://kmaster.io/		KMaster is a French start-up developing a mobile app for professionals and individuals to manage the keys and open all automatic gates via smartphones.
Eyelock https://www.eyelock.com		EyeLock is the American global leader in iris-based identity authentication technology solutions.
Skeep www.skeep.co		Skeep is a French start-up that develops personal data control software. It enables users to manage data companies have on them.