Hello Future Articles Archive

Year: 2017
Welcome to the Hello Future articles archive for the year 2017. This document compiles all articles published during this period, reflecting the ideas, innovations, and insights that defined the year.

The purpose of this archive is to preserve and share significant contributions from the Hello Future community, while providing an overview of developments and trends.

Five professions augmented by innovation

Thursday 28th of December 2017 - Updated on Thursday 17th of September 2020
Reading time: 4 min

Surgeon, teacher, architect, customer relations manager... In these five professions, as in others, technological developments are shaking up organisations and can be a cause for concern. But they aren't doing away with human beings. And they are improving working conditions, creating opportunities, and increasing quality of service.

Technological innovation is creating opportunities in professions where creativity and human intervention remain crucial.

According to a recent study by MIT and Boston University, the introduction, in the United States, of 1 robot for 1,000 employees leads to the loss of 5 to 6 jobs. Enough to once again support the idea that progress destroys jobs. A fear that is as old as progress itself. Meanwhile in France, the Employment advisory board concluded in a report that only 10% of jobs in France are threatened by automation. No two sets of figures are the same… But what about in practice?

Technological developments (robotisation, artificial intelligence, automation) are shaking up old habits and organisations. But they are also considerably improving working conditions, for example by reducing human error and repetitive or risky tasks. They are also creating new opportunities in professions where creativity and human intervention, in particular, remain crucial. And when they do on occasion profoundly change a profession, it is usually for a better quality of service. Here’s proof in five professions that have been “augmented” by innovation.

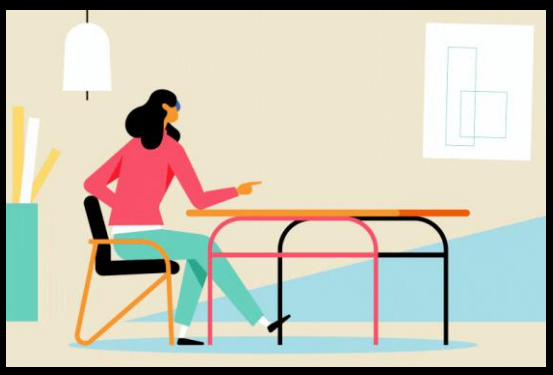
The surgeon’s hand guided by augmented reality

On 21 November 2017, the Avicenne hospital in Bobigny will perform the first surgical operation (fitting of a shoulder prosthesis) to use Microsoft’s HoloLens augmented reality headsets. The surgeons will have before them the many screens on which x-rays, scans, and other information are usually displayed. A procedure, which also reveals details that are invisible to the naked eye, thus avoiding, for example, severing an important blood vessel. And since 2013, the hepato-pancreato-biliary service of Strasbourg CHU (University Hospital) has been using the augmented reality technique, which uses 3D-reconstruction software to enable overlaying of the patient’s scan or MRI images onto actual surgical videos. Leading to a greater precision of surgical gesture and therefore less human error. Similarly, at the Georges-Pompidou European Hospital, Thales has developed an augmented reality system enabling orthopaedic surgeons to see the skeleton through the skin in real time. Now the eye is no longer alone guiding the hand.

The teacher in immersion with the pupil

Virtual reality and augmented reality are two ways forward for teaching. The former has the advantage of being fun and immersive. In this way plastic arts, architecture, or engineering students can visualise their projects, and in the same way history students can dive into Egyptian mythology or the Napoleonic Wars. Another significant advantage is that virtual reality focuses attention and prevents distraction. As for augmented reality, it complements learning and can thus optimise it. By offering extra information or instructions, it can guide pupils or students in their gestures for manual or technical training for example. A way for them to be active in their learning experience. More than just a digital transmission, “augmented” teaching complements the teacher-student relationship.

The 3D architect



A far cry from handheld mechanical pencils, plans and drawing boards, most recent technological developments have significantly changed the work of the architect. Autocad, Sketchup and other BIM (Building Information Modelling) software enable the creation of plans and quotes, 3D images, and quick sketches so as to test ideas when the client is present. Among other innovations storming architects' practices: the application by InViz, which gives you the possibility to see a plan in 3D by scanning it with a smartphone. Furthermore, new professions should appear, such as that of virtual home designer. With the development of virtual reality, the next few years should see an increase in the demand for expertise combining the narrative capabilities of a video game designer with those of space management of the architect. All of this technology, which for the most part is already present in an architect's everyday life, saves time that is precious, in particular for thought and creativity.

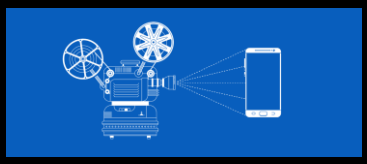
The logistician in the age of Big Data

In the lengthy e-commerce chain that goes from producer to customer via the market place, the supplier and the transporter, information relating to an order is generally held by only one player, which is often the supplier. One small delivery problem can lead the customer on a wild goose chase. Indeed, optimisation of the supply chain is still wishful thinking. Yet Big Data is paving the way for new man-machine interactions: customer-demand anticipation, real-time tracking of stocks, customer satisfaction analysis, cost reduction thanks to a predictive approach… This digital revolution, in which the internet of things (IoT) plays a central role, is giving rise to new professions such as that of Sales & Operations Planning Manager, as well as new practices, such as order pickers equipped with connected glasses that guide them through warehouses, interior drone assistants used to optimise stocktaking, etc.

The ubiquitous customer advisor

According to geneticist Albert Jacquard, “You can teach a computer to say “I love you”, but you can’t teach it to love”. At least not for the time being. And besides, that isn’t what we expect from a chatbot, those conversational robots equipped with artificial intelligence, that are used in customer relations. The aim, albeit less ambitious but so useful in our era of the internet where brands try to be available everywhere at all times, is to provide the gift of ubiquity, to channel the flow of messages, and to provide support to the customer service teams. By “listening” to a conversation with a customer, the bots can, for example, provide additional useful information to the advisor. They can also group clients into thematic “clusters”, enabling the advisor to provide answers that are suitable for several clients at once. Beyond chatbots, the plethora of data collected via IoT enables advisors to be more independent and to provide more relevant solutions to the customer. Be they experiential, commercial, recreational, or as-a-service, IoT applications are only just getting started.

The future, such cinema!



Wednesday 27th of December 2017 - Updated on Wednesday 22nd of June 2022
Reading time: 3 min

Algorithms, robots, data, autonomous cars, artificial intelligence... The digitisation of our societies has been thought out and described in many science fiction or suspense films for half a century. Back to the Future.

Cinema and series like to imagine better or worse but it is often when they imagine the worst that they're the best!

In 1968, *2001, The Space Odyssey* invented (in the cinema) ultra-realistic artificial intelligence HAL9000 and the tablet. Nearly fifty years after the release of the masterpiece by Stanley Kubrick, Xavier Perret, digital director at Orange France, had the idea of confronting the seventh art and technological innovation again with Guy Jacquemelle “Sponsored Data business development” at Orange, after their Big Data book: *cinema had already imagined everything* published at the end of 2014.

“In 2001, I saw Space Odyssey again with my 12 year old son and I came to realise that he saw totally different things in it. What my son lived, is a very modern story about the algorithms and robots, he says. The approach is very dated but he finds the substance in the magazines he reads such as Science & Vie. Do these old films, with a new look, not tell us about the digital world and big data, etc. that we live with from day to day?”

A century (almost) of robots

An idea developed into ten chapters by both authors in their new book: *Help, my life is becoming digital! The script has already been written …,* published by Kawa editions in September, 2016. As a didactic work that is also playful, it looks at a suspense film with contemporary reality, and especially at the digital transformation that each business or industry is currently experiencing, impacting users, employees and citizens.

“They say we live in a 4.0 industry moment where companies are becoming hyper connected. However, on this subject, there is an iconic film, because it is the first one, and this is Metropolis, released in 1927. That is to say that almost a century ago, people were wondering about robots that we are in turn questioning today”, explains Guy Jacquemelle.

Both authors point to other subjects such as the uberisation of society that we can find some basis of in *Fight Club* (1999), the gamification of the insurance sector in *The Game* (1997), questions on mass agri-food products via *Soylent Green* (1973) or the difficult relationship between science and data in *Gattaca* (1997).

The "Herbie" Beetle in the Google Car…

Another example? The Google Car. Demonstration by Xavier Perret: "Christine, by John Carpenter, this is a bit like the evil twin of the same car that lives its own life, or Herbie in the Beetle saga. It is not owned by anyone, except by itself. These are the questions about autonomous cars: Who is the master on board? Who is legally responsible? What algorithms will make the decisions and prevent accidents?" Guy Jacquemelle drives the point, recalling that connected cars are indeed a reality. "Already today in Australia, in the mines of Rio Tinto, there are hundreds of trucks that are autonomous, able to carry the ore to the production centres alone."

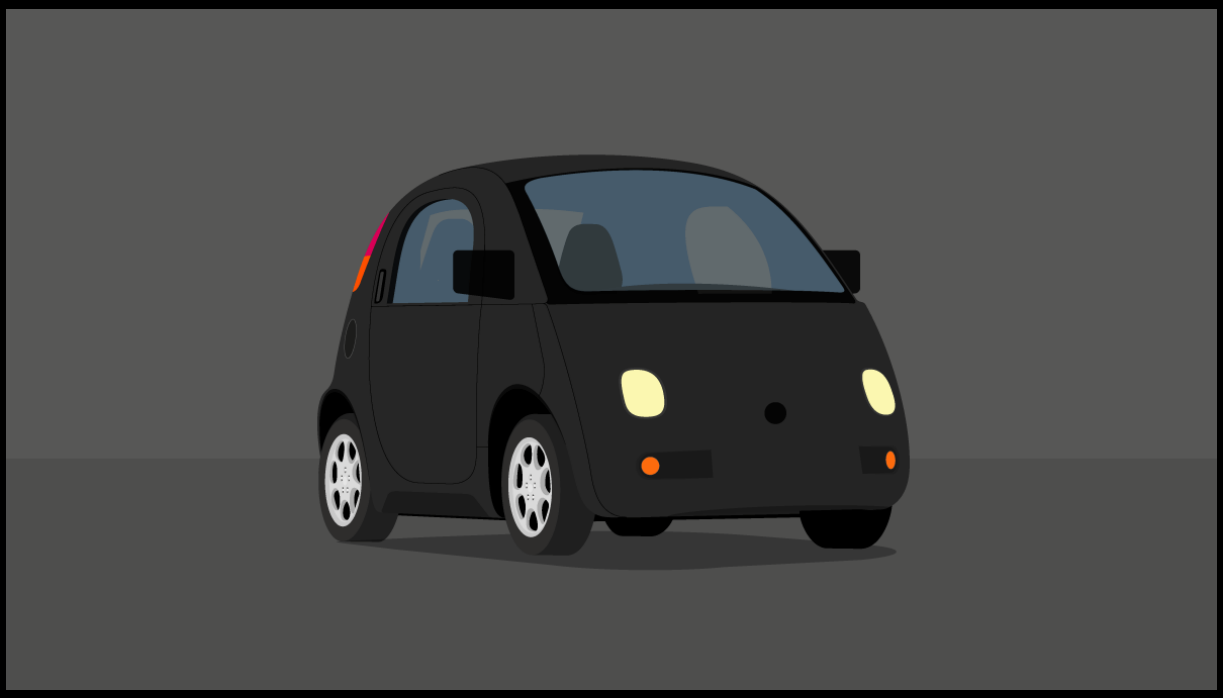
Steven Spielberg, Tom Cruise and an iPhone

How is it possible that cinema could anticipate the future at this point? Whether is its Steven Spielberg, Stanley Kubrick or David Fincher, these directors are *"stubborn or even obsessive",* says Xavier Perret. *"During the preparation of the films, they surrounded themselves with scientists, technologists and skilled writers. The films that most envisaged the future are those that had a context that greatly exceeded that of the cinema.*" Guy Jacquemelle establishes: *"For* Minority Report*, Spielberg had worked with people at the Massachusetts Institute of Technology. When we see Tom Cruise flick through images quickly with his index finger, it precludes the arrival of the iPhone five or six years later."*

Is the series the future of suspense?

Today, the film industry seems to be lacking inspiration when it comes to the divination of innovation for the future. *"We feel that it is easier to dream of the* Consumers Electronics Show *via inventions of new start-ups and films. It's not technology that is limited but the imagination. The future is less disruptive than before. It leaves less room for creativity and imagination, relates* Xavier Perret. *Today, in thinking about the power of algorithms, their application in our societies, do robots have a soul, etc., we will find it in the series."*
Indeed, to imagine what the future will bring, it is better to turn to works such as *Westworld, Black Mirror, Mr. Robot* or even *Real Humans.* Works that depict a very fatalistic, anxious and threatening future use of technology. This is true, but as Guy Jacquemelle concludes, *"cinema and series like to imagine better or worse but it is often when they imagine the worst that they're the best!"*
https://hellofuture.orange.com/en/self-driving-car-world-intelligence/
Hello Future <Internet of things < The self-driving car – a world of intelligence
Internet of things | Article

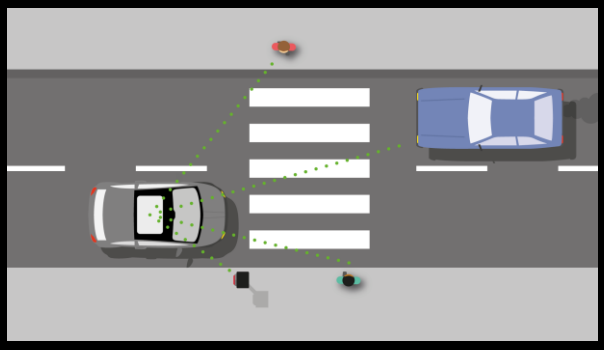
The self-driving car – a world of intelligence



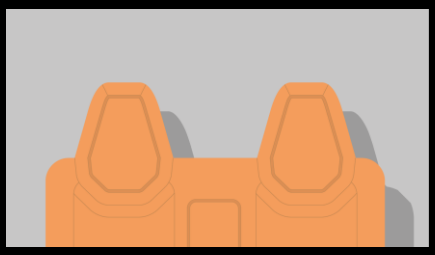
Tuesday 26th of December 2017 - Updated on Wednesday 22nd of June 2022
Reading time: 1 min

Interoperability of the systems

The self-driving car can only be useful if it is able to interact with its surrounding elements. To do so, the car must be equipped with an inter-operable communication system capable of analysing outside data (road signs, the location and speed of other vehicles, bad weather or even possible pedestrians or obstacles, etc) in order to relay this data in real time to the on-board artificial intelligence system.



Like in an armchair

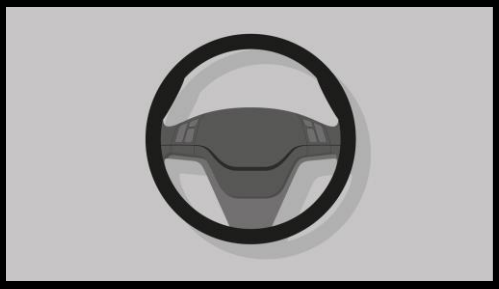


Like all cutting-edge technology, the self-driving car has not forgotten about passenger comfort.
The manufacturer Bose, for example, is currently working on manufacturing a seat that reduces vibrations by adapting to the movements detected on the road… all types of shock absorbers for the driver. Given the capability we know Bose has in providing comfort for our ears, we can trust them to do the same for the rest of our body.

Decision making

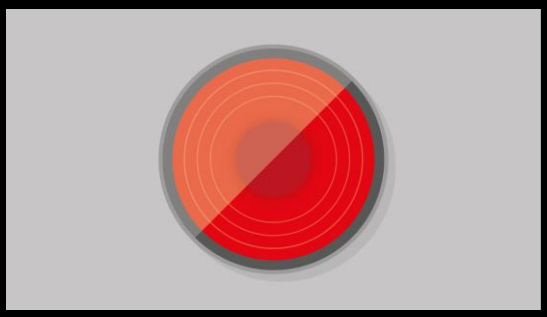
In a self-driving car, no longer is the nerve centre to be found in its engine, but rather in its computer system. In fact, we no longer talk about an on-board system, but an on-board computer. Connected to the vehicle's various systems, the on-board artificial intelligence collects, centralises and analyses the supplied data to make the best decision for the driver.

To keep your hands on or not…



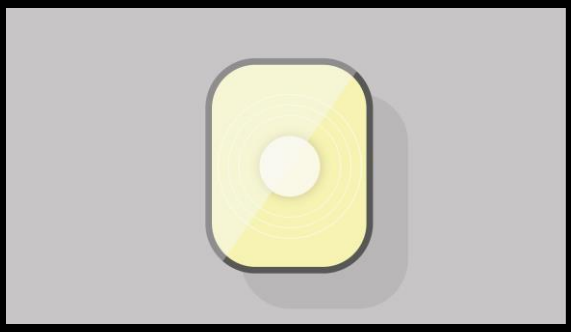
Five levels of car automisation exist. At Level 1, the driver is assisted by two speed regulators or ABS, for example. At Level 2, the driver is the supervisor, like in the case of « park assist ». At Level 3, the driver can assign defined tasks to their car, whilst still being able to take control again. At Level 4, the car is able to operate on its own in certain cases, such as parking. At Level 5, the car operates without human intervention. Currently, the builders are working to reach Level 4 within the next 10 years, in order to offer the "driver" freedom and relaxation at the wheel.

Stop the traffic!



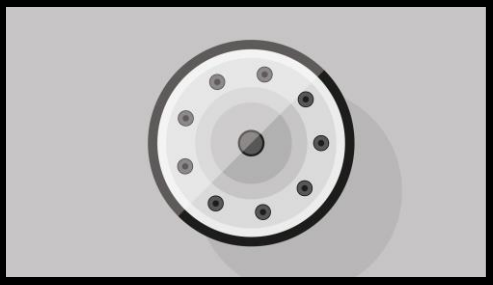
Given that self-driving cars must continue to interact with computerised road traffic infrastructures, traffic lights will probably become a thing of the past. Indeed, MIT scientists have recently concluded that our beloved ol' tri-colour traffic lights will get in the way of the proper functioning and development of self-driving cars. They will thus be replaced by an intelligent system of « Slot-based intersections », a sort of control system thanks to which cars will drive themselves.

Automatic radars



In order to foresee all situations, the self-driving car is equipped with a multitude of systems that allow it to adapt to all circumstances. The first of these is LiDAR (Light Detection and Ranging) – a technology that maps out the environment in 3D using laser beams at the front and back of the vehicle (or 360° like in the Google Car). It also has short- and long-distance radars to detect its surrounding objects and their speed, an odometer to calculate the distance covered by the car, in addition to the average speed, and a camera to identify the visual elements along the journey.

The miracle of electricity



When you say a self-driving car, you are saying "electric car!" With its arrival on the market, the self-driving car is going to reduce the fuel consuming cars and, naturally, greenhouse gas emissions. And let us not forget that artificial intelligence can likewise anticipate traffic jams… another source of car pollution.

Self-driving cars are the near future of automobiles. Intelligence is everywhere, so much so that its benefits are discernible for the driver, their road environment and even for the planet. Welcome on board!

Read also : « On track for driverless cars »

Let’s design the 5G network together with the Plug’in platform

Tuesday 5th of December 2017

Beginning in 2020, 5G will be improving energy performance by offering ultra-high speed that’s more reliable, more powerful and more efficient. And in addition, it also promises developments in new uses and business models.
Plug’in is both a technological integration platform and a live testing space.
For this to happen, Orange teams believe that the 5G network will have to be flexible, smart, secure and reliable. 5G promises a connectivity revolution, which means that the way in which networks are designed and managed will have to be reinvented. Plug’in, the integrated research platform launched by Orange and open to a number of players, is designed to help solve the four major challenges posed by this revolution: meeting the exponential needs created by connectivity, transforming networks based on software, designing the network management experience and, of course, managing energy consumption.
Plug’in enables many contributors to build the world of tomorrow, together: these include operators, users, researchers, developers and designers. For its part, Orange is taking its network know-how, its 5G and virtualization expertise and the power of its international capabilities and putting them to use in the Plug’in platform.
Currently, the shared challenge will be in developing and testing 5G usage and technologies in real-world conditions. That is why Plug’in is offering two environments: a sandbox for software development to create, test and integrate 5G technologies, a live testing space, and a highly realistic prototype of the network management center: the cockpit. What’s at stake with this integrated and open research platform? It’s essential! Because soon, we’ll need ambient connectivity almost as much as the air we breathe.

The sensitive home is built and rebuilt with the Home’in platform

Tuesday 5th of December 2017 - Updated on Thursday 16th of June 2022

Over the next few years, artificial intelligence will have the power to simplify our daily lives and improve our quality of life. Our homes will become smart and empathetic to save us time and increase our wellbeing, providing freedom to dependent family members and ensuring the safety of those close to us.

The Home’in platform will rely on a flexible and sensitive home assistant you can trust. To make this sensitive home a reality, technologies not only have to be fully secure and mindful of everyone’s personal data, but also provide a tool to open up to and connect with others. The challenge of Home’in integrated research platform launched by Orange is to design this sensitive home to safeguard your private life without locking anyone in a bubble. This raises technology and experience-design issues, not to mention fundamental sociological and anthropological questions about how we relate to one another, our household and our home itself. The sensitive home will rely on an assistant to serve you in your home like a “digital butler”. Home’in consists of an experimental home in which technologies and their uses are deployed and tested live onsite. A shared architecture will streamline the integration of new technological devices, allowing each contributor to work in an open, interoperable environment. To what end? The goal is to allow builders, developers, entrepreneurs, sociologists, anthropologists, designers, etc., to use this platform to help design and build the sensitive home of tomorrow. Orange will be contributing its IoT connectivity and usage know-how to the Home’in platform, in addition to using its international capabilities in the field of security. The shared challenge will be in joining together to build a home that safeguards the private lives of its occupants without isolating them.

https://hellofuture.orange.com/en/lets-shape-tomorrows-world-within-integrative-research-approach/
Hello Future < Research < Let's shape tomorrow's world within an integrative research approach
Research | Article

Let's shape tomorrow's world within an integrative research approach

Tuesday 5th of December 2017 - Updated on Thursday 17th of September 2020
Reading time: 3 min

In this exciting period, it is important for Orange to have a research policy that is open and integrative, promoting an approach where technologies and the way they are used are taken into account alongside one another. Orange is launching its research platforms around three revolutions: ambient connectivity, the internet of things and the sensitive home. These revolutions are underway and are already leading to significant changes in the way our physical and digital worlds interact.
For Nicolas Demassieux, head of research at Orange, and for his teams of researchers, the way forward is clear: "manufacturers, entrepreneurs, industrial firms, operators, sociologists, anthropologists, developers, designers, users, researchers…join us to help shape a chosen innovation that is responsible and will drive progress for everyone".
"By opening these three Plug'in, Thing'in and Home'in research platforms today, Orange is calling on the business world, academics and general consumers to help shape tomorrow's revolutions!"

Integrative research means aligning ourselves around a shared goal to invent the next revolutions in terms of technology and uses. How is Orange organising its research to make this happen?

ND: Integrative research is research that is open and widely engages with stakeholders from within the value chain and society. For a global approach to research, we are working upstream to look into the links and interactions both between our technological components and with users.
To understand these relationships and interactions, we need to constantly engage with society. Establishing research that carefully listens to the requirements involved and understands the transformations. Research that can also effectively make all these ideas, and above all the societal or ethical stakes involved, clear and understandable.
So, there is not any clear path mapped out or milestones in place! We want to establish this vision for research as a standard, and we will be developing this project working hand-in-hand with our stakeholders who share this approach. Our goal is to open up areas where everything needs to be explored, building a future that benefits everyone, from users to public research institutes, start-up and industrial firms.

Orange now offers three research platforms. What do they specifically cover?

ND: Three major revolutions are going to lead to in-depth changes in the interactions between our physical and digital worlds over the next 5 to 10 years. So we have three platforms to accompany these challenges. The “Plug’in” platform is focused on ambient 5G connectivity, “Thing’in” covers the internet of things and “Home’in” is targeting smart homes.
At a time when ambient connectivity is now almost as vital for human activity as the air we breathe, Plug’in aims to capitalise on the new possibilities opening up with ultra-high speed broadband. This will be more efficient from 2020, particularly from an energy perspective. 5G will make it possible to guarantee connectivity for critical applications and connect billions of objects.
Networks will essentially become software features (software-defined networks). They will use new technologies based on software and the cloud (on-demand networks) and will incorporate artificial intelligence (cognitive networks). This will revolutionise the way we conceive and operate them in terms of efficiency, security and availability, or even the way we sell them.

The internet of things, the focus for Thing’in, also seems to offer a wide range of new opportunities…

ND: The internet of things on a very wide scale is a result of the widespread connection of sensors to the internet and local intelligence. Tomorrow, the internet will have sensory capabilities thanks to billions of sensors measuring all sorts of parameters for the physical world (environmental, biological, industrial data, etc.).
It will also benefit from billions of activators making it possible to take action on the physical world, from our cities to industry, medicine or agriculture.

In this way, we will move from an internet of things, reduced to technical connections for individual objects, to a real web of known and shareable things within which objects will be able to interact on an application level to perform complex tasks.

Lastly, the Home'in platform is focused on smart digital homes. What opportunities are opening up for us in this area?

ND: Personal assistants like Djingo are already offering a simple, unique interface for controlling your home systems, accessing third-party services or more generally interacting with the digital world.
In the future, thanks to artificial intelligence, these assistants will evolve to become real advisers, with a responsible approach, protecting our privacy. They will be able to converse and reason with us, while respecting each home's habits and personalities, and adapting their advice for us accordingly.

You will be unveiling these three platforms at the Research Fair. What are your expectations with this presentation?

ND: These 3 platforms set out an outstanding ambition. They are platforms for technological integration and in-vivo experimental spaces, as well as vehicles for shared research between research and innovation stakeholders and users.
We will be able to join forces with stakeholders who share our vision for a fully digital and human future, providing our know-how and our capacity for innovation.
Together, we will carry out research work on technologies or uses with a focus on ambient connectivity, the internet of things and smart homes.

How could you sum this up?

ND: By opening these three Plug'in, Thing'in and Home'in platforms today, we are calling on you to help shape tomorrow's revolutions with us!

https://hellofuture.orange.com/en/orange-contributes-marseille-hub-leading-digital-gateway-europe-mediterranean/
Hello Future < Networks and IT < Orange contributes to the Marseille Hub, the leading digital gateway to Europe and the Mediterranean
Networks and IT | Article

Orange contributes to the Marseille Hub, the leading digital gateway to Europe and the Mediterranean

Tuesday 21st of November 2017 - Updated on Thursday 16th of June 2022
Reading time: 1 min

Jean-Luc Vuillemin, Senior Vice-President, Orange International Networks Infrastructures & Services, notes that: “if the Internet is a global network, it’s because of the subsea cables that carry 99% of the total broadband traffic. Orange confirms its position as the leading operator with its participation in more than 40 subsea cables and international consortia. This represents 450,000 kilometers of cables, more than ten times the circumference of the earth!”
In addition, Orange almost doubled its installed capacities in Marseille in 2017 with the three subsea cables IMEWE, SMW4 and SMW5.
Pierre-Louis de Guillebon, Director of **International Carriers** explains: “In Marseille, we recently strengthened our position over the AMEA region to offer better performance, improved connectivity and footprint, great reliability, and guaranteed security for the wholesalers. Orange is also boosting its presence in data centers.
Demand for data, IP and content rose 40% in 2017 and we offer end-to-end solutions to our customers with streamlined, more efficient installation at a lower cost”. As a result, with the Marseille Hub, Orange is boosting its operations and capacities for greater connection and more usages.

https://hellofuture.orange.com/en/ub-y-real-life-robot/
Hello Future < Internet of things < Ub-y, the “in real life” robot
Internet of things | Article

Ub-y, the “in real life” robot

Monday 20th of November 2017 - Updated on Thursday 16th of June 2022
Reading time: 2 min
Ub-y gives a little humanity to robots by re-forging the links between family and friends.
As it can sometimes be difficult to stay connected with family or friends on a daily basis, Suitable Technologies has developed Ub-y, a telepresence robot that allows you to hold conversations with your loved ones while it moves around their home. It’s as if you were there “In Real Life”, or almost.

Hello Ub-y. Your name means “Ub-there”, so wouldn’t you rather be a human who can go here *and* there?

I am a telepresence robot. I can organise remote work meetings, but I am also a house robot. However, don’t expect me to do the dishes, tidy up, or vacuum! Instead, my focus is on the relationships between people, having conversations… To make people talk to each other more often: no matter where they are, I represent them as if they were in the room.

What do you mean? Can you elaborate?

No matter how close they are, sometimes a family is physically separated. Maybe the oldest child has gone to study in another city or even on the other side of the world, or one parent is travelling for work, or maybe granny has difficulty moving or lives far away. My job is to minimise this physical and emotional distance as much as possible. And to (re)connect the people around me, wherever they are

And how do you do all that?

Some people see me as a kind of Skype or FaceTime on wheels, but I’m much more than that! My screen shows my user’s face. The user controls my movements remotely via a computer, a tablet or a mobile phone, making it easy for me to move

around all the rooms of a home. I therefore offer a real presence to those around me. I've even been invited to dinner by my hosts. Unfortunately, I don't have arms and I can't sit down… and anyway, a little electricity is enough to feed me every day.

Only a little electricity?

Yes, I rest on my base and voilà, my batteries are recharged for the next day! As my creators say, thanks to me, *"from all over the world, people are there in a single click"*. With Orange, my interactions are secure and I can even be connected in 4G.

https://hellofuture.orange.com/en/object-makers-whether-cellular-connections-connected-objects-becoming-easier/
Internet of things | Article

Modules featuring in-built cellular connectivity are going to revolutionise the Internet of Things

Tuesday 7th of November 2017 - Updated on Monday 20th of November 2017
Reading time: 4 min

Global forecasts for the Internet of Things market are currently being downgraded by analysts. By studying the experience of connected object manufacturers, who themselves directly influence the end-users' experience of these objects, Orange, as the IoT's leading player in Europe, supports the rise of connected objects and the growth of the entire IoT ecosystem. Nicolas Ducrot, Director Engineering of Connected Objects, shares his view with us.

An IoT market divided between cellular and non-cellular technologies

The connected objects market and the entire IoT ecosystem is currently divided between long-range technologies and non-cellular short-range technologies. Short-range technologies such as WiFi, Bluetooth, Zigbee and Z-Wave are all available to manufacturers and currently equip a large number of the connected objects on the market. Choosing between cellular and non-cellular technology has a significant impact not only on the end-user, but also on the manufacturer of connected objects, explains Nicolas Ducrot. *"In cellular technologies such as 2G or LTE-M, the industrial design process for connected objects may be considered complex by certain manufacturers. "Makers" are faced with having to manage technical and operational complexities; they must assemble numerous electronic components,*

engage contractually with one or more mobile operators according to the marketing area, and test and ensure end-to-end quality. Manufacturers may then tend to pass the complexity to the end user by choosing short-range non-cellular technologies. These are not always secure, tend to be complex for users to configure, and are always dependent on a third-party Internet connection." This impacts the end-user when setting up the connected objects (which includes pairing with the complex network, a step that does not exist in IoT long-range networks), and also affects the users' experience of these objects (unavailability of the third-party connection may render the object ineffective). Although cellular connectivity solutions are available for the connected objects market, at present they are mainly used by companies with experience in using these technologies, a market on which Orange has been present for more than 10 years through its Machine-to-Machine offers. "*However, the problem goes beyond the simple choice of which connectivity technology to use; it extends to the entire industrial production model for connected objects, which we must examine in order to simplify the process for the manufacturers of connected objects,"* explains Nicolas.

The manufacturer and their design process in the face of fragmented tasks

In the process of designing connected objects via long-range cellular networks, manufacturers find themselves at the heart of an industrial ecosystem where they are responsible for many elements: selecting the IoT communication module and the relationship with its manufacturer, the relationship with the operator(s) to ensure the operation of the connected objects in one or more regions, with the SIM card manufacturers to have the right card available (if applicable), with the providers in charge of hosting the data generated by the objects, with the distributors etc… Putting himself in the shoes of a "maker" of connected objects, Nicolas shares his analysis of the IoT industry. "It is a question of better understanding the strengths and weaknesses of a model and drawing the right lessons from it so as to contribute to its evolution," insists Nicolas. "It is not an obvious position. Indeed, the IoT industry is already structured – thousands of new connected objects are appearing each year. In an industrial and commercial context like this, it may be difficult for established players to step back. However, innovating at the very heart of this market's functions enables us to go faster, to go further." This experiment, which was conducted for two years, allowed Nicolas and his teams to analyse the functioning of the IoT ecosystem and its industrial model in order to "build a new value proposition, centred on the principle of facilitating the work of connected object manufacturers".

Simplify the IoT industry model

The "Live Booster" program is the embodiment of this value proposition. Through the Heracles connected module from EBV Elektronik, which is included in this

program, the manufacturer has a simple tool that saves time without having to worry about the operational complexities associated with integrating connectivity. *“With embedded cellular connectivity, we offer a plug-and-play experience to object makers and, by extension, to their customers. The Heracles module, which is smaller than a euro coin, is an effective answer to simplify the design process for connected objects,”* explains Nicolas.

By pre-integrating connectivity into the electronic design stage of the connected object, the manufacturer benefits from a secure, high-performance and competitive connectivity solution that operates over large geographical areas (33 European countries covered with the first module).

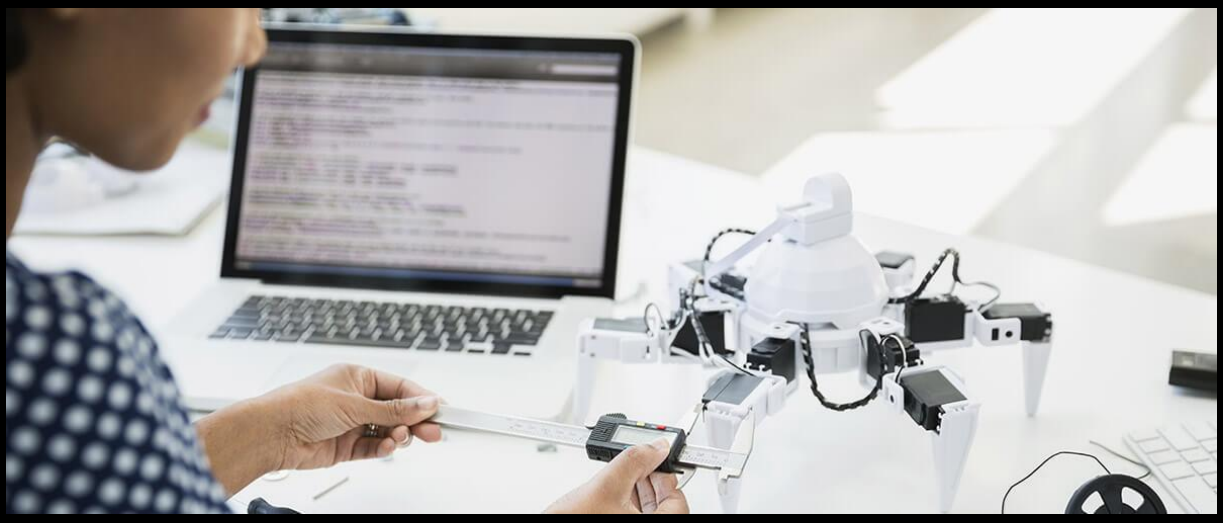
Thanks to the combination of a SIM card integrated in the module and a prepaid data plan, this all-in-one solution is profitable for the manufacturers of objects.

“The simplification is concrete and immediate,” says Nicolas.

But it does not stop there: “This first module is marketed in Europe by one of the leading distributors of electronic components, EBV Elektronik, whose business is to supply the entire industry. This solution makes it possible to avoid disrupting manufacturers’ procurement habits for components, and thus to easily integrate us into their uses,” says Nicolas.

It is essential that the IoT industry evolves as a whole and adapts to the constraints of the manufacturers of connected objects by eradicating both the technical complexities and the difficulties encountered in the purchase/consumption process.

Open Source, the innovation accelerator



Monday 23rd of October 2017 - Updated on Monday 20th of November 2017

Open Source. Unlike the terms “Big Data” or “The Cloud”, which have become household words in a short time, “Open Source” is a term that has not gained widespread currency among the general public. Yet it covers an essential reality in the new technologies and telecoms, where a philosophy of mutual assistance, sharing and “co-opetition” prevails.
“The Open Source-type cooperation model is without doubt the most appropriate way of creating new business models and services where each contributor is rewarded on the basis of their efforts.”
“Linux and Open Source have won, get over it”. That was the title of an article published in early 2016 on ZDNet, which sounded like a death knell and reflected a kind of inevitability. But the sentence is no less true for all that, and is becoming more evident with every passing year. At a strictly business level, the turnover of Open Source agents is growing six times faster than the digital sector in France as a whole according to a 2016 study by the French National Council for Free Software. But its influence goes way beyond financial issues alone…

Open Source?

A program is deemed to be Open Source when its development and use comply with certain principles laid down by the Open Source Initiative (OSI), such as free distribution and access to the source code. By doing this, a developer or community of developers behind a software solution can share it with their peers to improve,

enrich and perfect it. On the other hand, users of “proprietary” software are unable to study its source code and modify it.
From being a marginal phenomenon in the early noughties, Open Source has today become mainstream, up to and including the recent involvement of proprietary software giant Microsoft, which has teamed up with the Linux Foundation, set up in 2007 to oversee the development of the eponymous free operating system.
The race for Open Source had begun, and Orange has already been involved for a number of years by recommending the use of a selection of open source components and tools, setting up a Group governance body, and practising the sharing of code in its in-house software forges.

Open source, Open Innovation: self-evident openness at Orange

Open Source culture is deeply rooted in the Group’s mindset, and is essential to the life of its products and services. As an example, our Livebox routers feature built-in Open source components whose codes are published and stored on open access on a dedicated website.
The approach is pragmatic and consistent with the open, collaborative innovation policy operated by Orange. “When innovation takes place in an open framework it generates efficiencies, and Open Source is a reference framework that allows people from different firms and “technical” cultures to cooperate,” explains Thierry Souche, CIO, Orange Labs Services. “By contributing to an Open Source community, and by nurturing it with our feedback, we automatically benefit from improvements made by others. Through our membership, for example, of the OpenStack Foundation, which oversees the development of the eponymous cloud computing platform, we can envisage deploying datacenters with a single click in the near future.”

The “co-opetition” era

In the world of telecommunications, Open Source has dealt a new hand in a well-established game by bringing operators and hardware suppliers together. Competitors start to co-operate, bringing together a host of players including the likes of AT&T, IBM and Dell. Recently, AT&T decided to transition its SDN/NFV automation and virtualisation platform for functions in its ECOMP network architecture to Open Source in conjunction with Orange, in the framework of the Open Network Automation Platform (ONAP).
Thierry Souche reckons that this trend towards co-opetition can only strengthen. “The Open Source-type cooperation model is without doubt the most appropriate way of creating new business models and ensuring fair compensation for the efforts everyone puts in,” he explains. “At a time when budgets are tight, we need to continue working on the efficiency of our technical resources and configurations, and co-opetition is a strategic driver when it comes to rising to this challenge, which is where all innovative software players are heading.”

Quality a major driver

Through its mechanism, Open Source is shifting resolutely towards considerations of quality and efficiency. If a firm contributes, financially and technically, to an Open Source development project, it follows that it sees the prospects of profiting by it. “Open Source innovation injects flexibility into our organization and speeds implementation lead times,” adds Thierry Souche. “That’s because the world of Open Source encourages greater interpenetration of technologies than in the commercial sphere. It helps to bring forward new solutions and offer them to customers faster and more efficiently. And what’s more, those solutions are based on fine-tuned software building blocks that are reliable, secure, and proven by hordes of players all over the world.”
Being so advantageous for eco-systems, companies and end customers, can anyone doubt the benefits of Open Source?

Governing digital: perpetual experimentation

Monday 9th of October 2017
Reading time: 4 min

Far from being a state of anarchy, digital is overseen by a variety of governing bodies at global, continental and national level. Structures exist whose modus operandi and decision-making are not always consensual – far from it – and which need to reinvent themselves as the issues raised by these technologies become ever more complex. Read on for a quick rundown on the forces lined up…

“Different governance models have evolved over the years and cohabit, from self-governance, to intergovernmental organisation or multi-partner bodies.
Each challenge calls for its own specific solution.”

Like any question that has a deep impact on a transformation of human society, digital calls for forms of oversight and regulation. Valérie Peugeot researcher at Orange’s social and human sciences laboratory and member of the French data protection council (CNIL) has was already talking about digital loyalty and transparency emphasizes here : “Governing digital means accepting a state of permanent political experimentation !”.

Indeed, “unlike other areas, where it was possible to develop a governing framework by gradual stages, from local to global, digital issues generally ignore borders and continually change with each new technological breakthrough” explains Valérie. “That requires us to use our imaginations more and more” … another specificity of digital world which has consequences on its governance, “Digital is an eminently young political object in the scale of human history” and is mainly characterized by “the fact that it was global right from birth” points out the researcher.

It will not be surprising, therefore, that the first clear position on a regulatory framework for Information and Communication Technologies (ICTs) came from the US. In 1993, in a speech that has gone down in history, Al Gore, who at the time was Vice President of the United States, explained that the role of a federal state consisted in creating a facilitating environment for what were known back then as "information superhighways". In his view, a government should not under any circumstances meddle in the governance of ICTs, as had been the case with telecoms and cable, because it would hamper competition and technological progress in this field.

Simultaneously, the Internet pioneers were getting organised into what the sociologists Michel Callon and Pierre Lascoumes (authors with Yannick Barthe of "Agir dans un monde incertain. Essai sur la democratie technique" Le Seuil, 2001)" call a "Technical Democracy". In other words, they create their own self-governance structures, where people interested in a technical object will dedicate themselves to co-constructing standards. In this way, they generate "soft law", outside the traditional framework of "delegative" democracy , at the same time as they project and promote a powerful political vision: the fundamental Internet protocols (TCP/IP) used to transfer data around the Internet and the World Wide Web (htpp) are open source, which makes them common goods.

Towards the multi-partnerships

Since that time, several governance models have cohabited. There seem to be two opposing rationales. The first is historical, based on the representation of sovereign states, and is expressed in the great global organisations such as the international telecommunications Union, while the second accords the lion's share to the main Internet players themselves, grouped in various bodies such as the Internet Society (ISOC), the Internet Engineering Task Force (IETF), or the World Wide Web Consortium (W3C) . To make this picture even more complex, ICANN (the Internet Corporation for Assigned Names and Numbers), which among other things manages domain names, is a non-profit body controlled by the US Department of Commerce. That control is gradually loosening, giving way to a multilateral structure.

"Since 2003-2005, a fourth option has been emerging," explains Valérie Peugeot, "that of multiple partnerships, under the aegis of the UN, which at that time was organising the World Summit on the Information Society (WSIS) via the ITU, attended not only by governments but also by companies and representatives from civil society, and which led to the creation of the Internet Governance Forum (IGF)." A multiple partnership that for the time being is widely criticised, among other things for its lack of effectiveness, and features at the heart of geopolitical tensions.

Two typology criteria

With the ceaseless development of new technologies, governance issues go way beyond the areas of the Internet and the Web and extend to all digital domains. In fact, a large number of bodies exist or have been set up within state or sometimes European Union structures to manage strategic areas such as privacy and the protection of personal data and cyber security. But little is done at global level.

"*If we try to outline a preliminary typology of these bodies*" concludes Valérie

Peugeot," *we can organise them according to two criteria. One takes account of the geographic scale of governance. The other has to do with the power distribution model – between self-governance, and an international or multi-partner system. The big challenges connected more or less closely with digital (net neutrality, the GAFA monopoly (the US Web giants) and the BATX (their Chinese counterparts) and even fake news, can be understood in light of this dual analytical framework and help us understand how they are, or are not, overseen and by whom.*"

Semantics: The Holy Grail of Artificial Intelligence

Monday 9th of October 2017 - Updated on Thursday 16th of June 2022

What techniques and processes are involved when it comes to ensuring that a question typed in to a search engine or a web forum gets a reliable answer back, regardless of how it is formulated? This is one of the challenges of semantics in relation to automatic natural language processing.

“Our tool can operate as a sort of semantic search engine.”

Online forums are highly popular among web users due to the possibility they offer them of obtaining relevant answers to the questions they raise. However, to achieve that relevance, the question has to be first understood, whichever words are used to formulate it. Yet in their semantic analyses, most search engines rely mainly on the words used in the question rather than on its meaning. In fact, they will not see the equivalence between two phrasings that are similar in semantic terms but are different because of the words they use. One example might be the related questions “How do I get someone to look after the children?” and “Where can I find a baby-sitter?”

From expert knowledge of data to learned knowledge

Delphine Charlet and Géraldine Damnati, research engineers at Orange Labs and language experts, are part of the Deskin team (it means “to learn” in Breton) and are deeply interested in this subject area. After starting out analysing speech so as to recognize words or speakers, they are today studying the semantics of natural language. In 2017, they came first in resolving a task set at SemEval, an international semantics competition.

Delphine explains: “*Semantics signifies the meaning of texts. Historically, automatic natural language processing (NLP) has largely relied on expert knowledge developed*

by linguists and lexicographers. For example, they would list "Automobile" and "Car" as synonyms and identify "Ford Model T" as a make of car. Today, datasets like these exist for many languages , But not for all languages and not in all application areas, because the process is long and difficult as it requires human supervision.". Other technologies have now emerged with statistical analysis and, more recently, Deep Learning, where it is possible to infer knowledge bases on massive text corpora without necessarily relying on a database that has already been annotated by a human.

Fully understanding the meaning of a text in fine detail is the Holy Grail of artificial intelligence. In many cases, however, the real need is to understand an utterance roughly in order to process large volumes of data. This low-level processing is enough to help people find the right information, whereas in high-level processing there is a need to reliably understand the full meaning of any text extract.

Forums a strategic research field

Online forums have proved to be highly valuable and rich in information. In them we can see a genuine human collective intelligence at work where some people come along with problems and others with solutions. But forum content is as yet under-exploited. Starting with knowledge bases, it is possible to automatically answer questions of the "Who", "What" or "How many" type, such as "How tall is the Eiffel Tower?" or "Who assassinated Abraham Lincoln?" Conversely, it is far more difficult to answer "Why" or "How" questions.

"*The "question & answer" paradigm is important in the field of artificial intelligence. It is even, in a sense, core to it: I ask a question and a smart machine gives me the answer. Our approach is different: when we ask a question, we try to identify all the similar questions that have already been asked and to flag up all the (human) answers that have already been given,*" explains Géraldine.

Calculating semantic similarity

For the past decade, the annual SemEval international competitions involved large numbers of teams from all over the word, working on a variety of semantic analysis tasks. During the SemEval 2017 campaign, a "Community Question Answering" task precisely tackled the problem of identifying similar questions in forums. When asking a question on a pre-defined corpus, Google displayed the ten best results.

The challenge was to improve on Google! The campaign test data concerned an English-language forum for western expats in Qatar, dealing with all sorts of everyday life topics (where to find the best restaurant, how to hire a child minder, which is the best bank, etc.). "*Our team won the competition with a robust solution able to calculate the semantic similarity between words, even in data that was "infected" by spelling or grammar mistakes,*" says Delphine. The approach adopted by the Deskin team consisted in searching for similar words, not just identical ones, by setting parameters for the automatic processing model. Machine learning is used to process the entire history on the forum concerned in order to learn the representations of each of the worlds according to the context they appear in. "*This technique of word embedding finds similar word meanings based on contextual comparisons," says Géraldine. "One of the benefits is that the model is indifferent to*

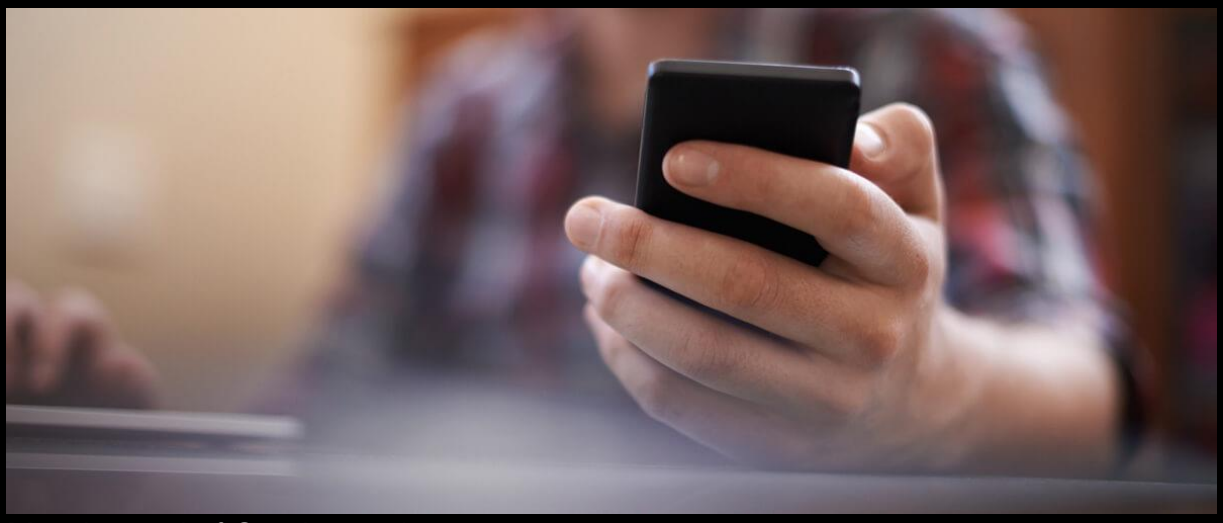
local mistakes. The word "babys" spelled with a "y" , for example, will be identified as "babies" thanks to the other items on either side of it."

Multiple potential applications

What kind of context will derive most benefit from this solution? A first natural application concerns the Orange forums, the customer care service, and self-troubleshooting. A prototype is being developed on the Orange forums assistance base by identifying the right paradigms for this dedicated model. Looking ahead, the field is far bigger, because the tool can operate as a sort of semantic search engine. For example, it is possible to search for very precise information in technical documents, carry out biomedical searches (on tests, reports, diagnostics, and on any patient or physician records), produce aids for data-journalism, both for readers looking for information and authors carrying out fact-checking.

And further ahead, another target will be achieved with the analysis of syntax, textual structure, predicates and arguments. "*With our current approach, the sentence "Peter repaired Paul's car" will help us to understand that this is about auto repairs, and that two people are concerned, but without knowing exactly who actually helped who. By identifying the semantic roles of the constituent parts of the sentence, our team is trying to improve detailed understanding of texts,*" added the two researchers.

Are we sitting on a digital powder keg?



Monday 2nd of October 2017

Everyone has their opinion on the rise of digital everything. Even leading figures from the tech industries are blowing hot and cold. When Elon Musk talks about the dangers of artificial intelligence, Mark Zuckerberg says such warnings are irresponsible... So is there room for compromise between pioneering visions and alarmist outbursts?

The value of digital in societal terms in every domain, from education to healthcare, is by now self-evident. Should you need any convincing, just peruse the articles on this blog. But the ubiquity of digital can sometimes raise concerns: the technology has taken over our everyday environment to such an extent that we don't even notice it any more. And yet…

Digital stuff, everywhere, always

Largely virtual and "embodied" in software apps and algorithms, digital technology has even gone so far as to integrate into physical objects: think of those 100,000 trees in Paris that are now equipped with their own RFID chips!

Digital power is equally exponential. As Nicolas Demassieux, Director of Research at Orange explains, "Digital captures value in the economic meaning of the word, but it also captures knowledge. Digital allows us to accumulate a huge capital of knowledge about the world around us. A company like Google has developed a store of erudition that makes it a sort of "Pico della Mirandola 2.0" (referring to the 15th-century Italian humanist whose erudition and memory were legendary). Effectively, the Mountain View giant is investing in multiple fields of endeavour. In healthcare, for example, it hopes to prevent, and ultimately eradicate, all sorts of pathologies though its Project Baseline. The idea behind Baseline is to map out good human health by collecting a vast range of data from some 10,000 volunteers over a 4-year period. The data will include clinical information, medical imagery,

behaviour patterns, environment, etc. More recently, Google announced that it intended to supplement its indexing of the Web with an index of the real world by combining data from its Streetview cameras with AI algorithms able to detect and recognize all the objects populating our cities, from traffic signs to bus shelters, and from store signs to parking spaces, and upload the data to a gigantic database!

On free will in the world of 2.0

When Lawrence Lessig, a law professor and defender of internet freedom, wrote his text *Code is Law* on the eve of the second millennium, he raised a fundamental question – that of freedom in cyberspace and the "regulability" of the internet – a question that embraces all of digital.

The issues raised are considerable. Technology is increasingly claiming decision-making power over our lives via artificial intelligence. And more often than not, we allow it to exercise this power and freely delegate it. This began with ABS systems, where sensors on car wheels, a computer and a hydraulic braking system help drivers to retain control over their vehicles in an emergency braking situation.

Errare robotum est?

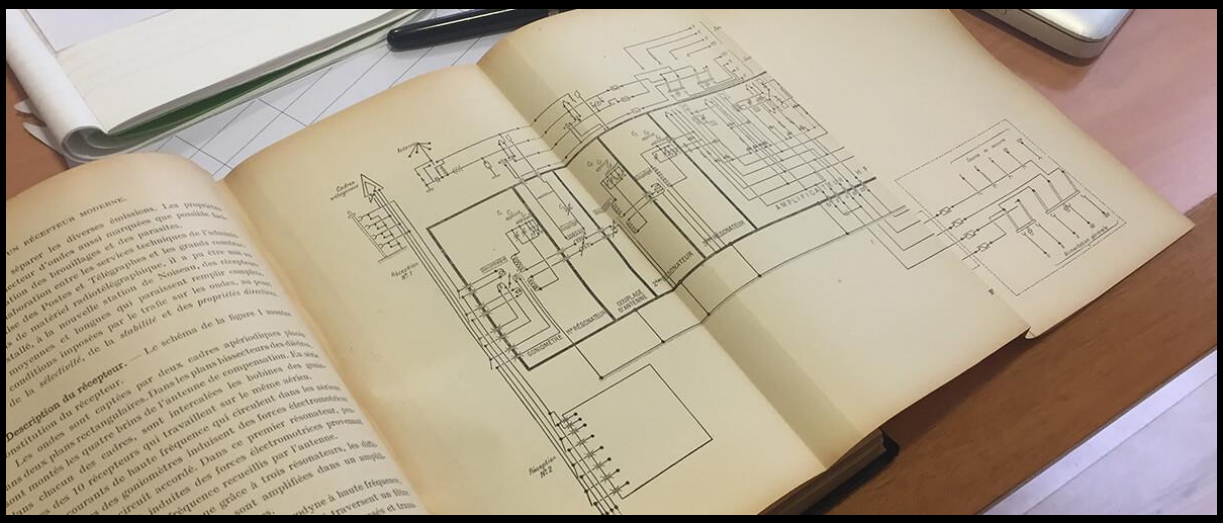
But what happens when the system is defective? Because total infallibility does not exist, and news stories regularly remind us of this fact. "*Like the robot security guard that ran over a toddler in a California mall in 2016, or, more recently the other robot that fell into a fountain in Washington DC*."

Even so, we must not forget the enormous potential of digital and new technologies. AI has made, is making and will make mistakes, but we must see these subjects from a systemic angle, see the whole picture, according to Nicolas Demassieux.

Stop the hysteria!

"Take the example of self-driving cars: overall, their driving will be better because they do not drink, or talk on their mobile phones while driving. We are seeing a growing amount of hysteria creeping into the debate, whence a degree of excessive caution, especially around AI. We need to bring back calm, responsibility and objectivity into these discussions. Because it begins with a new awareness of the potential of the new technologies and digital, and also of the risks they involve. Now is the time to launch an analysis of those risks, before we roll out systems to alleviate the risks or eradicate them whenever possible." In other words, there are solutions for the risks of virtual technology, and they are very real! "The unstoppable nature of digital deserves the arguments it spawns. But we must avoid the pitfalls of hysteria and excess caution …"

Uncovering the invisible: underwater connections, by Agnès de Cayeux



Wednesday 20th of September 2017 - Updated on Thursday 16th of June 2022
Reading time: 3 min

A call for projects has been launched for Art Factory's pilot season, with two themes for artists to explore: The materiality of the network and the world of LoRa. Today, we talk with Agnès de Cayeux, a Net Art artist since the 1990s, who works with all forms of multimedia.

Over a year spent in residence at Orange's innovation campus, Agnès de Cayeux pondered the materiality of the network. She chose, pragmatically and with a great deal of emotion and poetry, to explore "where data goes".

But…What is the network's story?

Agnès de Cayeux emphasizes that almost all data exchanged around the world passes through underwater cables, a fact little-known by the public, who imagines that it most often travels via satellite or antennas. While the reality lies on the seabed, they look to the skies…

"I take a keen interest in the network and data, a subject I was exposed to during my work in Net Art," Agnès de Cayeux explains. "The fact that the vast majority of data is exchanged using underwater cables speaks to me, above all, on a human level (there are sailors in my family). What I find just as interesting is the question of art: seeking to understand the technology around networks, of course, but also to transport it somewhere. I hope, with artistic intent, to turn this into a tangible relationship between man and his earthly and underwater world", she says.

Indeed, Agnès de Cayeux's approach is very human. During her year in residence at Orange, she looked to get to know employees, rummage through the archives, and shine a light on Orange's historical collections and audiovisual archives on networks. Her intention? To tell us a story.

A multifaceted artist

Agnès is a visual artist: she creates machines (such as "the wave machine", in conjunction with Orange engineers) and installations. She also produces written work through her correspondence or poetry. Her work is testament to "how an artist latches onto a scientific theme on an axis which is not (exclusively) scientific".

Her multifaceted artwork will be embodied in an installation including some elements created in conjunction with Orange employees:

– a plastic installation which combines her research, creations, an object found in the historical collection, a sound narrative,

– and a project which will also include the drafting of a White Paper on her vision of underwater connections, as well as her perception, having spent time on the *Pierre de Fermat* cable ship and in Orange's archives, and also the time she spent conversing with researchers. She will evoke sailors and uncover their physical work and the entire industrial universe which they inhabit.

– A glossary containing vocabulary specifically used in maritime and cable-laying discourse is a planned component of this White Paper. "The idea is to uncover it all", she explains. "How is our data processed, where does it go? Humans still have a role to play. One expects there to be a lot of electronics involved, but there are sailors who lug around the cables. It is still a very working-class world inside this industry which remains physical, in the middle of the sea or under it, on the sands of the seabed. It is very moving and powerful to see that this industrial world still exists at Orange".

For Agnès de Cayeux, a network surveyor, the connection to her work is anything but random. She explains, "the man who installed the very first underwater cable was a painter and a poet: John Watkins Brett". She is committed to evoking this forgotten figure, thus linking the past to the future…

Please note:

Catherine Ramus, design engineer at Orange, recalls the aim of the Art Factory project: "This project was born of Orange's desire to carry out multidisciplinary collaborations between artists and the Group's employees. Its purpose is to encourage innovation, explore the creative process, trigger a reflective process on the multidisciplinary approach, and pave the way for other ways of working".

Hello Future < Internet of things < From analogue to digital – the technology that revolutionised TV, Wi-Fi and mobile broadband.

Internet of things | Article

https://hellofuture.orange.com/en/analogue-digital-technology-revolutionised-tv-wi-fi-mobile-broadband/

From analogue to digital – the technology that revolutionised TV, Wi-Fi and mobile broadband.

Monday 3rd of July 2017 - Updated on Tuesday 14th of November 2017

The earliest references to it in the scientific literature date as far back as the 1950s, but it wasn't until the late 1980s that the concept of "Orthogonal Frequency Division Multiplexing" (OFDM) gained wider acceptance and began to unleash its full potential.

Since that time, this transmission technology has gone from strength to strength. Whether you watch digital terrestrial TV or surf the web at home using WiFi, or out and about using 4G mobile broadband, OFDM underpins it all. Today it's mainstream and invisible to most users, but it was, and remains, the origin of a slew of revolutions in our daily lives. Télécom Bretagne engineer Bernard Le Floch is well-placed to talk about the adoption and diffusion of this technology, having spent the lion's share of his career at Orange's Research arm and contributed to Digital radio and TV standardisation programmes.

Eureka! A foundation project for OFDM

Shortly after joining the government department of what was then known as the Direction Générale des Télécommunications (DGT) in 1985, Bernard Le Floch was called on to look into OFDM. "At that time, not a lot was known about OFDM, until the research work carried out by DGT and Télédiffusion De France (TDF – France's national transmission services operator) at their joint research arm, the Centre Commun d'Etudes de Télévision et Télécommunications (CCETT)." At that time, the CCETT (a joint venture between TDF and CNET, the Centre National d'études des Télécommunications – the future Orange Labs) was playing a central role in the European Union's Eureka-147 programme to develop a Digital Audio Broadcasting standard – better known today as DAB. It was a tremendous human adventure,

punctuated by moments of sheer bravura, especially when he was involved in promoting OFDM technology for the transmission layer of the DAB standard.
As Bernard tells it, “The best way of achieving the full potential of OFDM was to demonstrate it in a real-life environment. In the space of a twelvemonth, we developed a prototype OFDM transceiver and we went to the World Radiocommunication Conference organised by the International Telecommunication Union (ITU) in Geneva in 1988. We invited ITU delegates from all over the world to go for a spin in a Renault Espace to demonstrate the system. And it was a great success that had a decisive impact on attendees!” OFDM had demonstrated its effectiveness and after that, there was no holding it back. In July 1990, it was decided to select OFDM for the digital radio standards. Shortly thereafter, a team from the CCETT got another chance to go before the movers and shakers of the media industry when they attended the annual convention of the National Association of Broadcasters (NAB) in Las Vegas, where they gave a demonstration similar to the one given in Geneva.
The digital radio standardisation phase then kicked in, resulting in the DAB standard: “Standardization is just one stage – an important stage, of course – among other, equally difficult, stages because you had to convince manufacturers and operators of the benefits of a new, 100 per cent digital system. In this connection, hats off to the determination of everyone who contributed to those projects, to their enthusiasm and profound interest in the topic, enlivened with the prospect of success.”
TNT takes off with OFDM
In 1992, as the DAB standardisation group was set up under the aegis of the CCETT, the TV sector was in turn wanting to dispense with the old analogue standards, whose names – PAL and SECAM – are still familiar to many. That same year, the digital Terrestrial Television broadcasting (dTTb) project was set up, jointly run by the CCETT and Philips. Once again, the CCETT campaigned for the adoption of OFDM and the technology was chosen in 1995 by the partners in the Digital Video Broadcasting (DVB) project that included all the European industrial players concerned in the future digital TV service. “Like the previous project, this one was characterised by the harmony reigning in the in-house team, and by the diversity of the links with the outside world. We were in touch with a large number of experts from all the European partner countries in the standardisation programme, and those meetings are remembered as unrivalled times of mutual exchange and enrichment….”
Based on OFDM, the DVB-Terrestrial (DVB-T) standard was published in 1996, leading to the development of Télévision Numérique Terrestre (TNT) in France, which was finally launched in 2005. For TV viewers that meant more channels, high-definition, digital-quality sound and images, and improved reception – a hands-down win over the old analogue standards!
Targeting the networks
As Bernard Le Floch points out, “CCETT’s research was taking place as much in a Broadcasting arm as in one devoted to Telecommunications. As a result, we were

involved, as part of the European Telecommunications Standards Institute (ETSI) in the field of wireless local area networks – what today we call Wi-Fi – as a member of the Broadband Radio Access Networks (BRAN) working party. Once again, we made a convincing defence of OFDM technology using slightly different parameters, which was to find its way into the final version of the WiFi standard currently used in our smartphones, tablets and computers!" Looking ahead, it also went on to be used in a derivative version in 4G mobile telephony networks, and is being considered for the future 5G standard.

That's a vast field of applications for a transmission technology that, at the end of the day, has created multiple revolutions in our communications and in our entertainment and information channels.

Game theory: definitely not child's play…

Friday 16th of June 2017 - Updated on Monday 15th of April 2019
Reading time: 4 min

Did you pick up on those poker champions beaten hands-down by an artificial intelligence program? That was in early 2017, and behind that accomplishment lies a little-known (to the general public, at least) field of mathematics called game theory. Contrary to what the name implies, game theory impinges on a wide range of fields, from computing to biology and the economy. Mikael Touati, an Orange research engineer in economic modelling and agent plays, gives us some pointers.

What is game theory?

It's a field of mathematics that has been growing since the 1950s. What we call a "game" is an interaction situation where participants take decisions that impact others. Depending on the context, and on whether participants are acting simultaneously or sequentially, and according to the possibilities offered to them or what they know or don't know about the situation or the other participants, they will make different choices. By taking all those parameters into account, the theory seeks to understand what will influence those decisions, and what results they may lead to. We try to understand the mechanisms of a given situation, just as we would try to understand the mechanisms of a game.

Could you describe an example of a game for us?

The stable marriage problem is a classic theoretical problem that was solved back in 1962 and gave rise to a great many research projects. It asks the following question: if you take a group of individuals, is it possible to marry the men and women in it so that nobody will want to divorce? We look for a stable manner of linking them up according to their expectations so that each woman and each man will prefer to

stick by their present spouse rather than being single or with someone else. We are talking here about men and women, but in practical cases, these “couples” correspond to individuals belonging to two distinct groups, for example students and universities, doctors and hospitals, and even mobile phones and radio masts.

What are some of the real-world applications of game theory?

For the stable marriage example, we can talk about admission systems in some colleges and universities in the United States: the students express several choices, ranked by order of preference, when submitting their applications to the schools. On the basis of their records and interviews, the schools also have their own preferences. Finally, a matching mechanism is used to enable the recruitment. But a difficulty was flagged up in the 1980-1990s in that some participants could manipulate the results by selecting choices different from their real preferences in order to boost their chances of being admitted to their preferred school. Others began to circumvent the system and to finalise recruitments between themselves! The marriage game made it possible to re-think the mechanism to avoid this type of problem. But that’s only one example among many others, because game theory covers an incredible number of subjects and fields of application. It is widely used in economics but also touches on biology in the field of evolutionary theory, computing, and political science.

Why is a group like Orange interested in game theory?

In the field of economics, game theory is a way of studying competition mechanisms between different players, such as competing carriers. Orange is also interested in the emergence of marketplaces. These are places where people exchange goods and services among themselves: you have interaction and decision-taking, but these are very different when it comes to a service like Airbnb or an auction site like eBay. So you have to decide how the interactions organise themselves – who gets what, who pays for the service – in short, on what mechanism will you base your decision to create the platform?

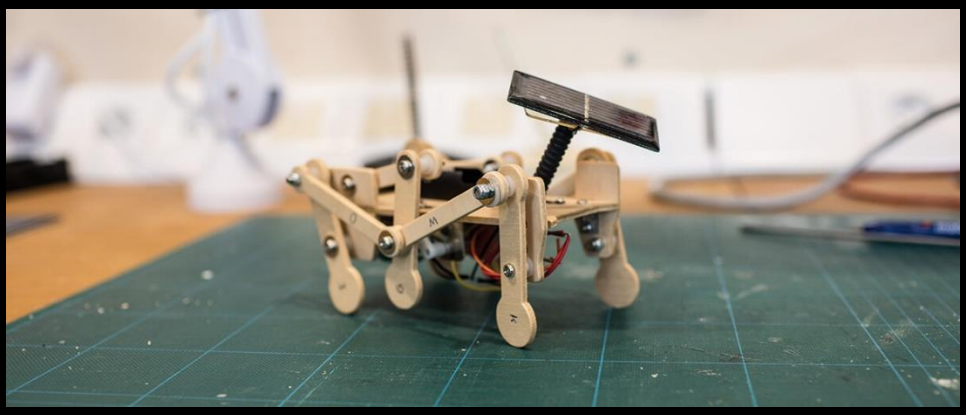
Game theory is even used in network design, to overcome congestion problems, for example: when several people want to connect to a site, there must be sufficient resources available, otherwise users will suffer slowdowns. The people are not interacting among themselves, they don’t know who is on the network at the same time as them, and yet the quality of their connection depends on the choices made by others.

Is artificial intelligence opening up new vistas for game theory?

Deep learning is a field where game theory is destined for a brilliant future. Today, machines learn from past occurrences, draw conclusions and replay the situation, see what could have been different, and take their decisions on the basis of future potential. In some cases, they also interact with and influence each other. To imagine and understand these situations, you need to combine deep learning and game theory. Game theory is a powerful tool. That said, we must not use it naively or abusively. The solution may be complex and while we can programme machines to ensure they adopt selected behaviours, humans and reality are still difficult to model.

If you'd like to learn more about game theory, Mikael Touati has authored an article giving many examples. You can read this on the Orange Research blog at:
Théorie des jeux: et si on jouait un peu ?
See also:
Game theory

Do It Yourself, the great community and sharing idea is gaining momentum!



Friday 9th of June 2017 - Updated on Wednesday 22nd of June 2022
Reading time: 3 min

Since it first appeared in the 1960s in the United States, “Do It Yourself” has developed throughout the world thanks to digital technology. But its values of learning and sharing have not changed, putting the human at the heart of production centres that are open to all, known as FabLabs.

Do It Yourself (DIY) first appeared in the United States in the 1960s, surfing the wave of the hippie movement and its communities. In Europe, an Italian architect, Enzo Mari (only in French), launched the concept in the 1970s: he gave out plans allowing people to make his wooden furniture themselves free of charge, a somewhat utopian idea at the time, which was developed further by the Massachusetts Institute of Technology (MIT) in the late 1990s with the “FabLabs” (Fabrication Laboratory), which are open manufacturing centres where collaboration and sharing are the core concepts.

Locations

In this spirit, and continuing the theme of the “Do It Yourself” movement, FabLabs (Fabrication Laboratory) emerged in the late 1990s, arising out of the concept dreamed up by Neil Gershenfeld, a physicist, computer scientist, and professor at MIT. The early supporters of “DIY” began to share, exchanging their know-how and creating things themselves.These collaborative environments developed into “maker” communities that have grown throughout the U.S., Europe, and France. With 83 FabLabs recognised by MIT, France has the largest number of FabLabs in Europe (and the second-largest number in the world).

In Africa, DIY is also known as “frugal innovation” – i.e., working with what you have — which is no mean feat… For instance, in Dakar, in one of Senegal’s most innovative FabLabs (French version only), two passionate creators explore all digital avenues and share their know-how to solve both personal problems and to rise to the environmental or economic challenges facing their country.

Today, the FabLabs phenomenon reaches every sphere, turning up in the most unexpected places such as Biarne, (French version only) a village in the Jura region of France with approximately 400 inhabitants, where the first rural FabLab was established. Five years after it launched, the story so far is a very positive one, with Biarne’s “makers” proud of their FabLab which is now called “Net-IKi”. From that time, it has a hot press and 3D printer, making it a big hit with other local players: research and development groups, students, and SMEs.

Thanks to digital technology, the phenomenon is growing rapidly. As evidence, in recent years, the arrival of the 3D printer has revolutionised the design and manufacture of objects, machines, and online open source software… What’s more, in this respect, France stands out as a key player. Toulouse and Paris have recently been appointed to organise the 2018 edition of the World FabLab Conference, an event bringing together more than a thousand FabLabs from across the world, and tens of thousands of visitors. Machines that are otherwise inaccessible can even be used by the public.

The “DIY” culture has found its place in Orange Gardens

A halfway house between a workshop and a FabLab, an area has been set up on the Orange Gardens site for meeting and sharing: “The 3rd Place”. Here, the team comprised of engineers, designers, developers, and so on allows employees to learn more about the “Do It Yourself” and “Do it Together” culture. Inside, you can tinker and innovate with a wide range of tools and machines available. With a soldering iron, a 3D printer, open source software, laser cutting, a sewing machine and a digital embroiderer, there is something for every future “maker”! The team at “The 3rd Place” has many innovative projects up its sleeve, having recently created a data object known as “The TicBot”.The only down side, according to Lou Vettier, a “maker” and coordinator at “The 3rd Place”, is that few women visit them… One of her missions is to shake things up and make manufacturing and the tutorials offered at “The 3rd Place” more attractive to women.

Orange’s Community FabLabs, a digital remedy to combat social exclusion

A number of private foundations have also got on board to engage with community associations. Orange Solidarité (Orange Foundation) thus introduced a community aspect to FabLabs by opening its doors to young people with no qualifications to teach them about new digital practices and develop their skills, with the support of Orange employee volunteers. Edified by discussions and experience, it is a rich human adventure in community FabLabs where everyone learns something…

Hello Future < Internet of things < TicBot, the tool which translates our digital tics

Internet of things | Article

https://hellofuture.orange.com/en/ticbot-tool-translates-digital-tics/

TicBot, the tool which translates our digital tics

Thursday 8th of June 2017 - Updated on Thursday 17th of September 2020
Reading time: 3 min

A simple connection
Made entirely of simple programming components (Arduino-type), once programmed and connected to your Wi-Fi, the TicBot is simply plugged into the mains.
Arms swinging
Comprised of simple components, known to all makers: servo motor, LED, Arduino, the TicBot is perfect for those beginning to create their own objects. The TicBot is also Internet-ready. It connects to the Internet to capture the data that reflects your digital activity. The greater your mobile activity and the faster theswing.

Hairs growing

The translation of intangible data, such as the strength of your mobile connection, is carried out clearly and immediately with the TicBot. More noticeably, the interpretation of the data through a real object enables everyone to understand and if necessary to adapt their behaviour. If you're in hyper-connection mode, the TicBot will let you know straight away, its hair will stand on end and its eyes will turn red.

The TicBot – as its name suggests, comes from "tic" and "bot" (robot) – is manufactured according to the "Do It Yourself" principle. It measures our digital activity, turns it into data, then makes it tangible… it also lets us know about occasionally excessive use.

This funny little data object was created in a space known as “The 3rd Place”, reserved for Orange employees, which is dedicated to sharing, manufacturing and prototyping on the Orange Gardens site.
With its half-robot… half-box appearance, at first sight it is difficult to imagine what it might be used for… but as soon as it starts up, it’s astounding! The intensity of our digital activity is difficult to ascertain, and this is where this small TicBot data object comes in. So what does it do? It measures the intensity of digital activity on your mobile phone (data captured: number of times the screen is unlocked), and records and restores the data to make it tangible, thereby allowing users to see the intensity of their activity.

>> Download the user manual to build your own Ticbot

As such, this object can help people to disconnect more regularly. As a “DIY” object (level of difficulty: intermediate) which users must build themselves, the TicBot meets real challenges: it studies the reactions of the public who are encouraged to think about their habits “tics”, and it explores the materialisation of data embodied in a simple object.
How does TicBot work?
Very on-trend with a “vintage” look, the TicBot can even show its funny side when telling you about your condition: from a calm state as it sways peacefully back and forth, its brass hair (see picture) suddenly stands on end if the activity on the mobile is too intense (level 3)… It’s the TicBot’s way of saying “Watch out, digital activity is too intense… stay cool!”
To translate our different comportments, 4 levels have been defined:
> low usage: number of times unlocked lower than 2 per hour
> average usage: number of times unlocked between 2 to 4 per hour
> high usage: number of times unlocked between 4 to 8 per hour
> intense usage: number of times unlocked over 8 per hour

The number of times the user’s mobile is unlocked, is captured via an app installed on the smartphone and this data is recorded in real time, then returned and divided into 4 levels (look at the picture above).
In order for this to work, there is a server between the TicBot and the smartphone user, but not only that… An Android TicBot app, connected to the server, captures the data – i.e. the number of times the user’s smartphone is unlocked – before forwarding it to the server which then sends this information as data to the TicBot. This then reacts immediately, moving around, “opening its eyes”, and moving its “arms”. Linked to the TicBot’s movement, its eyes light up and their number and colour show the number of times the phone was unlocked per hour. All of a sudden, the object becomes a robot.
This little data object, developed by a team from Orange Gardens (Catherine Ramus, design engineer, Huieun Kim, designer, and Tristan Savina, developer), is the result of a research project initiated by Orange Labs Research. It is already turning heads

upon meeting the public. In fact, the TicBot will be presented at Maker Faire Paris, the big annual event for makers, to be held at La Villette from June 9–11, 2017. This is just the beginning, with other “Do It Yourself” objects soon to be created at Orange Gardens’ “The 3rd Place”…

>> The history of DIY

The digital identity conundrum

Friday 2nd of June 2017 - Updated on Monday 27th of November 2017
Reading time: 4 min

These days, with the explosion of online services, from managing your bank account to health insurance and the spread of online payments and purchases, the security of our digital lives is a critical issue.enterprise,

It's quite common, nowadays, for people to have a dozen online accounts – if not many more – for a wide range of uses: email, e-commerce, banking, eGovernment, and so on. The upshot is that we have a whole array of log-ins and passwords, or else we use the same one for dozens of different applications. It's a phenomenon that is anything but satisfactory and practical, not only as regards simplicity, but also for your online security: authentication using a log-in and a password is nearing saturation point!

Online identity: an issue the Internet was ill prepared for

In a world that is going digital at breakneck speed, identity is a key concept because it is fundamental to trust-based transactions, whether between individuals or between individuals and online services. We've all heard about those massive thefts of passwords from a number of providers, and of identity theft. This leads to mistrust among users or complicated defence strategies to step up security. The challenge is, therefore, to propose an authentication process that is simultaneously secure, simple and universal, where today there are as many log-ins and passwords as there are online services. "The Internet was originally designed as a vast encyclopaedia, the aim being to be able to index and retrieve information online and not to identify individuals," explains Pierre-François Dubois, VP Product Marketing at the Orange Technocentre. "Mobile networks, on the contrary, designed a highly sophisticated system for identifying people right from the outset, so that they could be reached at any time using a telephone number twinned with a SIM card. I'm convinced that mobile telephony operators are in an ideal position to respond to the issues of security, simplicity, and universality in connection with digital identity."

GAFA become identity providers…

At the end of last decade, the first firms to grapple with this issue, were, as so often, the "GAFAs" (Google, Apple, Facebook, Amazon). Through their standardized Application Programming Interfaces (API), players like Facebook and Google encourage web services to integrate an authentication system using the social network or email account. Dubbed Facebook Connect and Google Sign-In, these functions have transformed the two Californian web giants into authentication solutions. "It's the start of a response to the need for simplicity, enabling users to avoid the explosion of passwords. But it comes at a price: you have to agree to

share data connected with your Facebook or Google account, and hence allow them to track all your online browsing activity."

…and governments begin to focus on citizens' Digital Identity

Another major event is to be sought among national governments, and in particular the European Union, which in 2014 adopted a regulation on electronic identification and trust services. The aim here is to establish an electronic identity (eID) similar to an online identity card that would enable an EU citizen to digitally carry out cross-border procedures easily and in complete security: a sort of digital passport for all. The ideal solution has yet to be found, but the deadline is fast approaching, as there is talk of 2018 for its initial deployment.

A strategic role for carriers

Within that equation, and faced with these upheavals, mobile telephony operators occupy a unique position to leverage a top trump card, namely the identifier comprising a telephone number to which data on the customer are linked, along with the SIM card on which it is possible to record a 100% confidential secret code known only to the customer, which could become a universal password. Consequently, it is possible to imagine an authentication process based on the SIM card – and that is exactly what the Mobile Connect project is designed to achieve.

The Mobile Connect answer

Developed by the GSM Association (GSMA) at the initiative of several operators including Orange, Mobile Connect is accessible to over 2 billion users worldwide, who would all gain first of all in simplicity when required to authenticate: you would simply need to enter your mobile number on the website of your choice (one that is compatible with the Mobile Connect standard) and then the secret code on your handset and you're home and dry in complete security, because the solution is based on a secure platform built into the SIM card, which is already acknowledged for its intrinsic security. In addition, the sharing of attributes or personal and contextual information is systematically subject to the customer's prior authorisation, while their private data are sheltered from any uploading by the sites on which they identify themselves – an unparalleled guarantee of personal data privacy.

"Today, the system has between 60 and 80 million active users worldwide, adds Pierre-François Dubois. In Spain, for example, all operators there launched the service over a year ago. And in 2016, it was singled out at the Mobile World Congress for two awards in the "Authentication & Identity" and "Outstanding Innovation for the Connected Life" categories. The digital identity revolution has begun!"

Between competition and cooperation: the scramble for knowledge

Friday 26th of May 2017 - Updated on Monday 27th of November 2017
Reading time: 5 min

Meet Grigory Antipov, a PhD student at Orange Labs Products & Services, whose dissertation seeks to answer the following question: is a machine capable of telling someone's age and gender just from a photo, of ageing them, making them younger, or even switching their gender? As we look back over his career and his research, we dive into the buzzing world of machine learning, which is moving at the frantic pace of global research.

Grigory Antipov embarked on his studies in his native Russia. At Moscow University he first studied applied mathematics and computer science, before looking for information about field that might interest industry. That was in 2012. Back then, there was a lot of talk about data mining and machine learning, two emerging field that looked extremely promising. Grigory specialised with a research Master's, and it was after these two years spent in France and Spain, determined to pursue a career in research, that the PhD student came across Orange. "When I completed my Master's in late 2014," says Grigory, "the research world was about to be submerged in a huge wave of deep learning, a set of machine learning techniques that was revolutionising machine analysis of images and sounds. Orange suggested a topic for a dissertation in this field on a particularly interesting subject as part of a team of experts with big reputations in the field. That was just the opportunity I needed."

Faces and deep learning

Grigory Antipov has been working as a researcher at Orange for almost three years now. His dissertation (supervised by Orange's research engineer Moez Baccouche

and Pr. Jean-Luc Dugelay of the Eurecom engineering school) focuses on two problems: the semantic analysis of images to recognise the gender and age of an individual from their photo, and how to age a face in a photo or make it look younger, which among other things allows the machine to recognise the same person from two different images. “Existing face recognition engines find it hard to tell if two faces are those of the same person, especially when there is a big age difference between the two images. The ageing of photographs has existed for many years, but the current algorithms simply applied a few filters using an initial photo. In our research, the big challenge is to generate a photo from scratch.” The first results were conclusive. The team won a challenge involving recognising someone’s apparent age launched by ChaLearn, a non-profit that organises international machine learning competitions. Grigory’s research has even been cited in the prestigious MIT Technology Review, a science popularisation blog published by the eponymous Massachusetts Institute of Technology.

Two competing and allied networks

Grigory and his supervisers operate using a library of thousands of “natural” images, mainly of celebrities. The first stage involves teaching the machines using an approach based on Generative Adversarial Networks (GANs). A GAN is a pair of neural networks: in this case a “generator” and a “discriminator”. On the one hand, the “generator” network tries to draw a random human face corresponding to a requested age. On the other is a mix of natural and synthetic images created by the generator, which the discriminator network tries to distinguish from one another. The two networks learn at the same time, but with opposing objectives: the generator tries to fool the discriminator by drawing increasingly realistic faces corresponding to the ages requested, whereas the discriminator finds the differences between the natural and synthetic images of the given age by making the task more complex for the generator network. The two networks are therefore competing – hence the name “adversarial” – but one can’t make progress without the other.

When the learning is complete, the generator network is able to create random human faces corresponding to the ages requested. It can, therefore, make a given person younger or older, or change their gender. To do this, the generator network is given the person’s description using a specific type of encoding. This encoding contains the person’s key information (shape of the face, of the nose, etc.). In his dissertation, Grigory suggests an original method for finding that specific encoding based only on the target person’s photo. As soon as the noise is identified, it is easy to generate photos of the person at all ages.

Any real-world applications?

This research field interests academics and industrialists alike. When it comes to consumer applications, the technology will facilitate parental controls, for example, or help to offer automatic photo organisation systems. As a result, it will be possible to find all the photos of a relative in a flash, from childhood snaps right up to adulthood. Looking further ahead, the ability to age photos will also be interesting in the case of child kidnappings, to create a photo-fit of what the child might look like several years after their disappearance. For advertisers, age recognition is a major

challenge, since it will enable them to qualify their audience and adjust broadcast content accordingly. The technology could also be used for advertising screens in public places. “It’s worth noting that the attraction of the system is not to identify people, who remain anonymous, but to obtain information about their age in order to personalise services. More generally, age recognition will also help to perform statistical estimates of a crowd to gather demographic data.”

Fast than the Research

The daily round of a PhD student like Grigory comprises days of tests, in-depth reading, and attending conferences. There’s no shortage of exciting new developments in a very fast-moving field invaded by a plethora of laboratories: “Scientific competition has really gathered pace, and these days, the traditional pace of research is no longer suited to rapid technological change. In the deep learning field, new articles are being published every week. By the time an article has been peer-reviewed and approved by conference committees, new data need to be factored in, which sometimes completely changes the picture. So it’s become essential to circulate pre-publication material on the web. And conferences are no longer places where you discover what your peers are up to, but somewhere to go when you’re already well-informed, to discuss, share, and move your work forward of course, but above all to advance research!”

That’s because, in the scramble for knowledge, researchers the world over also make progress by testing their ideas on each other in a delicate balance between competition and cooperation – the same sort, perhaps, as you see in two adversarial neural networks?

Let's talk to our everyday objects…

Tuesday 2nd of May 2017 - Updated on Thursday 16th of June 2022
Unveiled at the Hello Show, Orange's Djingo personal assistant maximises advances in Artificial Intelligence to deliver a conversational service very close to human conversation.
"OK Djingo! What's on TV tonight?" Speaking to an object that talks back to you – intelligently – used to be the stuff of Sci-Fi: no longer. Using Djingo, Orange customers will be able to access their carrier's products and services via a text or voice-activated conversational interface. In the home, Djingo will spring into action to switch on the TV, get a film ready to screen, launch your favourite playlist or control connected objects. But its functions go well beyond the four walls of your living room. The idea is to access services provided by Orange and its partners in ways that allow customers to control their online services. Thanks to Artificial Intelligence, the words written or spoken by the user are no longer raw data lacking a context. The service aims to understand the meaning of the phrases pronounced by the user as well as the emotion generated by the tone of voice or the rapidity of speech. Access to the information you need is easier and more direct.
Birth of a project
Twelve months ago, Orange launched an innovation project involving conversational services, convinced as it is that, as AI technologies improve, this new way of interacting represented the future of customer relations. A small team of developers and customer experience specialists was accordingly set up to work on a product vision and create a technical solution. Yvan Delègue, Director of Orange Multimedia Applications, explains: "We're trying to imagine what lies ahead in the "post app era", as it's called. Our approach is pragmatic and open. With all our researchers who are working in these areas, we have a huge wealth of in-house skills. But we are also keeping an eye on all market players, from the big names to the smallest start-up, the idea being to marry our in-house expertise with the best the market has to offer."
Reinventing ways of working
Designing an assistant like this overturns all our tradition ways of designing and building a service. "Until now," adds Yvan, "when we were developing a function, we first thought about the graphical user interface, from a largely "Web & Applications" viewpoint. While I don't think that conversational services will sound the death-knell for graphical interfaces, they do constitute a new approach to accessing them. We are clearly no longer in the "Mobile First" vision that has dictated what all businesses have been doing in recent years. We're now talking about "Customer First", because we're making the customer central to our thinking

once more, so that we can provide them with an instant service, tailored to their requirements, as well as taking the context into account. So it’s now the service that adapts to the user, and not the other way round.”
Imagining the customer experience of the future and developing the technology to support it involves a new exercise in observation and forward thinking that will encourage business sectors at Orange to accelerate their own digital transformation. Right from the get-go, Orange ranks among the leading carriers to explore this field in Europe and to offer its customers an avant-garde, practical solution.
More about Djingo

In the Pelagos Sanctuary, whales can sleep peacefully!

Tuesday 2nd of May 2017 - Updated on Thursday 16th of June 2022
Reading time: 3 min

It was by chance, while watching a report on the French television programme Thalassa eight years ago, that Julie Zarade, Quality, Safety, and Environment Coordinator at Orange Marine in La Seyne sur Mer (Var), learned about the initiative of the “Souffleurs d’écume,” (a reference to whales spraying out water when they surface). This local association takes actions to protect the whales (and cetaceans in general), of which the REPCET tracking device. By installing this device, ships can, in just a few clicks, locate the presence of whales in the Pelagos Sanctuary cetacean reproduction zone, which lies between Corsica, Italy and Monaco. This environmentally sensitive area must be protected both in terms of its importance for the reproduction of cetaceans and the balance of its fragile marine ecosystem.
The area is also the home of “meadow of Posidonia,” an aquatic plant essential in terms of providing food and an environment for reproduction to the fish, as well as its role in oxygenating the water. These were compelling arguments for Orange Marine to invest in REPCET.

REPCET is more than a type of software – it is an innovation which serves the marine ecosystem

This is why Orange Marine has decided to install this device on the cable-laying ship Raymond Croze from the very start of the test phase. Another way to support the association “Souffleurs d’écume”. in its actions to protect the cetaceans.
REPCET, a cetacean tracking device, was designed by a French company in the Var – AR Consulting. Initially, it would only operate in the Pelagos Sanctuary, an area located between Corsica, Italy, and Monaco in which whales, dolphins, and pilot whales reproduce. This tracking software has two tabs: “mapping” and

“observation”. By clicking on the “mapping” tab, you can view the previously located cetaceans. By the “observation” tab, you access the system to signal a cetacean in your area. This innovative system is able to concentrate all data available to ships – such as oil tankers, ferries, and cable-laying ships – equipped with the device in the area, and to ensure that tourism and other human activity do not interfere with the presence of cetaceans. Recreational boaters do not have access to this device since they could use it to locate and observe cetaceans without taking proper precautions, which could in turn put cetaceans in danger. The association “Souffleurs d’écume” therefore maintains control of all data. However, it does make its data available to the scientists at GIS 3M (Scientific Group Interested in Marine Mammals in the Mediterranean – website only in French) with the aim of furthering the partnership between innovation and protecting the Mediterranean’s marine ecosystem.

Several initiatives put in place to limit the impact of human activity on the marine ecosystem

In 2012, Orange Marine installed the device on a cable-laying ship, the Raymond Croze, which operates in cetacean reproduction zones in the Mediterranean, the Black Sea, and the Red Sea. This year, its subsidiary Elettra will be installing the device on the Antonio Meucci, a ship that operates in the same area, and Orange Marine will install it on another cable-laying ship. More generally, and in accordance with the provisions of the ISO 14001 standard, Orange Marine conducts an environmental impact study before and after each cable-laying project. Environmental constraints and protecting the marine ecosystem within the installation area are taken into account when the route for a cable is chosen, and when a cable is laid. The REPCET device helps Orange Marine to meet its commitment for an innovative approach of marine ecosystem preservation. REPCET guarantees the safety of cetaceans, and gives ship owners assurance that their ships can avoid collisions with cetaceans, and the damage to vessels that such collisions can cause.Originally, REPCET was only used to locate large cetaceans, but the association is now improving the usefulness of the device by expanding the observations to other species, such as marine turtles, with a view to preserving the marine ecosystem.Thanks to “Souffleurs d’écume” and its network of partners, Decree No. 2017-300 of 8th March 2017 on shared devices, designed to prevent ship-cetacean collisions in the Pelagos and Agoa marine conservation areas, was published in the official journal.

The decree requires ships longer than 24 metres that have made more than 10 trips in one of these marine conservation areas during the previous calendar year, to install a device allowing them to share the location of cetaceans. This was an important victory for the Var association and a significant step toward protecting cetaceans and their ecosystem.

Interview with Julie Zarade – Quality, Safety, and Environmental Coordinator – OINIS/Orange MarineFor more details:

– Why do we need to protect the Posidonia meadow? (only in French)

– Undersea cables: some green in the deep blue

MOOCs: Knowledge and skills are just a click away

Friday 28th of April 2017 - Updated on Tuesday 2nd of May 2017
Reading time: 5 min

MOOCs (Massive Open Online Courses) are a new form of online courses open to all. This learning method, which was first adopted by universities, French “Grandes Écoles”, and the general public, is now being adopted in the business world, and will soon enter elementary, middle, and high schools. What will these new learning methods bring us in the future? Will they completely disrupt our knowledge acquisition methods? We speak to Thierry Curiale, VP of the Open Collaborative Learning Program at Orange.

Are MOOCs really a revolution in learning?

Today, MOOCs are mainly used in higher education, where they allow mass dissemination of lecture courses to multiple countries. The MOOC concept was invented by two Canadians, Stephen and Downes, in 2008, and then, in 2012, two professors at the University of Stanford in the United States created Coursera. Thus the online course concept open to all was born, but in contrast to the Canadian initiative, is very instructional, i.e. vertical and top-down. The goal of the Coursera platform is to make knowledge available to the greatest number of people, and is now the largest such platform in the world.

So does all this actually represent a learning revolution? Not really, for two reasons. Firstly, the vast majority of MOOCs are today instructional, i.e. they are based on one or only a few “experts” who speak to passive “learners.” Community MOOCs, in which the learners are more active, are rare. As such, MOOCs often do nothing

more than expand the scale of the lecture hall – from 400 students to tens of thousands. Secondly, in the technical sense, it is not very complicated to develop a MOOC platform. MOOCs are thus not a revolution in and of themselves. On the other hand, private virtual instruction, whether free or charge or fee-based, is creating something of a revolution. It is already omnipresent on the web, and competes directly with public education programs. This is a historical first.

Will MOOCs permeate all areas of education in the near future?

Yes, MOOCs are about to enter national education at all levels. We cannot say how quickly it will occur, but the majority of elementary, middle, and high schools will ultimately adopt new online learning methods, including MOOCs. Some MOOCs that favor peer learning are developing a new pedagogical method based on active teaching principles that date back to the 1920s to 1940s (such as Freynet and Piaget). They allow "learners" to learn by socializing and interacting with pedagogical teams and other "learners." This is therefore not a revolution but rather the use of digital methods to modernize little-known pedagogical tools that are nonetheless tried and tested. MOOCs are a move away from top-down teaching to an open, interactive, and peer-based approach. In such an environment, we all become "experts," who possess certain types of knowledge, and, at the same time, also "learners," i.e. we are both producers and consumers of content. This new reality is a major identify transformation challenge for teachers. They will need to become advisors rather than "experts," i.e. facilitators of peer learning and of social ties and interactions between individuals.

And within the work world?

On the other hand, in the development of skills in the business world, MOOCs represent a fundamental revolution. They allow the formation of teams via 24/7 platforms, relaying skills between them, and creating new skills development methods. Both employees and employers will see tangible benefits, including time savings, lower costs, skills development management, maintenance as well as increased employability, and mobility. Digitalization creates new possibilities to acquire skills virtually. Most MOOCs are free of charge with the exception of certain "business to consumer" platforms such as Coorpacademy. Thanks to digitalization, employees can acquire knowledge and adopt a new learning culture rather than be obligated or required to adapt to change. They can continually test, acquire, and develop skills both at work and at home, and do so more autonomously. This is what is referred to as "Lifelong learning." In the digital world, learning is working and working is learning.

Today, there is often talk of immersive reality. What role might this play in knowledge acquisition?

Although we are only at the initial stage of immersive reality, we are, for example, already able, using computer-generated images, to simulate a breakdown on the production line at a plant and go in and repair it. At the cinema, immersive reality allows viewers to have sensations that put them at the heart of the action, immersing them in the movie and experiencing it from the inside – which at times might not be pleasant for some. Immersive reality is already used as a teaching tool

in the area of professional training (only in French) (CAP [professional aptitude certificate], BEP [professional studies certificate], Bac pro [professional baccalaureate], BTS [higher technical certificate]). It allows professional situations to be recreated that then help teachers use simulations to train their students.
Is it possible to imagine going even further?
In the area of pharmaceuticals, we are now able to send certain therapeutic active compounds to target receptors in ailing cells. This is called vectorization. Ultimately, we will be able to send information contained within nanobio active compounds to specific areas of an individual's brain. The paradoxical sleep phase will be the most receptive to this "transfer" of information at the source. The neurophysiologist and onirologist Michel Jouvet,(only in French) the "father of paradoxical sleep," has in fact shown that we are likely to learn while dreaming – an innate ability that all warm-blooded mammals have had for 200 million years – and that dream images were a language long before spoken languages appeared. These images help the brain organize itself. However, before this is possible, we must first be able to model the neurobiochemical organization and functioning of the brain. Projects with this goal are now underway.
What would you say if, by 2050, you could swallow a pill before bed and then wake up knowing how to speak English or Japanese? Nicholas Negroponte, the co-founder of the MIT Media Lab, has predicted that one day we will be able to learn while we sleep…
However, we have not yet achieved this goal – perhaps fortunately since achieving it – will confront us with ethical issues that will first need to be answered.
Learn more about MOOCs:
Academic platforms:
– Coursera, EdX, Udacity,
– Udemy,
– EdX
– Iversity (German)
– Futurelearn (British)
– FUN (French, only in French version)
Non-academic platforms (peer learning):
– Novoed
– Solerni
The Orange Solerni Agency program

Innovation to create favourable conditions for digital trust

Tuesday 25th of April 2017 - Updated on Thursday 16th of June 2022
Reading time: 4 min

“Big Data is watching you”: faced with concerns from consumers and the public about how their personal data is used online, the need to create a climate of digital trust is becoming a leading issue.

In the space of a few years, digital technology has revolutionised our habits: online shopping, data storage, communication via social networks, etc. Each time we open an app, browse a website or use a connected device, we are allowing an amount of data related to our habits, preferences, relationships, home or even our location to leak out into cyberspace.

Who uses Big Data? How is it used? Security and privacy are at the heart of internet user’s concerns. According to the Digital Consumer Survey carried out in 2015 by Accenture, 44% of consumers do not feel confident that their personal data is being protected online. However, a vast wealth of information lurks in the data available which can, for instance, give rise to the creation of new and useful devices for consumers.

To take advantage of this, companies must create the right conditions to boost consumer confidence in data exploitation. When we talk about the term “digital trust”, according to the Digital Trust Alliance, it refers to *“a digital environment where the consumer is informed about the protection of their rights and is confident in their actions”*. Companies are being increasingly proactive about building this confidence, by guaranteeing data protection, bringing transparency to its usage, but also, by developing innovative solutions.

The essential data protection

The main role of companies is to ensure data is protected. In this respect, the legal framework is increasingly strong, particularly with the implementation in May 2018 of the European directive known as the General Data Protection Regulation.

However, corporate ethics should go beyond the regulatory framework. There are a number of ways to limit the risk of data theft or unauthorized use.

Internally, this involves a rigorous selection of technologies and technical partners as well as ensuring that employees are aware of the issue. The company must also regularly conduct self-assessments, for example by organizing committees to examine the potential threats to any new service developed.

In order to combat external risks, the company must maintain a very active watch in order to stay abreast of the topics being highlighted by the competent authorities

such as the CNIL (France's data protection commission – Commission Nationale de l'Informatique et des Libertés).
It is also about investing in research and innovation to anticipate the developments in cybercrime techniques. For example, at the 2016 research fair, Orange presented a Behavioural Authentication System. It observes the user's behaviour on a smartphone (movements, movement rhythm) and is able to continuously authenticate the user without having to ask for a password. The solution has been developed to mitigate the risks associated with password piracy and therefore unauthorized access to personal data.
The role of the company is to support customers in digital-related issues by actively listening and responding to their needs. The real challenge is developing systems that allow users to control their data in a clear way and thus create the conditions for developing trust. For Orange, the theme of "trust and security" is one of the nine research areas "to tackle current and future technological transformations and invent tomorrow's uses".
Appropriate use of location tracking
Ultimately, Big Data is never better utilised than when it is used to benefit its consumers. The aim is for companies to use the data collected to create innovative services that can offer real benefits to their users. To help them to get to know their customers better, gain knowledge, get organised, interact with others, anticipate their needs, etc.
As a consequence, Google has launched the Trusted Contacts app intended to reassure a user's loved ones by sharing their location in case of an emergency. Any people defined as trusted contacts (family, close friends) can also ping the user for their location through the app. In the event that they do not manually respond, the app will automatically share their location, or, the last known location of their phone before their connection dropped; an effective way to use location tracking.
La Poste, meanwhile, has launched Digiposte +, a type of digital personal assistant. The app enables users to store, manage and archive all documents needed for the administration of daily life and can be shared with family members; bills, statements, pay slips, certificates, etc. Once the user has provided consent, Digiposte + automatically searches through all of the online documents, updates them and organises them into different folders. The app also alerts the user to deadlines and assists the user with procedures; to renew identity documents, sports club membership, rental contracts, etc. Better ways to communicate with your nearest and dearest, organise yourself effectively, optimise the management of your home…
By putting Big Data at the service of consumers and the public, and technology at the service of society, new initiatives are multiplying. The ultimate goal is to create the right conditions for trust within the digital society, so that users are more inclined to share their personal information as they recognise the benefits that can be reaped.

Action through thought, from fantasy to reality?

Friday 14th of April 2017 - Updated on Thursday 16th of November 2017
Reading time: 3 min

Advances in recent years in research on brain-machine interfaces allow us to consider going beyond their restorative function.

Brain-machine interfaces (BMI) are direct communication devices between the brain and an external device such as an electronic system, a computer or a tablet, etc., allowing a person to act through thought. How? First, brain activity is recorded, usually through electrodes placed on the skull, that is to say, the electrical signals emitted when focusing attention on a thought or a specific action. Next, software analyses and interprets these signals and converts them into commands for the machine.

The first work on the BMI began in the 1970s in the University of California in Los Angeles (UCLA). Research progressed rapidly from the 1990s, especially in the field of health with the idea of “fixing” human functions. Tetraplegic individuals could thus control an exoskeleton through the thought of getting up and moving; amputees could control their bionic prosthesis; patients of the syndrome of confinement could talk to a computer and write through thought…

The best known example is probably Matthew Nagle, a former football star who became a quadriplegic after being knifed. In 2004, he was the first human to use BMI to restore certain functions lost due to his paralysis.

BrainGate was implanted into him, a system composed of one hundred electrodes known as “invasive”, that is to say connected directly to the cerebral cortex, developed by Cyberkinetic the company in collaboration with Brown University’s neuroscience department. This allowed Matthew Nagle to control a computer cursor and a robotic arm to control the TV and lighting, or to read his emails and play Pong. Thanks to the many advances made in recent years, a BMI not only restores lost faculties (movement, hearing and sight), but could also soon expand.

Another promising area of BMI application is in gaming. The promise? To allow the player to move and interact with virtual environments, control actions in a game by thinking, or to adapt the content of the game itself through the mind of the user. Since the early 2000s, researchers have been testing BMI technologies in a playful video context. Although some companies already market consumer products based on electroencephalography (see slideshow), research remains experimental.

Among the most interesting projects is OpenViBE2. This collaborative research project conducted from 2009 to 2013 by academic laboratories (such as INRIA),

industrial video gamers including Ubisoft, and specialists of virtual reality (Leprechaun, Clarity), focuses on the potential of brain-computer interfaces (BCI) in the field of video games with an original approach.
BCIs are apprehended not as substitutes for traditional gestural interfaces (gamepad, joystick, mouse, etc.), but rather as “a way to play in a new way, complementary to traditional techniques.
OpenViBE2 has allowed researchers to realise important scientific advances in neuroscience, in the processing of electrical brain signals, or human-machine interfaces and virtual reality, and invent new concepts to “interact with more video games in a more original and effective way”. For example, like a “Multiplayer” brain-computer interface, which allows two players to play together or against each other in a game of simplified soccer, or the automatic adaptation of the virtual world to the mental state of the player…

Blockchain: governance, trust and free will

Saturday 25th of March 2017 - Updated on Thursday 16th of June 2022

Blockchain has been identified as a breakthrough innovation, rich in potential for progress, but both researchers and enlightened citizens must exercise critical doubt. Exploration with Nicolas Demassieux, Director of Research at Orange.

Any innovation brings with it "*Two kinds of limits: those that you know and that you try to resolve, and those that you do not know."* Truism? Fundamental posture, rather, as recalled by Nicolas Demassieux, SVP at Orange Labs Research, which protects any fetishism through the exercise of critical doubt. An exercise that is more essential and beneficial than ever, at a time when both the acceleration and the profusion of innovation can easily turn heads…

While "scientific revolution", according to the expression of Nicolas Demassieux, and "buzzword" are magic on social networks, blockchain perfectly illustrates this phenomenon. Its potential for progress is real … as are its current boundaries and the issues it raises.

What are we talking about exactly? "Blockchain technology, explains Nicolas Demassieux, solves a very simple problem that we have known about for a long time: when you want to record transactions, you need someone to keep the accounts. For a long time we had no alternative but a centralised solution to it. Blockchain is a distributed technology which means that, through the cooperation of a large number of actors, each contributes to keeping these accounts."

Promises and limits

The potential of this breakthrough technology can be seen in “smart” contracts. While the “simple” blockchain is a way to enter a transaction into a register, the smart contract also enables you enter “all the conditions that will be tested to trigger this transaction,” says Nicolas Demassieux. That is what *“the great promise of Smart contracts”*, is, he adds: *“We will be able, with these conditions encoded in the software, to scan the contracting process from end-to-end; this will speed up economic flows, making them more ‘intelligent’.”*
But this revolution also carries with it limitations and can make the economy “*more unstable*“, points out the research director of Orange. More broadly speaking, blockchain is not without it limits. Its energy cost is one: *“If all the transactions of the world were carried out on blockchain, we would not have enough energy on the planet to run the system, it’s just not possible in the current version of blockchain”.*
Another limitation: the risk of rigging! Explanation: “To run the bitcoin blockchain for example, there are ‘minors’ and today, they are Chinese actors – ‘mining’ industrialists that control a very large proportion. If tomorrow they agreed to rig bitcoin, they could do it.”

Trust Issues

Moreover, unlike Wikipedia, or ICANN, which provides Internet governance, Governance of bitcoin is problematic. Nicolas Demassieux emphasizes the difference between the technical governance of blockchain and the specific governance of its most common application, bitcoin. *“For bitcoin,* he points out, *it remains obscure, this is not transparent governance. We don’t know how it is organized. If tomorrow I wanted to enter into bitcoin and write the software, how would I do it?”*
This opacity raises obvious issues of trust. “What are the intentions of those who have developed this technical system? What are their ambitions, how do they operate in their decision making?” So many questions today are without answers. However, as Nicolas Demassieux recalls regarding the topic of “safety and trust”, one of the research areas of Orange, the two assets of the digital economy of tomorrow are knowledge and trust.

Encoding democracy?

So many questions need to be posed because, beyond the subject of the bitcoin which is anecdotal enough at this stage in its real economic dimension, the emergence of the code in decision making is abysmal in its implications.
Smart contracts, as we have seen, are used to encode the rules of the realization of a contract. If we can encode rules of the game and also the rules of governance **then, why not, those of democracy…?**

But Nicolas Demassieux warns against an outrageously technocratic vision. “Democracy spends its time changing the rules, he recalls. It does so in a human way, that’s all, in order to take account of political objectives or correct operational dysfunction. So beware: the idea that we can achieve optimal rules in an instant, that they are entered into a piece software and then there is nothing more to do, I don’t believe it for a moment!”

“All these systems are very interesting because they will enable automatism and make a number of operations less expensive but, he adds, the intelligence to set out good rules of governance adapted to our ambition, our policy, and ensuring that they are respected, remains the domain of free will for the moment. Do I want a democratic system or a tyrannical system, it always comes down to this and it’s not blockchain that is going to change it!”

What will remote controls look like in the future?

Saturday 25th of March 2017 - Updated on Thursday 16th of June 2022

Remote controls are not about to disappear but their technology, function and shape will probably evolve further. Meeting with Thierry Souche, vice president of Orange Labs Products and Services.

"The real challenge is how to remain at a level of use with extreme simplicity."

With the proliferation of new interfaces, what is the future of remote controls? Are their days numbered?

Not at all! Users need to be able to control and manage their services. There are plenty of ways to do it but the TV remote control is a totally legitimate way because it is anchored in the use of almost everyone. If you asked a user to use his TV without a remote control, he would be completely lost! But tomorrow, this remote will be a much more active object than it is today, an object that understands, anticipates, accompanies and facilitates interaction. Why? Because the service itself is enriched. Although I tend to say that 95% of TV remote users in Orange are "zappers" (channel changers), customs are slowly evolving.

How are you working with Orange to invent the future remote?

We observe people … We put real customers in test rooms and we watch. It's stupid but you get to see if the customer can easily find what he is looking for, without frustration or wasted time. We are of course working with designers because in terms of remote controls, there is the question of design, ergonomics, and emotion: fingers must be able to find everything quickly. The technological dimension is also at the heart of our work. When we had to change the IR remote recognition system, which was not necessarily the most effective, we moved to

electromagnetic reactions but users were not unanimous. So we adopted Bluetooth (which does not require us to aim the remote at the TV to turn it on). It doesn't sound like much but it seemed like a good compromise. We also wondered about putting a keyboard on the remote control or not. A small fraction of geeks loved it but most people thought it was horrible! However, we must ensure everyone has the best of both worlds…
https://hellofuture.orange.com/en/will-remote-controls-look-like-future/
What will remote controls look like in the future?
There will always be remote controls. That does not necessarily mean a material object but there will always be "something" that will be called a "remote control" to guide us through a panel of ever richer services. It could be a shared object: we talk about TV remote controls but tomorrow, the remote control could be for the house. For example Amazon or Google offer objects for controlling home services with voice command: Amazon Echo, Google Home; and Apple is starting to think about it. The real challenge is how to ensure a level of use with extreme simplicity.

Among manufacturers, there is a lot of talk of an object that looks like a tablet. What do you think about it?
Four years ago I tried really hard in Orange to develop an object that would be similar to a tablet. Since the object worked with an application, the use was graphic, and we could visualise choices more clearly. And with the contents of a tablet being more varied than those of a lambda remote control, use was enriched. Finally, with a tablet, you can reconfigure at will, create shortcuts and facilitate its practicality. On paper, it was great but after several tests with consumer panels, it was a total failure! Does that mean it will be a failure in a year's time? Not necessarily, because the uses have changed. The tablet has become a true means of service consumption but using the tablet as a remote control, is still divided. In France, Orange sells Stick TV, a TV decoder where the smartphone is a remote control: young people love it but older people slightly less.

And what role can voice play in the future of remote controls?
Today, the vocal dimension is slowly happening in our TV products. TV services offered by Orange are getting richer and more diversified. What we call a linear interface, i.e. performing several actions in a row to reach the service or program that you want, becomes difficult to value. The customer wants the service or program launched at the first click, not after several actions. With a voice or sensory interface, it is a word or a gesture: thus we can skip our four clicks for access to the service – from before – to performing a single interaction. This is unbeatable time saving. But today, people are not educated in this technology. Again, geeks will love it but everyone else, not so much. For example, my mum cannot put speech recognition on a remote control, she would be totally lost. However, in nine months' time, with a little education, perhaps she will be able to! We need people to appropriate these new modes of interaction little by little, until it becomes natural and they ask for more…

Science Factor: our youngsters have got talent!

Friday 17th of March 2017 - Updated on Monday 20th of March 2017
Reading time: 3 min

Meet the "The People Connect" team, selected for the final in the "high school students" category of the Science Factor competition. These four highly motivated young people want to simplify the lives of restaurant customers and servers.

The Science Factor competition was instigated several years ago to offer high school students the opportunity to design innovations that are useful to society and the environment and so stimulate scientific vocations, especially among girls.

One of the 2016-2017 finalists, “The People Connect” is a mobile application project, accessed via a flash code placed on restaurant tables, which allows restaurant customers to find out what is on the menu, order and pay in the blink of an eye.

Behind this super idea are Flore, Marine, Thomas and Eloi – four teenagers from the Saint Paul secondary school in Charleville Mézières, in the Ardennes, and their supervisors, Fabrice Thomas and Isabelle Schmolinski. We met them a few days before the presentation ceremony which took place on 7 March.

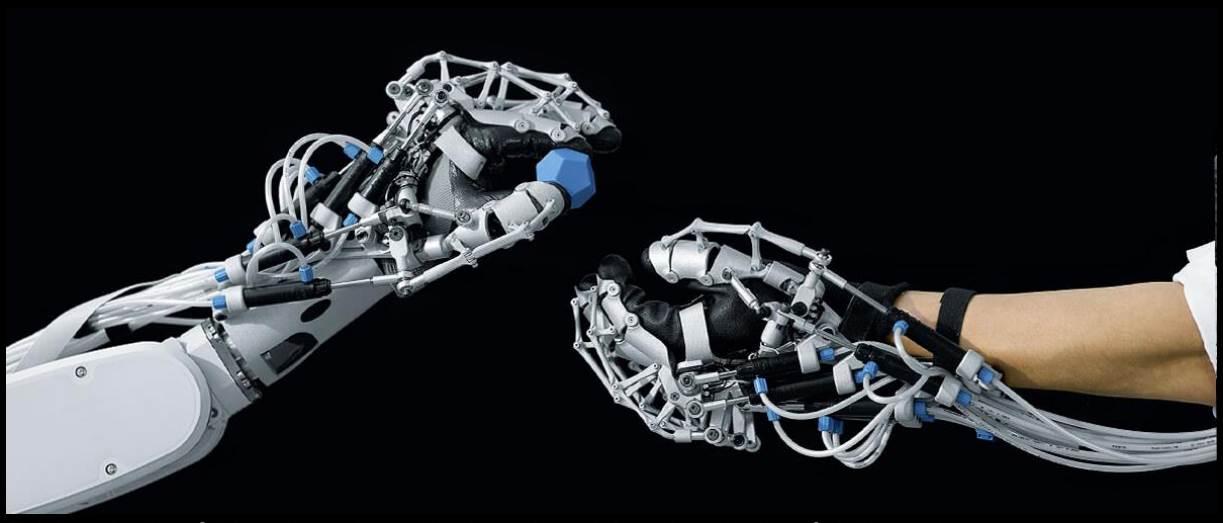
An application for restaurants

“*We thought it would be good to come up with a project and carry it through to the end*,” says Flore, the team leader. She was behind the idea for “The People Connect”, a project she developed with her friend Marine. “*At first, we wanted to create an application that would tell you how to dress to suit the weather*,” she continues. “*After a month, we realized that one already existed, so we had to start again from scratch. I was in a restaurant in Paris and found the wait really long. So I figured why not come up with an application that could be used in*

restaurants…"
The girls were soon joined by Thomas and Eloi, two students in the high school audiovisual class, who shot and edited a short film demonstrating "The People Connect" app. "*Flore and Marine didn't really have the resources they needed to present the application*," explains Éloi. "*So, Mr. Thomas appealed to students in the audiovisual class. Thomas and I volunteered*."
Very involved, the four students are actively involved in promoting their project: "*We went on the radio, and were in the newspaper L'Ardennais, We printed flyers that were distributed on the street, we shared the project on our respective social networks and we set up a Twitter account*," says Thomas.
They also had discussions with restaurateurs: "They could see the disadvantages – like the risk of losing the link between the customer and the servers – but they also saw the benefits, such as saving time for customers, servers and kitchen staff. That's what we were looking for with our application, so we were pleased," explains Éloi.
Science Factor and beyond
Fabrice Thomas is very proud of what his students have accomplished: "I enter competitions with the students almost every year and I am very pleased with these young people; they are motivated and managed to pool their different skills. For me they have been all the more courageous because they've done it all in their spare time," he says.
The teenagers agree that the Science Factor competition made them more mature, enabled them to overcome their shyness and gave them a lot in terms of taking initiative. "*They are rather reserved. Talking to strangers is not easy for them,"* says their teacher*. "They really jumped up a level by managing to explain their project to people*."
As for the Science Factor rule that teams must be led by a girl, Flore thinks it's helpful "*because boys often want to be leaders and girls don't always get to have a say*," she explains.
Although in the end Flore, Marine, Éloi and Thomas didn't win the 2016-2017 Science Factor competition (the high school prize went to the Serrotonines team for their urban agriculture project), the four teenagers don't intend stopping there. Their teacher told us that a company that is interested in their application wants to help them continue the adventure.

Artificial intelligence | Article
https://hellofuture.orange.com/en/technology-service-disability/

When technology is at the service of disability



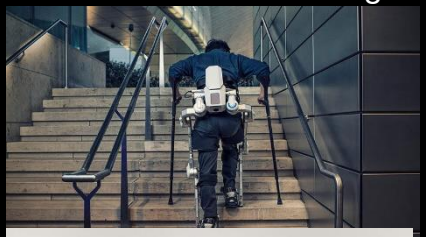
Friday 10th of March 2017 - Updated on Monday 16th of July 2018
Reading time: 4 min

Can technology restore the sight or use of a paralysed limb? Can it end the disability? One thing is certain: it helps to improve the daily lives of many people with disabilities through adapted interfaces and futuristic devices.

"In recent years, the spectacular advances in technology for disability have opened up a new field of possibilities."

Exoskeletons for assistance to effort, human-machine interfaces, bionic implants and even neuroprostheses (thought-controlled prostheses)… In recent years, the spectacular advances in technology for disability have opened up a new field of possibilities. Overview of available innovations today (or almost), which allow many people to regain autonomy and equally make society more inclusive.

An exoskeleton to walk again



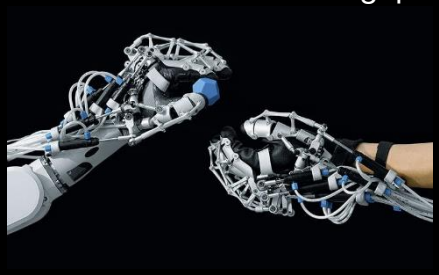
Hyundai H-MEX, one of the latest exoskeletons to have made the headlines.

ReWalk

The exoskeleton which was a long-time fantasy has become reality. Today, it helps users to recover movement capacity, get up, walk, and go up and down stairs. In the face of machines intended for hospitals and rehabilitation centres, the more

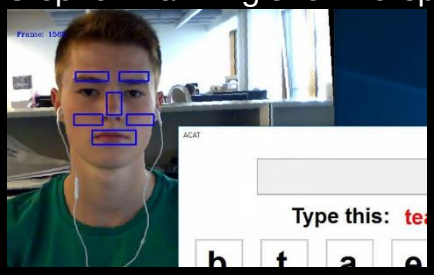
accessible “daily” exoskeletons are expected to enter the market soon, like the Wandercraft, ReWalk or Phoenix.

An exoskeleton that has grip



Festo : Powered by pneumatic actuators, the ExoHand can grip objects with great skill. At the same time, an exoskeleton – is “worn” like a glove – with a human-machine interface insofar as it can also *“absorb the movements of the hand and transfer them in real-time to the robot’s hands”*, it provides different fields of application. As part of rehabilitation, it increases the strength of the human hand and improves its endurance.

Stephen Hawking’s text-to-speech software



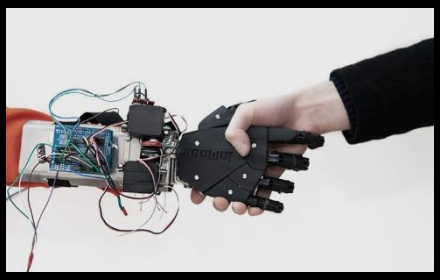
http://www.chip.de

The astrophysicist, Stephen Hawking is suffering from Charcot disease which is characterised by progressive paralysis of the muscles but he manages to communicate thanks to a speech software developed by Intel. The device is named ACAT and it enables him to transform his facial movements into text and then into speech. It is now available for free, given that Intel has published it on open-source to help people suffering from neurodegenerative diseases and assist in developing new interfaces adapted to other types of disability.

An app to make a phone call when you are deaf

RogerVoice :Some situations still require the use of telephone and represent real challenges for deaf and hearing-impaired persons. Launched in October 2015, the RogerVoice app helps “[read] *what you cannot hear*. [Write] *what you cannot say*“. It automatically, instantaneously and accurately retranscribes speech in writing and vice versa without any need for the interlocutor to install it.

A bionic hand printed in 3D



Source: myhumankit.org

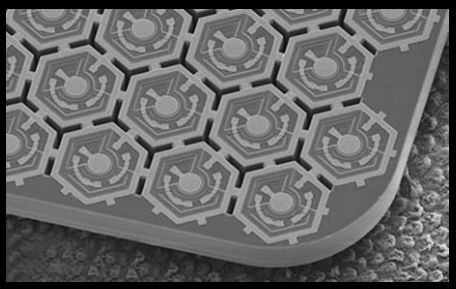
What if the solution was not from the industry but from collective intelligence?

Two years ago, Nicolas Huchet was the centre of attraction. This worker from the Rennes region had his right hand amputated following an occupational accident. He personally designed and manufactured his bionic hand thanks to 3D printing. Today, he contributes to the development of low-cost open source solutions for all types of disabilities.

The e-Nable, international network of volunteers also develops 3D-printed prostheses, or the association called Not impossible, which specifically equips war victims.

An artificial retina to see the world with a new eye

A year ago, Pixium Vision successfully implanted its first artificial retina. In an article published on the INSERM website, researchers study this technology, which makes it possible for people who have lost their sight to perceive light signals again. *"The artificial retina replaces the photoreceptors. More precisely, they are (3 x 3 mm) implants attached to or under the retina, composed of electrodes that electrically stimulate the retinal neurons".* Among the devices developed, three obtained the CE marking (Argus II, Retina Implant and IRIS II of Pixium Vision).



An iPad for the visually impaired

BLITAB

The Austrian start-up BLITAB developed the first touch tablet entirely in Braille. On the surface of the device, a multitude of small physical bubbles appear in relief, instantly converting what appears on the screen (Web pages, text editor, images, etc.) into Braille.

With regard to its creators, BLITAB is not just a tablet, “it is a platform for all existing and future applications intended for the blind and visually impaired”.

Spectacles to hear images

OrCam

At 2017 CES, the Israeli company OrCam presented an amazing device, able to read what it sees. The device is called MyEye and it works without connection. It consists of a camera and bone-conduction earphone which is placed on the frame of a spectacle, and a control box containing the battery and a computer endowed with learning capability. MyEye can read texts (street name, menu, book …) as well as memorize and recognize objects and people.

Data to the climate's rescue

Friday 10th of March 2017 - Updated on Thursday 16th of June 2022
Reading time: 2 min

Providing solutions to the environmental problems associated with climate change, this is what enables the open innovation associated with the analysis of Big Data. "Big Data Science can contribute to sustainable development and social welfare."

In the Sahel, we hope to know how to better predict extreme weather events, thanks to the data collected by a telecom operator. This was developed by Orange in Morocco.

"We realised that we could analyse rainfall intensity according to the decrease in signal transmission connecting some antennas, says Nicolas de Cordes, vice-president of Marketing Anticipation at Orange. Antenna by antenna, our network could therefore be transformed into a huge weather station, especially useful for very heavy rain, like in the Sahel, where the intensity of the precipitation can be more precisely estimated. This can help protect key infrastructure (airport, city, canal, etc.) when we see big disturbances due to occur, in order to be more effective by acting faster."

In Senegal, during the Data for Development challenge in 2015, a researcher was able to combine Orange data with that of an electricity operator to anticipate the energy needs depending on the location of mobile phone users. This type of mobile data can therefore be decisive for making decisions in the field of urbanisation.

A planet improved through data

This breakthrough is part of the Data for Climate Action programme framework initiated by the United Nations (UN) agenda, in order to stimulate business innovation to reduce the impacts of climate change. A programme in which Orange is involved, as well as other large companies such as Western Digital, SAP, Microsoft and Schneider Electric.

The origins of the project date back nearly two years. "We participated in the drafting of a United Nations report which was designed to measure the potential contribution of Big Data for development, explains Nicolas de Cordes. Things are then started with initiatives such as the Global Partnership for Sustainable Development Data. And now the idea of an identical challenge, but this time adapted to the climate, has been put forward."

"Data for Climate Action will boost research on the potential of data from the technologies of the information and communication, for environmental purposes and on a global scale, indicates Mari-Noëlle Jégo-Laveissière, Executive Director of Orange, in charge of Innovation, Marketing and Technology. Orange's involvement in the UN programme is part of the natural continuity of our initiatives for open

innovation focused on how Big Data science can contribute to sustainable development and social welfare. This demonstrates our commitment to providing positive solutions to the societal and environmental problems for all.”

Internet of things | Article
https://hellofuture.orange.com/en/inside-black-boxes-fabien-zocco/

Inside the Black Boxes by Fabien Zocco

Friday 17th of February 2017 - Updated on Monday 27th of November 2017

This plastic artist questions the boundary and relationships between technology and language, between robots and humans. Black Boxes is the project on which he works in residence at the Art Factory of Orange Gardens, Orange research and innovation site based in Châtillon. Humans are constituted as humans from the moment there is technology, and it has been so since the origins of humankind.

Can you present your background and your approach?

I am a plastic artist. I studied in Poitiers where obtained a degree in history as well as Fine Arts. That is where my passion for digital art began. I was interested in the relationship between technology and language, an approach I developed in a post-diploma course at Fresnoy, National Studio of Contemporary Arts. Language is indeed a privileged attribute of humans if it deals with spoken language and an attribute of the living when one considers the language of animals. This question of the relationship between the living and the non-living is at the centre of my work, knowing that machines are endowed with linguistic and semantic attributes that break down the boundaries between these two polarities.

Are humans modified by new technologies?

This is the question at the origin of my approach, in the sense that humans are constituted as humans from the moment there is technology, and it has been so since the origins of humankind. Anthropology and the philosophy of techniques consider that what brings mankind out of animality is precisely the tool. Today, the total disruption of the tool by digital technologies reconfigures, in my view, first the relationship between humans and the world, and secondly the very definition of what constitutes a human being.

How did you join the Art Factory that welcomes you in residence?

The Art Factory is a facility that Orange launched on the occasion of the inauguration of the Orange Gardens site. A call for projects was published a year ago regarding two development areas that are dear to Orange, Internet of Things and Materiality of Network.
I submitted my application and was selected to come and spend six months to develop a project that involves LoRa, a communication protocol with very low power consumption that allows the connection of objects (Internet of Things).

How does the residence work?

I come here every week. I benefit from financing and in addition to this the technical skills of the LoRa technology and a location – Le 3e Lieu are put at my disposal. I can talk with Orange engineers and I also met a sociologist who works here. Le 3e Lieu is a Third Location with a range of tools and skills that would be difficult to find elsewhere. It is its specificity, that of making research projects like mine possible.

Can you describe the *Black Boxes* project that you are developing here?

Black Boxes will be a robotic sculpture whose starting point was a cybernetics concept, a line of thought that emerged in the late 1940s and early 1950s among American researchers who, in my opinion, laid the ideological foundations of a technological society. I find it interesting to compare the concepts of cybernetics and Internet of Things. Cybernetics developed this *"black box"* concept to describe the element of a system (technical, social …) whose internal functioning is inaccessible.

This has nothing to do with the black box in aircraft, then…

No, the black box in cybernetics is a mysterious object which receives information as input and redistributes the transformed information as output, but without knowing the changes that this information has undergone. It is also a metaphor to describe our relationship with technology, since we are confronted with mysterious objects whose ins and outs are not always known. The idea behind my project is to give an effect to this metaphor by making black boxes of 15 cm by 15 cm cubes that will move on the ground. They will be motorized and will develop languages and behaviours together. These cubes will be dispatched in two separate spaces connected via the LoRa network, which will enable them to transmit a kind of remote language.

Research | Article
https://hellofuture.orange.com/en/sebastien-canard-cryptographer-good/

Sébastien Canard, a cryptographer who is good for you

Friday 17th of February 2017 - Updated on Thursday 16th of June 2022
Reading time: 3 min
This research engineer and safety expert at Orange Labs develops cryptography solutions to protect the privacy of Internet users.
One of the challenges of "privacy" is to offer safe and simple services, while guaranteeing the confidentiality of personal data.
In the early 2000s, Sébastien Canard is offered a thesis at Orange. His supervisor is none other than the eminent Marc Girault, expert in cryptography who manages the R&D of the group: *“Marc Girault is a bit like my mentor. He taught me cryptography and I often had the opportunity to work with him. “*After his thesis, Sébastien Canard is hired at Orange Labs and specialises in the protection of sensitive data.

Balancing confidentiality and responsibility…

Member of the Orange Applied Crypto Group and prolific author (30 publications to his credit), Sébastien Canard develops cryptographic protocols to protect the personal or confidential data of individuals and businesses in their daily use of digital services. His research focuses particularly on the anonymity and the responsibility of users.
One of the challenges in the field of “*privacy*” is to offer safe and sufficiently simple services, while offering maximum guarantees on the non-disclosure of personal information. *“Typically, it is all about allowing an individual the access to a service while providing minimal information about himself,* explains the researcher. *For example, a student goes to the cinema. To receive a discount, he must show his student card. By doing so, he reveals a lot more information about himself than necessary.”.*

Cryptography, however, offers numerous solutions enabling users to remain anonymous through dedicated signature tools. Much of the research conducted by Sébastien Canard is to implement and improve these tools. In the above example, the student can prove his status without disclosing all his personal data. *"He becomes an anonymous student,* he continues, adding: *nevertheless, anyone can't just do whatever they want under cover of anonymity. "*This is where the concept of responsibility plays its part; it must be engaged if necessary.

… and confidentiality and security

At the 2016 Research Salon where we met, Sébastien Canard was presenting BlindIDS, an intrusion detection solution for encrypted network traffic. Whilst the research prototype demonstrates the maturity of the cryptographic tools, it is also a good example of an "*open*" project , in an environment that promotes innovation based on sharing and collaboration.
"BlindIDS is the result of a discussion with another Orange researcher working on intrusion detection systems, he tells me. He explained his needs to us and we talked about our cryptographic solutions." The problem raised was: How to ensure the confidentiality of exchanges on the Internet without "blinding" the security solutions? How to encrypt data without interfering with the detection of cyber-attacks?
To find the solution, the two researchers joined forces, "him, mastering the way the intrusion detection systems work to spot malicious traffic, me, providing my expertise in cryptography, explained Sébastien Canard. We combined our knowledge to arrive at a solution which has already given birth to two patents, a publication and a prototype that we present today at the research Salon.".
Events of this type, where the Orange collaborators can share their work, favours fruitful exchanges not only between researchers, but also with the operational entities of the group. *"During the three days of the salon,* explains Sébastien Canard, *we collected use cases and concrete applications, giving us valuable information on the directions to which our work must extend."*

In search of the perfect immersive sound experience

Monday 2nd of January 2017 - Updated on Tuesday 2nd of January 2018
Reading time: 4 min

For a number of years now, innovation for TVs has focused on image quality and set design. But what's been happening, meanwhile, around sound quality? By teaming up with Cabasse and Dolby, Orange has taken up the sound challenge and developed the Barre de Son, a soundbar offering a unique, high-quality sound experience that is also affordable.

Seeking to deliver that solution, in 2016, Theo Lainé, Orange TV Product Marketing Director fixed up a meeting with one Alain Molinié during the Las Vegas Consumer Electronics Show (CES), the biggest consumer trade show for electronics technology innovation. "Alain Molinié," he says, "is the co-founder of AwoX." Recently, AwoX acquired Cabasse, a French firm founded in 1950 that has a remarkable backstory, having built up a global reputation for its expertise in acoustics and engineered a slew of innovations in acoustics, especially in Hi-Fi and Home Cinema. "Because we have already worked together, and know their exacting quality standards, we naturally approached the company to show them our project." That was the starting point for the *Barre de Son* designed by Cabasse and Dolby Atmos for Orange, in search of the perfect immersive sound experience.

A thumbnail history of sound

Sound reproduction technology has seen two major innovations in the past: stereo in the 1930s, which for the first time delivered a spatialised sound experience, followed by multi-channel sound technology, aka "surround sound", which emerged in the 1940s and which spread progressively to cinemas and then to domestic settings with the advent of Home Cinema. "Today, for its third revolution, sound has

added a vertical dimension," adds Alain Molinié. "The result is achieved through a loudspeaker that projects the sound upwards, towards the ceiling, where it is reflected towards the listener, who not only feels surrounded by the sound, but immersed in it." This is the principle underlying the technology developed by Dolby Atmos, which in its turn is equipping a growing number of cinemas. And it's also the technology chosen by Orange and its partners to build a product that makes no concessions in the quality stakes.

Customer experience first

The age when manufacturers developed their products in isolation before bringing them to market is now over. These days, everything starts with customer usage. The aim is to get under the user's skin to answer a simple question: what to they expect from a sound system connected to their TV set? The answer, of course, is quality sound first of all. But they also want ease of use. Soundbars are proving to be the most suitable solution as they are less demanding that a Home Cinema system comprising multiple loudspeakers. And because in 2017, no-one wants to see any unsightly trailing wires, the subwoofer is separate and wireless. Last, while we are expecting it to deliver matchless performance in terms of cinematic experience, the system is not meant to have just that one function. You will therefore be able to channel your music playlist to the soundbar from your smartphone via Bluetooth and benefit from real Hi-Fi sound quality.

Achieving the best conditions

To design a soundbar on a par with our ambitions, teams of experts from Orange, Cabasse, and Dolby adopted a trial-and-error approach. Over a six-month period, they innovated, tested, and fine-tuned to achieve the desired result. "In Brest, where we are based," explains Alain Molinié, "we have an outstanding location for designing our products, namely a 3,000sq.m. acoustics centre built around an anechoic chamber (also known as a "dead room") suitable for high-precision testing. It is equipped with a production workshop for creating prototypes: we have all the tools to hand to rapidly carry out modifications and listen to the results straight away. Throughout the project, we hosted teams from Orange and Dolby at this facility to carry out listening sessions, tweak and compare the equipment in different configurations."

An experience accessible to all

The idea was not just to stop at the production of a high-quality soundbar, but to make it affordable for every pocket. Théo Lainé adds: "What counts for us is to deliver the best possible audio and visual experience for our customers. We demonstrated this last year, when we released an HDTV decoder. And we are doing a repeat performance today with our affordable immersive soundbar, which corresponds to our ambition to democratise an experience that had hitherto been somewhat elitist. And so that our customers get the most out of their devices, we will be deploying a tailored content offering."

Thanks to their painstaking efforts in search of the best compromise, and within the space of a few short months, the teams from Orange, Cabasse, and Dolby have managed to create a standout product relative to the systems currently on offer.

In this way, the Group has once again shown that it will always go the extra mile for its customers, even if that means going out in search of the best partners in areas that are not part of its core business.
To know more : The sound Bar

Aleksandra Guerraz discusses transcripts

Friday 10th of February 2017 - Updated on Tuesday 4th of April 2017
Reading time: 3 min

Technologies for processing natural languages can improve the user's experience. This, in particular, forms the subject of work by Aleksandra Guerraz, a computer linguist at Orange Labs.

La compréhension des verbatims doit permettre de mettre en œuvre plus facilement des actions appropriées.

"We may not necessarily notice it, but automatic processing of natural language is present almost everywhere to some extent: in spell checkers, in automatic translators, in search engines, in online chat agents…" Of Polish origin, Aleksandra Guerraz arrived in Paris in 2000 to take a degree in Language Sciences. She quickly became interested in the automatic processing of natural language (TALN), which combines linguistics and informatics, and allows you to "Transcend the domain of pure linguistics and widen it to that of applied linguistics".

In 2004, at Orange, she embarked on a thesis about speech synthesis – which transforms a written text into speech. She was then recruited by the R & D Centre at Lannion, in the TALN team: she has recently joined the team for man-machine dialogue processing, and tends to specialise in "*text mining*". *"At the time",* she recalled, "*the big issues were concerned with processing search engine requests, or data extraction, including the recognition of named entities, i.e. of informative words (the names of individuals, names of places, organisations, dates, etc.) within a document."*

A simple and intuitive interface

Nowadays, Aleksandra Guerraz works mainly on EVA, a simple semantic analysis tool. EVA is intended for non-expert colleagues, who need to analyse thousands of transcripts from polls, surveys or telephone calls. To fully exploit these transcripts, statistical classification and semantic analysis tools are available. However, these rely on advanced skills in linguistics, statistics and computer science.
“At present, our colleagues rely either on us or external providers to exploit the content of these transcripts betsti, Aleksandra explained. We wanted to facilitate the use of tools for statistical and sematic analysis via one simple and intuitive interface that masks the complexity, so they could create their own analyses.” Basically, EVA allows the transcripts to be grouped into categories that contain similar words. “The advantage of this tool, she told us, is that it allows users to define their categories themselves … They are guided a little by suggestions for statistical groupings, but they can then refine them to adapt to the needs of their buisiness.” The tool also allows transcripts consisting of open questions, of the type “Your opinion is important to us” to be processed.

An oriented “UX” design

Once the transcripts have been classified, they have to be presented in a readable way, which allows a group of comments on a particular issue to be retained or dismissed . *“The understanding of transcripts by operational bodies should allow them to implement appropriate actions more easily, by comparing them to those observed in their business, said the scientist. Currently, we are working with several entities (human resources, information management system…) to find out if the tool corresponds effectively to their requirements”.*
The design is “UX” oriented, i.e. it takes the needs of the users into account. Except that in this case, the users are not Orange clients, but a group of their employees. *“We first observed how they went about analysing their transcripts, and thinking about the way we could help them .”*
One meeting conducted in collaboration with various players at Orange HQ: “EVA was using tools like Khiops, which had been developed by another team, who we have obviously collaborated with. We have also done a lot of work with an ergonomist, graphic designers, developers … “, ended Aleksandra.

Hello Future < Research < Sajida Zouarhi, a PhD student takes us inside the universe of blockchain
Research | Article
https://hellofuture.orange.com/en/sajida-zouarhi-phd-student-takes-us-inside-universe-blockchain/

Sajida Zouarhi, a PhD student takes us inside the universe of blockchain

Monday 6th of February 2017 - Updated on Thursday 17th of September 2020
Reading time: 3 min

For this PhD student at Orange Labs Meylan, blockchain technology can contribute to strengthen digital trust by restoring the user to the forefront and handing him back control of his personal data.

I feel that blockchain offers us a second chance, a kind of rebirth of the Internet as it should have been.

Every year, Orange Labs recruits around forty PhD students specialised in various fields, integrated in a research team and supervised by the company and a research laboratory. In 2014, Sajida Zouarhi was one of these students, thanks to a thesis on the “guarantee of quality of service for critical data transmission”. A subject which gave her the opportunity to monitor the possible applications of blockchain in the health sector.

Popularised by Bitcoin, blockchain is a transparent, secure and decentralised data storage and transmission technology. It works like a digital register of exchanges, un-modifiable and checkable by all users.

“I quickly detected the interest of blockchain technology and became passionate about this subject, said Sajida Zouarhi. The Internet is a revolution that reached everyone in a relatively short time, and I think that blockchain has the potential to have the same impact on people’s lives.”

According to the researcher, blockchain could contribute to strengthen digital trust by handing back control of their data to the users. *“This is a technical innovation with a strong human dimension.”*

At the Orange Research Salon in 2016, she presented with her team a consent management solution, enabling patients to manage in a simple way authorisations given to third parties (here, health professionals) to access private information from objects connected in a selective and differentiated way.

“Increasingly, we realise that it is difficult to keep control over our data. For Orange, the subject of digital trust is important and this is why our research teams explore different technologies which could ensure better governance for the users.”

(Sub-head) In collaborative mode

This is why Sajida Zouarhi is very involved in the French community forming around blockchain. Co-founder of the Chaintech association, she started the Magmateek community with a “blockchain meetup” in Grenoble. The community gathers over 260 members around various subjects (impacts and challenges of blockchain, future projects, etc…).
In Paris, she contributes to the organisation of Blockchain 1.0, the first educational blockchain festival, held at the 42 School in June 2016. She also participates to various collaborative blockchain projects, such as KIDNER, an open source platform that enables to match potential kidney transplant donors and receivers.
Convinced that blockchain can have a positive social impact, she is working hard to popularise and promote the technology to the general public. For her, this is an integral part of a researcher’s work, based on communication and sharing:
“Researchers should not remain locked up in their offices, they should take the time to explain their work to people, help them grasp concepts and technologies that may initially appear complex.”
At Orange, she is actually encouraged *to “explore, leave the lab”*. The group she created on the internal social network (Plazza) on the advice of her PhD supervisor generates a high membership with over 230 subscribers, and remotely gathers every month several dozen people who think together about the opportunities offered by blockchain. *“What is beautiful with the whole blockchain topic is that is enables to bring together people who would have otherwise never spoken to each other. They can educate themselves together on this new paradigm and see how blockchain can impact their profession.”*

Links:

– Rejoindre Orange grâce à une thèse
– Everything you need to know about the blockchain

Jean-Jacques Schwartzmann builds your profile, using your smartphone

Friday 27th of January 2017 - Updated on Thursday 16th of June 2022

In order to make Orange services easier to use and secure, whilst protecting the privacy of their users, this security expert is leading his own exciting project on biometrics and authentication.

Jean-Jacques Schwartzmann, and his search for good compromise between security, usability and privacy, depending on the service concerned.

“I genuinely consider myself to be an official member of France Telecom”, he said with a grin. Jean-Jacques Schwartzmann joined Orange Labs Caen in 1988. At that time, it was a SEPT (Joint Research Department of La Poste and France Telecom), and it was there that he entered into the game. *“I started working on biometrics at the beginning of 1990,* he told us. “*Basically, I worked on signal processing and the implementation of algorithms for voice authentication.”*

The year 1997 marked a turning point for him: SEPT was closed down, and its activities were transferred to the National Centre for Telecommunications Research (CNET). Research into biometrics was slowing down, and Jean-Jacques Schwartzmann moved into security at the beginning of the liberalisation of encryption techniques – a domain jealously guarded by the military – which allowed e-commerce to flourish. He joined a team headed by encryption expert Marc Girault, *“Who introduced me to this discipline, and taught me a great deal”*, and worked amongst other things, on the security of online payment platforms.

In 2000, Jean-Jacques Schwartzmann returned to his first love, and strived to *“Embed biometrics within Orange services”*. *“With relative success, because of the*

numerous barriers to its use…", he said. Biometrics still failed to take off, and Jean-Jacques Schwartzmann began to work on Orange Money, a money transfer and mobile payment service used in several African countries, which started in 2007.

Security, usability and privacy

To facilitate the use of the service by people with low literacy levels (not only non-graduates in communications, and innumerate too) he developed: *"An App with an interface based on icons and speech, which masked the complexity of the entire transaction in text mode".* Unveiled at the Salon de la Recherche in 2010, the prototype attracted a great deal of interest, which prompted Jean-Jacques Schwartzmann and his team to produce several different versions integrating various technologies. At the same time, the researcher became very interested in authentication, which he described *"As a triangle made up of three vertices: security, usability and privacy. If one of these is strengthened, it is done to the detriment of the others."* For example, multi-factorial authentication increases security, but involves more complicated identification procedures for the users.
The work of Jean-Jacques Schwartzmann thus consists in part of finding a compromise between security, usability and privacy, depending on the service concerned. This is what he achieved with the demo "Behavioural Authentication", a behavioural authentication solution he presented at the Salon de la Recherche in 2016, which has been the subject of two scientific publications. He explained: *"We authenticate a user by means of their habits on the telephone; how they interact with their touch screen, tap on the keys or use its apps…"* The same user behaviour becomes an authenticating data. The solution relies on algorithms that capture the usage data and combines them with anonymising algorithms that prevent the solution becoming intrusive.

A fantastic time for research

This innovation was developed in an environment that Jean-Jacques Schwartzmann describes as: "Very favourable to research, and very rich. There are innumerable high quality researchers at Caen. We also rely very heavily on Ph.D. students, who make up about a third of the team. We maintain a large number of contacts in the academic world, and take part in training by research, which is very rewarding." The researcher now lectures at ENSICAEN, mainly in applied cryptography and algorithms. "This allows me to have a pool of students, that I can eventually take on board as apprentices or interns." One of these former students has made a huge contribution to Orange Money on the outside.
Since his arrival at Orange twenty eight years ago, Jean-Jacques Schwartzmann has experienced periods that were more of less favourable for research. "*After a few years, and under the driving force of Nicolas Demassieux* [Director of Orange Labs]*, we entered a fantastic period, with a lot of effort and commitment. A period in which*

great freedom was offered to researchers to train, and explore new territories", he concluded.

Matthieu Liewig: when the house obeys the voice

Friday 20th of January 2017 - Updated on Thursday 16th of June 2022
Reading time: 2 min

Matthieu Liewig imagines a future (not far away) when the house will obey not only our fingers and eyes, but also our voice. The major concern of the research project manager? Making digital services even more accessible and fluid.

The idea with Alice, is to find new forms of human-computer interaction to simplify the use of digital services.

Matthew Liewig began his career within the Group in 2000 as a developer. "*At that time, Orange TV did not yet exist and ADSL had just been deployed.* Yet simplifying access, understanding and facilitating use were already for me the central issues in the design of services. "Today he is responsible for a research programme in the field of the smart home (in the broad sense: home automation, multimedia, telephony, etc.), which seeks to gain a better understanding of the context of life of the inhabitants and simplify the use of multiple digital services now available in the house.

New forms of interaction

This will to simplify services is a common thread in the career of the person who participated in the design of the application my Livebox or Business Everywhere solutions. *"When I arrived at Orange, I mainly worked on access to Internet services,*

diagnosing connection problems … It really made me want to develop the simplicity of services offered to customers."
And it is exactly in this context that Matthieu Liewig will embark on the development of Alice, the family assistant prototype based on natural language, allowing the control of connected home devices using our voice. *"Today, there are more and more digital services arriving at home",* says Matthieu. "*The idea with Alice, is to find new forms of human-computer interaction tailored to the lifestyles of our customers.*"
Indeed, from the beginning of their research, Matthieu Liewig and his colleagues have seen the value of implementing new interfaces that are more intuitive and accessible to control and communicate with all of our appliances at home. "Human-machine interfaces have continued to evolve, the appearance of the keyboard in the 1960s, voice recognition today, through the invention of the mouse and the touch screen and … new forms of interaction will appear." Like natural language, it is a highly advanced form of voice interface, able to deduct the train of thought and objectives of a person from a constructed dialogue between the system and the user.

In open mode

Alice is based on one integrative artificial intelligence solution. *"Integrative in the sense that it combines multiple bricks of artificial intelligence"* explains Matthieu, such as deep learning, based on artificial neural networks, semantic analysis, the logic of dialogue, etc.
The design of such a solution, which uses several emerging disciplines, could only be done in open innovation mode. Matthieu Liewig's team is involved in VoiceHome, a collaborative project that involves industrial partners (VoiceBox, Delta Dore, eSoftThings, Technicolor to be completed) and academic partners (INRIA, Irisa, LOUSTIC).
Furthermore, the development of Alice has benefited from the UCI approach (User-Centric Innovation). The prototype is now deployed in a dozen homes in Lannion (Brittany) and Paris, from the same families who were interviewed in the first phase of the project. "This iterative and collaborative development mode helps to enrich Alice almost daily, based on consumer feedback" concluded Matthieu Liewig.

Disconnection: a right and a duty…?

Friday 13th of January 2017 - Updated on Tuesday 4th of April 2017
Reading time: 3 min

The massification of the use of smartphones is accompanied by increasing porosity between the professional and personal, public and private spheres. Does room connectivity condemn us to permanent connection?

It takes 64 seconds on average to gain attention after reading an email

There have been over 20 million smartphones sold. It is in 2015 that the milestone was reached for the first time in France. An increase of 7% compared to the previous year, according to the firm GfK. A growing trend is confirmed in the uses: 62% of French people own a smartphone while one out of three French people enjoys the triple screen – computer, smartphone and tablet.

More than ever, humans are increasingly connected today. However, the more and more prevalent place taken by the digital world in the daily life of everyone questions the notion of private space, the separation between the professional world and private sphere.

One person out of two checks their e-mail on their smartphone

According to the research firm Return Path, the smartphone has become the preferred way to “check” e-mails – for one person out of two – precisely because it is handy and available at all times. But this immediacy, this “continuity of connection” raises questions: “having the smartphone available all the time,” is convenient, but it can quickly turn into an injunction of “always being available,” implying an information overload and dispersion of attention. This can also lead to developing pathologies linked exclusively to the professional environment.

“Right to disconnection”

However, this redefinition of the personal and professional spheres established by the arrival of new digital tools should not be inevitably suffered but tamed and domesticated because its original purpose is not to penalise humans but to serve them.
A principle has been established in Germany for several years. Since 2011, the automobile manufacturer Volkswagen has prohibited its employees to send emails between 6.15pm and 7am by blocking the access to their professional Blackberries while the chemist Henkel forbade the sending of messages at the weekend and during the holidays at the end of the year.
In France too, the question of the right to disconnect was proposed and integrated into the Labour Code through the Labour Law.
Orange, for its part, in late September 2016, signed an “initial agreement on supporting digital transformation“.

Multiple individual solutions to remain free

But to be sustainable, digital freedom does not apply one-way: the task lies not only with the company but also with the individual. If has been found that if the latter manages to “separate” the professional and the private as much as possible (diversification of email addresses and phone numbers, limited availability), other simple practices are at his disposal since it takes 64 seconds on average to gain attention after reading an email and the French receive forty per day on average, why not disable notifications that unconsciously head to the reading of an email? Nobody is annoyed with him, let alone his colleagues who may also participate in work overload relief and thus gain efficiency and solidarity. So just enjoy it, at last. We do forget, but optimising working time, also optimises free time!

Maryline Clare-Charrier imagine the TV of the future

Friday 13th of January 2017 - Updated on Thursday 16th of June 2022
Reading time: 3 min

Maryline Clare-Charrier is working on the television of the future The head of the research project in Orange Labs has dedicated her career to identifying technologies that will change our experience of digital television.

When questioning Maryline Clare-Charrier about the TV of the future, she said that the TV of tomorrow will not only be a screen on which you watch a programme, but a window. A window that can transport the viewer to the heart of a football stadium, the stands of a tennis court or inside a theatre because "*the detail is rendered almost as good as our eyes would see it if we were there. Sometimes better, since you can zoom in".*

A new quality viewing experience

"*The issue*, says Maryline Clare-Charrier, *is to provide our customers with a much better new audio-visual experience quality."* This specialist in image and digital video, who joined Orange in 2005, devoted part of her career to identifying and evaluating technologies that improve the quality of images and digital television. Among the highlights of her career are six months in Sydney, at the time when she worked at Canon (where she stayed for more than 10 years) on the coding of digital images; her role as Head of the French delegation for the JPEG2000 standard and in 2009 the release of the first live 3D opera, Don Giovanni. *"When the director of the Rennes Opera came to us, we began to define a project and were prepared to work with external partners on the evaluation of Live technologies for 3D TV,* she recalls.

The Don Giovanni operation was really very rewarding. It allowed me to meet professionals in the audio-visual world: directors, vision engineers, all those behind the cameras." Then the direction of three successive collaborative projects also strongly mark her career, including at major events in which she worked with engineers and technicians to test technologies being studied ("The Damnation of Faust" in the Bastille opera, the Roland-Garros tournament, etc.)
Project manager for 3DLive (articulated around 3D live production and broadcast) and 4EVER *(for Enhanced Video ExpeRience)*, Maryline Clare-Charrier is now responsible for the 4EVER-2 programme, which focuses on the future UHD TV format (Ultra High Definition) version 2 (not just more pixels, but also better contrast, better colour and better movements) with a focus on live TV, particularly live coverage of sports and cultural events. Part of her work involves measuring the perceived quality (user satisfaction in relation to this new format) and to assess the maturity of the technology both in terms of production, distribution and reception.

Team work

4EVER-2 is a collaborative project, part funded by the state and local communities, which includes nine French academic and industrial partners. *"This collaborative mode offers many advantages: it allows us to rely on highly innovative SMEs, such as ATEME, HTS or TeamCast,* says Maryline. *It is difficult for SMEs to engage significant research resources into this type of project. With support from the government, they can be launched and us, we can rely on their technical expertise to advance."*
Other partners, France Télévisions or AMP VISUAL TV offer their experience in television and live filming, while the academics, INSA Rennes and ParisTech, contribute to research in video decoding (HEVC standard "*High Efficiency Video Coding*") and GlobeCast provides its broadcast capabilities. Major manufacturers of screens or cameras regularly offer the consortium their prototypes for evaluation purposes. Each partner brings something to the project, all working under the responsibility of Maryline who "*coordinates the technical and human resources and ensures that things can be done.*" The project manager is delighted: *"Everyone works together, we make super interesting stuff and it is progressing well".*
A prize won in April 2016 in the NAB Show, the largest international trade show dedicated to television techniques, also crowned this wonderful teamwork. Awarded for the first time to the French, the "*Technology Innovation Award*", rewarded the 4EVER-2 consortium for its work on the UHD Phase 2 and its involvement in the standardisation of this format that could revolutionise the way we watch television.
Links:
– www.4ever-2.com
– recherche.orange.com
HORS ECO
https://hellofuture.orange.com/en/virtual-reality-department-therapeutic-research/
Artificial intelligence | Article

Virtual reality in the department of therapeutic research

Saturday 8th of April 2017

Support for pain, management of phobias, treatment of mental disorders and even childbirth... virtual reality proves to be an innovative ally for the therapeutic management of patients.

Known to the public primarily through the prism of the video game industry, virtual reality (VR) has quickly found a very choice public from the scientific community and the medical world. And for good reason: according to several scientific studies, the fine line between the real and virtual worlds can alleviate the pain experienced by amputees, reduce stress and even combat some phobias. When VR is mixed with science, the results are dramatic.

Phantom pain

Well known to neurologists, phantom pain occurs in two thirds of patients who have recently undergone an amputation, and persists in one in two a year later. For several decades now, researchers have shown that these symptoms are caused by a poor perception of the brain that is expecting signals from one or more absent members. To alleviate this pain, the simulation of the existence of the members concerned would suffice to trick the brain.

If since the 1990's physicians have resorted to the use of skilfully positioned simple mirrors to begin long-term therapy, a study of the University of Technology of Chalmers, in Sweden, published by The Lancet in December 2016 tends to indicate that virtual reality would get much more effective results.

Fourteen adult volunteers thus followed several sessions for a year during which an RV experience reincarnated them in a life-size avatar. The conclusion is clear: the mere fact of seeing a member reconstituted through the device defies cognitive perception and sends a simple signal to the brain: "everything is fine". The subjects

who participated in this study reported that the intensity of the pain decreased by 32% and its frequency between 43 to 61%. These positive effects were felt for up to 6 months after the experiments, some patients even then reduced the dose of their pain treatment.

Births using VR and ephemeral phobias

Cognitive distraction offered by virtual reality also seems to bear fruit in other specific situations, as shown by the research conducted in the US by gynaecologists with women in the phase of childbirth. With a headset screwed onto their heads, listening to instructions, patients are content to dive headlong into this alternate reality…
"Now, breathe deeply," "focus on these birds", "watch the waterfall" … by simple relaxing situations, the subjects are able to unconsciously initiate "work" without anxiety. *"I never anticipated that I wore the machine for that long. It helped me breathe and really focus. ,"* says Erin Martucci, the first woman to have given birth in part thanks to virtual reality.
"Because the patient knows that what he is going through in the headset is not real, he has more courage to face the situation that avoids reality." Dr Eric Malbos did not expect the practice to become so widespread so as to apply this technology in the treatment of phobia in his patients. Although complex to handle, virtual reality also offers a variety of infinite situations, ideal for adapting to the anxieties of each individual. Among them, there is already a driving simulator for road accident victims, traumatised by their accident.
New studies estimate that the symptoms related to depression and mental disorders could also benefit from the positive effects of virtual reality devices on our body. This still embryonic research now requires larger clinical trials before, maybe someday, they are deployed on a larger scale.

https://hellofuture.orange.com/en/s-r-sensitive-robot-improves-peoples-performance/

Hello Future < Artificial intelligence < S.A.R.A., the sensitive robot who improves people's performance

Artificial intelligence | Article

S.A.R.A., the sensitive robot who improves people's performance

Friday 27th of January 2017 - Updated on Wednesday 22nd of June 2022

Hate virtual assistants that lack personality or emotion? Able to perform a wide range of tasks whilst being endowed with empathy, this all-new robot created by Articulab is definitely not like talking to a statue.

Hello S.A.R.A., what a lovely name!

Thanks ! Its an acronym of *Socially-Aware Robot Assistant*, which means "socially attentive robot assistant" in French. These are my creators at ArticuLab at the university of Carnegie Mellon in Pittsburgh, America, who gave me that name. Despite being called a robot, I consider myself more of an artificual intelligence that can interact with different people; on the one hand, I carry out their tasks, and on the other, my responses depend on their emotions.

How is it possible for you to "react" to their emotions?

First of all, I listen to my interlocutors. Then, I interpret how they are expressing themselves by detecting their body language, voice, and the words they're using. Someone who smiles at me will not of course get the same reaction from me as someone who thinks I'm just a head. To do this, I use a microphone as well as a camera, which allow me to perceive their individual emotions, then work them out, thanks to a new generation of algorithms my creators have christened: "social reasoning", which operates in real time. Finally, I offer a response that's adapted to my interlocutor's state of mind… but at all times, I never forget about the task they have asked me to carry out!

What makes you different from other wizards like Siri or Google Assistant?

Well, I have a face that's topped off by enormous spectacles, which makes me look very, very sympathetic! And then, I'm able to hold a real conversation, to establish a real relationship of trust, unlike my brothers and sisters, who often have a tendency to remain very "work-like". Lets just say, I'm here to work with my interlocutors rather than service them in a neutral way. I'm able to empathise, somehow!

What do your interlocutors have to gain from working with you?

I like to see myself as someone who can help them improve their performance. After all, everyone knows we work much better in trusting relationships. I've already proved myself by teaching a few people who had academic problems.

Other interlocutors use me as a personal assistant to relieve their overloaded work schedules, particularly when they're on the road, or at a conference. But my favourite task is still when I'm left in charge of helping someone affected by Asperger's syndrome to develop their social skills!
https://youtu.be/82OorC-efQY

https://hellofuture.orange.com/en/meaningful-interfaces/

Hello Future < Internet of things < Meaningful interfaces

Internet of things | Article

Meaningful interfaces

Friday 24th of February 2017 - Updated on Monday 27th of November 2017

“Added to the ease of use is the pleasure to interact. A user is prompted to perceive the interaction with the interface as an interaction between partners,” Nicole Pignier, author of Designer le vivant.

What will the interfaces of the future look like? A question that the daily paper already answers and where users have to appeal to their senses. One thing is certain: they will not (or anymore) look like a remote control or a controller.

A little over a year ago, the New York Company Ray released its Super Remote. Television, Xbox, DVD player or decoder: everything was controlled from the touchscreen of this remote control which falsely looked like a smartphone. Only problem: the life expectancy of Ray Super Remote was already low at the time of its release. There were already many more effective new interfaces. Yes but which ones?

Eye, hand, body, finger: anatomy of the interface of the future

Some consider the smartphone as “the remote control of our lives”, justifying the permanent use of the phone by the capacity that it offers us in managing an infinite possibility of tasks. “It is rather a passing point to communicate, work, seek information”, rectifies Nicole Pignier, University Professor, semiotician design specialist, co-director of the magazine Interfaces Numériques (Digital Interfaces), and author of the book Le design et le vivant (Design and the Living) to be published by Connaissances et Savoirs publisher.

A smartphone is still above all a hardware interface. However, innovations in this field seem to be moving away from the concrete, the physical. This is particularly the case with eyeSight technology, which offers sensory solutions to control ones household appliances, multiple connected objects and even ones car with a simple movement of the finger or eye.

Innovations that are already part of everyday life, in various forms: control by movement of the arms or head in video games; biometric recognition of confidential data, whether by fingerprint to activate ones telephone or by identification of the iris as on some passports; or even contactless payment with ones credit card.

“When we look at the history of design, the evolution of interfaces, we realise this growing tendency to use our different sensory memories, both in ergonomic and synaesthetic terms. Design requested an increasingly wide variety of gestural modalities. We see it today with tactile interfaces, in particular, Nicole Pignier explains. “Future interfaces will seem more natural and easier to manage, there will

be no need to search for a remote control, there is a real potential practical aspect. The pleasure to interact will be added to the ease of use. The user will be called upon to perceive the interaction with the interface as an interaction between partners".

The Connected Brain, a real ethical issue

So much so that some scientists – even some companies – talk about the advent of the "connected brain" by 2030, capable of merging the user with his/her uses. Manufacture an enhanced human, in a way. According to Nicole Pignier, it is certain that this technological possibility poses "a real ethical problem". "The disappearance of interfaces, at least visually, makes us operate with them without realising it, no longer act knowingly, no longer be aware of our actions and their effects." "The latter continues: To think that interrelationships in a company must be based essentially on storage, archival and responsiveness capacities means reducing or even denying the creative complexity of memory, consciousness as well as the existential bond that every human being has with his/her environment as well as others. If one thinks that human societies were built on this consciousness of existence of living beings among the living, connected brains are out of place."

For the author of Le design et le vivant, a particular sector might however benefit from the contribution of such a technology: health. A question raised by the 2016 CES (Consumer Electronics Show), where companies such as BrianCo and OpenBCI were able to display connected headbands transforming the brain wave into electrical signals in order to detect potential pathologies or help patients suffering from Charcot's disease. Make sure that limits are respected. New sensory interfaces, okay, but, Nicole Pignier concludes, "those that will make the user aware of what he/she is doing if he/she has to activate a machine, an interface. This threshold is very important because it guarantees the user, control over his/her actions and decisions".

https://hellofuture.orange.com/en/en-route-agriculture-future/

Hello Future < Internet of things < En route to the agriculture of the future

Internet of things | Article

En route to the agriculture of the future

Friday 3rd of March 2017 - Updated on Thursday 16th of June 2022
Smart Agriculture, Internet of crops, precision agriculture ... technological innovation that allows the agriculture of the future to make real progress in terms of efficiency and the fight against waste.
In 2050, the Earth will have reached the threshold of ten billion people, a third more than today. Ten billion mouths to feed. Still, in 2050, the United Nations Food and Agriculture Organisation forecasts a production increase of 70% of global food produced in relation to 2006 so as to provide for everybody's needs. Currently, however, this same organisation observes the annual loss of a billion dollars of agricultural production worldwide after harvest. Worse, industrialised countries blame a loss of 10% of their crops of seeds and cereals each year. A real mess.

"Produce better while respecting the environment"

Fortunately, there is "*S*mart Agriculture" of which *"The goal is not necessarily to produce more but to produce better, while respecting the environment,"* explains Andrea Vitaletti, Professor in Computer Engineering from the University of La Sapienza, Rome (see video below).
This Italian researcher knows what he is talking about: over these last few years, he developed PLEASED (PLants Employed As SEnsing Devices), a project aimed at gathering data through an electrical signal via Arduino circuits connected to the plants. *"It was particularly found that the plants had communication capabilities. So it is possible – not necessarily viable but possible – that plants can communicate through connected objects in the future,"* he expands. Still with the same idea of environmental apprehension and biotope in order to allow better use in the coming years. *"The possibility of measuring a phenomenon is always the first step towards better understanding it,"* recalls Andrea Vitaletti.

8% water saved through "*S*mart Agriculture"

How does smart agriculture, sometimes called the *Internet of crops* ("the Internet of cultures") or Precision Farming, work exactly? Using various connected objects or

sensors, it is now possible to gather a large amount of data to adapt the agricultural method for better performance, avoiding all kinds of waste.

“Currently, one of the crucial questions of agriculture is “how to manage water more efficiently”, continues the Italian scientist. *If you are on a hill, the top requires more water than the bottom, and the distribution is uneven. Precision farming provides the right amount of water, nutrients or chemicals to the agricultural aspect in the right place at the right time. For this, we have a dedicated connected machine capable of measuring the parameters necessary for proper irrigation. “*According to a study by the OnFarm Society, American farmers who have adopted the precision farming have reduced their use of water by 8%.

Drones and unmanned tractors

“We also have drones or satellite images that allow you to perform the spectral analysis of the fields in order to penetrate these in depth while remaining on the surface, know what field needs more care than another” adds Andrea Vitaletti, speaking about the *Internet of crops* as a *“benefit for agriculture”*.

Another possibility for farmers? That of managing their inventory, equipment or their livestock directly from a smartphone or tablet. As for the driverless tractor, manufacturer John Deere is currently working on it. A windfall which would allow farmers to maximise their hard work while reducing its arduous nature. The United States always, where adaptation to smart agriculture is much more advanced than elsewhere, grain production is doubled through the use of connected objects (7.3 tonnes per hectare compared with 3.8 worldwide).

Finally, OnFarm considers that 75 million connected devices will be installed in the global agriculture industry by 2020 and will exceed a million data points collected every day from 2025. Until then, let’s hope that the eight billion people will have learned not to waste thanks to smart agriculture.

https://hellofuture.orange.com/en/sleep-tech-welcome-connection-sleep/

Hello Future < Internet of things < “Sleep tech” welcome to connection sleep

Internet of things | Article

“Sleep tech” welcome to connection sleep

Friday 3rd of March 2017 - Updated on Thursday 16th of June 2022
And what if, contrary to popular belief, new technologies offered resources to gain sleep and peaceful nights? The point on "sleep tech" that was one of the latest CES stars.
At first glance, everything opposes new technologies and quality sleep. Used before bed, the blue screen light disrupts natural cycles. Even worse, by over-taxing the attention span through continuous content or alerts, smartphones, tablets or computers prevent the body and mind from going to sleep.
However, with the explosion in the use of connected objects, numerous products related to applications for smartphones propose solutions for insomnia and other sleep debt. The trend is such that the last CES in Las Vegas in January 2017, created a high-tech space dedicated to the night, from monitoring sleep cycles to aiding sleep and waking up.

Sleep on demand, wake up as planned

The majority of technology is based on a simple principle: the better we understand sleep, the better we manage our nights. Sensors placed near the sleeper traces their breathing, heart rate and the movements of their body in order to define a profile and phases of sleep (light, deep and REM) and recommend the ideal wake-up time. The intelligent mask Neuroon goes further. It allows cyclical sleepers ultra-controlled sleep. By analysing brain waves, muscle tension or blood oxygenation, it determines the best wake-up window. But by crossing this information with a timetable, the application also offers to optimise recovery by cutting sleep following a polyphasic rhythm (in several units). It is of particularly interesting use for frequent travellers.

Light, scent and temperature just right

To create good conditions for waking-up, some play with light therapy which enables, through exposure to white light, the readjustment of sleep cycles following the spectrum close to that of the sun. Others, drawing on studies from NASA designed to help astronauts sleep, create lights that affect melatonin production. Like the progressive variations of light at sunrise and sunset, the dawn simulators

Hug One and Terraillon Omni adjust their brightness according to the required hours.
Following the same principle, an app like Sensorwake Oria ensures relaxing sleepiness and good mood wake-ups by spreading a soothing or stimulating scent. Moreover, others propose the regulation of the temperature of the pillow or mattress according to falling asleep or waking up phases. (Moona, Luna, Kryo Sleep).

Dreams on demand

Experiments identified by scientists show that lucid dreams may have a therapeutic role, especially for treating post-traumatic stress.
Still under test, applications are emerging. Lucid Catcher for example, acts through electrical stimulation. Electrodes on a night mask identify rapid eye movements during REM sleep. By the stimulation of the frontal cortex, the subject becomes aware of his condition and so takes hold of his dream and improves the quality of sleep.

https://hellofuture.orange.com/en/here-is-the-voice/

Hello Future < Artificial intelligence < Here is the voice…

Artificial intelligence | Article

Here is the voice…

Saturday 25th of March 2017 - Updated on Wednesday 22nd of June 2022

Talking to one's smartphone or voice assistant is an activity that is expanding fast. How do language specialists help these concentrates of artificial intelligence and innovation improve their understanding of queries?
In 2016, Google published an edifying figure: 20% of its mobile search engine queries came from its voice assistant known as Google Assistant; a percentage that rose to 25% amongst the new Millennial Generation. Over at Apple's, for the same time period, we learned that Siri had surpassed the order of a billion search queries… per week. As for Amazon, its assistant, Echo, is thought to have already secured its place in about 9% of the American households.
And that's not the end of it: "*Within the next five to ten years, between 30 and 50% of the uses could be vocal*," says Patrick Constant, co-founder of the search engine Qwant and founding president of Pertimm.

"The most natural interaction involves using the voice"

This increase in the use of vocal assistants is explained by the advances in technology as well as, in a very straightforward manner, the evolution of uses.
"*Thanks to the maturity of voice to text technologies, which help to translate the voice request into text, we are beginning to acknowledge certain things*," says Patrick Constant. "*In addition, we are gently moving away from the use of keyboards, mice, etc., because we realize that it is still more complicated to type "I want a red dress at € 30" than just saying it aloud. The third reason is that the advent of the Internet of things causes the human being to interact more naturally with these objects. And the most natural interaction involves using the voice, still.* "
As such, and because the smartphone is always within reach, it is much more convenient to use voice assistants to ask for, command, or even control things remotely. This is, of course, provided that the said assistants are working properly. This is where the language specialists come in.

Dozens of specialists at GAFA

How do language specialists work to improve voice assistant services? And who are these "language specialists"? "*Many linguists and phoneticians have switched to*

the vocal assistant industry, but it also concerns those who are interested in different translation techniques," explains Jean-Gabriel Ganascia, an expert in artificial intelligence and a professor at the University Pierre and Marie Curie (Paris VI). *For example, phonology specialists try to understand what a word, phrase, etc. is. Others, still, are devoted to automatic language processing*."
And obviously, there is enough work to occupy "several dozen persons", according to Patrick Constant, at the GAFA (Google, Amazon, Facebook, Apple) as well as within Microsoft. It is, he continues, that "*language has this peculiarity of being infinite in terms of possible expressions – the same way uses and queries are infinite*."

Voice to text, deep learning and parsing

Voice to text (the capture of a language on which linguists work from a phonological point of view), *deep learning* (for example, learning to recognize the precise spelling of a pronounced word), or *parsing* (a technique that consists in cutting out words and then figuring out what they mean – where is the verb, where is the action, where is the object, what is the exact query?) are among the steps towards perfecting vocal assistants' understanding in the face of user expectations.
"*When someone says: 'I want to book a plane for tonight for Nice', the artificial intelligence must understand what the expression 'I want to book' means, that the mode of transport is a plane and not a train or a car, take note of the date 'for tonight' and the place 'Nice'. And again, the artificial intelligence does not yet know where the requesting person is. There is a whole semantic understanding undertaken before sending the request,"* says Patrick Constant.
He adds: *"99.9% of artificial language intelligence systems work with tasks required to be performed according to very precise guidelines; in a certain way, they are "parrots". All that man can mechanize will end up in an artificial intelligence. Yet, language is a precision mechanism; we will therefore go much further than we can imagine on this particular subject."*And for that, the knowledge of linguists, phoneticians, translators and other lexicologists is once again essential.

https://hellofuture.orange.com/en/internet-energy-introduced-new-breakthrough-energy-sector/

Hello Future < Networks and IT < The Internet of Energy has introduced a new breakthrough in the energy sector

Networks and IT | Article

The Internet of Energy has introduced a new breakthrough in the energy sector

Saturday 8th of April 2017 - Updated on Thursday 16th of June 2022
Twenty years after the deployment of the Internet, at the crossroads of the digital world and energy, the enernet is rethinking the models towards shared energy that is efficient, decentralised and sustainable for a resilient planet.
While the Energy Information Administration, the US Agency for Energy Information, predicts an increase in global energy consumption by 48% in less than thirty years, imagine what solutions could be used for successful energy transition, limiting the environmental impact of the energy system and thus contributing to a sustainable planet? Bob Metcalfe, the inventor of the Ethernet, is convinced that the enernet, that is to say the combination of energy and the internet, offers a key.
For the founder of 3Com, a US company specialising in network equipment, the feedback on internet deployment helps inspire the construction of an energy system on the same decentralised model as that used for telecommunications.

Clean energy when you need it, where you need it

Today, the enernet could be applied on the same principle as the internet to simplify the architecture of the energy system. With the falling cost of renewable energy, the undermining of centralised models and the digital capacity to provide power through sharing, together, all this gives us the makings of a major breakthrough, in order to tackle the challenges of the energy transition.
Based on this new dynamic and synchronising of resources, the enernet has the ability to reconcile three benefits: the deployment of clean energy, including solar and wind power; eco-efficiency through reduced fuel consumption; and energy safety in the territory, including in areas of production deficit. In other words, the internet of energy enables us to better distribute the energy when needed, where needed, at a lower cost and with fewer emissions of greenhouse gases.

At the heart of the system, the smart grid

With the contribution of the digital world, electrical networks have become intelligent (“smart grids”). The association of electrical and digital technology infrastructures provides the missing technological brick to help control the flows. By collecting data on the state of the electrical network, the network manager adjusts, in real-time, the production, distribution and consumption of energy. It can then encourage companies and individuals to adjust their consumption according to signals relating to price for example.
Another major asset includes when the smart grid anticipates the level of production and consumption, it then promotes the correct integration of renewable energy. Better controlled by digital world, green energy will be used to the maximum and will contribute more massively to decarbonising power generation.

Consum’actor producer and resilient planet

Operation in a smart grid is already the case in some municipalities in the Netherlands and France. Equipped with smart meters linked into the grid, inhabitants self-consume their photovoltaic production with a backup from the national grid only when needed. The counters are thus essential for collecting data, for providing information to consumers in real time and allowing the use by the next generation to better synchronise supply and demand.
For this intermittent renewable energy, however, there remains a question: how do we avoid losing the excess energy produced in the sunlight of the day and benefit from it in the evening?
One solution lies in the storage of energy. New technologies are being developed and solutions are already in an experimental phase throughout neighbourhoods combining multiple storage levels: a first device relieves the upstream network, a second allows for “standalone” operation in the district making a few independent hours, a third store excess PV production on days of strong sunlight directly to consumers.

Many benefits

In all these systems, the internet ensures energy efficient processes by creating a centralised intelligence system for optimisation at all levels of the value chain. From the start, there are numerous benefits: reduced power consumption, better use of solar hours with renewable energy development, consumer involvement in a collective and citizen effort. Question of cost, although the infrastructures require significant investment initially, once in place, the renewable energy operates at a zero marginal cost.
All these reasons show that enernet could change the situation in depth and pave the way for a new eco-sharing, horizontal and collaborative model.

https://hellofuture.orange.com/en/video-games-therapy-depression/

Hello Future < Digital culture < Video games as therapy against depression?

Digital culture | Article

Video games as therapy against depression?

Saturday 8th of April 2017 - Updated on Tuesday 14th of November 2017
Video games rarely reveal enough other facets than entertainment and possible addictions. Yet research shows that they could help to treat some cases of depression.
Many researchers are convinced that as part of the fight against and a cure for depression, video games could be as effective as psychotherapy. Research around hypothetical therapeutic video games is not a new fantasy but rather a working axis cleared from work carried out in the mid-1990s by some experts for children with autism.
"In therapy with children, video games become more and more same as dreams: a royal road to the unconscious state" explains psychologist Yann Leroux, which is why this more and more realistic and dreamlike medium recreates a link and a discussion with the most difficult patients.
Yann Leroux takes as an example the *ICO* game whose atmosphere earned its Japanese creator Fumito Ueda many praises. This game features a young boy unjustly excluded by his tribe and locked in a fortress because of his physical difference with the rest of the inhabitants of his village.
In this game, "*surrender and the banning of the main character can be easily identified by a child. »* explains Yann Leroux.

Therapeutic work

In his work, psychologist Michaël Stora also chooses *ICO* as a therapeutic work, capable of transforming the relationship of patients with the world and others, to improve their daily lives.
In the adventure, the young hero quickly meets Yorda, another prisoner in distress, "*a woman who was soon besieged by the children patients as the incarnation of a mother. Fragile and bloodless, she simultaneously represents the victim, but also a key to letting […] out of the prison."*
Michaël Stora is convinced that this positive confusion that patients can maintain between reality and fiction can, in some cases, lead to satisfactory results. *"This experience over a year convinced me that video games, specifically ICO […] had in*

itself all the necessary springs, not in the work of development through words, but through the game itself."

Video games twice as efficient

In addition to these already satisfactory practices, much further study been developed. From 2011, New Zealand researchers undertook the creation of *SPARX*, a video game designed to treat adolescent depression – a condition that is treated only in 20% of young people involved. *SPARX* refers to "smart, positive, active, realistic and x-factor thoughts", i.e. an experience for young people to virtually fight "evil thoughts."
The study, conducted among 86 depressed adolescents, reveals that 44% of them have fully treated their disease. For comparison, out of another group treated only with conventional clinical treatments, only 26% of the subjects were able to complete healing.

20 minutes a day

In January 2017, a more recent study, conducted this time with an adult using a therapeutic game called *Project*: *Evo*, confirmed this trend. Patricia Arean, a professor of psychiatry at Washington University, explains: *"We think this game is effective because it exerts a particular area of the brain that we think is associated with depression."* At a rate of 20 minutes per day, this entertaining video experience would have positive and conclusive effects in 80% of patients. *"This video game is as effective as psychotherapy,"* she concludes.
Research in this area is far from complete, but it appears that games, whether originally designed as therapeutic tools or not, may indeed have a positive impact on the well-being of patients of all ages.

https://hellofuture.orange.com/en/innovation-inspired-natures-genius/

Hello Future < Digital culture < Innovation inspired by nature's genius

Digital culture | Article

Innovation inspired by nature's genius

Friday 14th of April 2017 - Updated on Thursday 16th of June 2022

Ecosystems, natural forms, processes, and materials... Nature is a treasure trove and biomimicry invites humankind to seek sustainable innovation from its various sources of inspiration.

Biomimicry offers tangible opportunities for the future, and is the act of using nature-inspired solutions to solve human challenges posed by societies, whilst reducing material and energy consumption. France is already committed to making energy and environment transitions, and is showing increasing interest in this multidisciplinary approach. For the second year in a row, it will host an event dedicated to the fast-growing discipline of biomimicry in Senlis (Biomim'Expo, 29-30 June 2017).

Amongst the 171 public research laboratories working on biomimicry related topics in France, 15 are engaged in the fields of robotics, complex systems and information processing (according to an assessment by the European Centre of Excellence in Biomimicry of Senlis).

From ant to algorithm

Researchers from Dr Guy Theraulaz's team at the Paul Sabatier University of Toulouse, (Research Centre on Animal Cognition), are studying the collective intelligence of ants to develop algorithms used in the fields of robotics, information technology and telecommunication.

The team is developing models based on the filtering of information driven by the behaviour of social insects. The objective is to increase the reliability of information

(for example, that used for recommendation algorithms on e-commerce or booking websites) and to increase proficiency in collaboration, cooperation and collective information research.
The research also focuses on animal perception capabilities. By observing the behaviour of certain types of fish (primarily the elephant-nose fish), Frédéric Boyer's team (Nantes Digital Sciences Laboratory and the Institut Mines Télécom) have developed an "electrical sense" which enables underwater robots to recognise the shape of objects and move them around more easily. Currently, a European project aims to introduce a swarm of collective underwater robots incorporated with this electrical sense to monitor the canals in Venice.

Crickets; a source of inspiration

Have you ever seen two flies collide? With this in mind, Stéphane Viollet, Research Director and head of the bio-inspired robot team at the Institute of Movement Sciences (CNRS/Aix Marseille University) has developed the first artificial eye which resembles that of a fly. This high performing compound eye, named CurvACE, gives aerial robots a unique panoramic vision thanks to hundreds of individual pixels.
The project, which was launched in 2014, paved the way for obstacle avoidance applications installed in home automation systems, vehicles and even in robotics.
In the realm of insects, crickets are a constant and incredible source of inspiration for scientists… Endowed with highly sensitive sensory hairs, they can rapidly evade an attack from a predator.
This unusual performance prompted Jérôme Casas, of the Institute of Research on Insect Biology, to develop flow-sensor arrays which exhibit the same chain of information processing uniquely developed in the sensory hairs of crickets.
The long term goal is for these sensors to be used in the field of technology, for example, in flow sensing cameras, or in medicine.

A rather useful parasite

And what can be said for the wasp, or more precisely one of its parasites… For researchers in optical instrumentation at the French National Office for Aerospace Studies and Research, the eyes of the Xenos peckii parasite were a source of inspiration for the structure of the Multicam. In optical technology which has been used in imaging in astronomy and military intelligence, the Multicam camera is a stack of arrays of micro lenses, which form a set of juxtaposed micro-cameras. This makes for a very compact, fully integrated assembly close to the infra-red lens, to provide large images with very high resolution.

Networks and IT | Article

Li-Fi, a relevant and complementary alternative to the Wi-Fi network

Friday 5th of May 2017 - Updated on Thursday 16th of June 2022

While the experts agree on an unprecedented expansion of connections in the next few years, Li-Fi creates a small revolution which enables us communicate through light. This is an economic and ecological pathway using the optical spectrum as a relevant and complementary alternative to Wi Fi while the radio spectrum is becoming increasingly crowded.

In recent years, smartphones and tablets have accelerated the use of the internet. Communications are increasing everywhere, all the time. The exchanged data volumes are exploding and in turn, the number of connected devices is expected to reach between 30 and 60 billion in 2020. A power context in which Li-Fi (Light Fidelity) could shake up the digital landscape by offering an alternative method of communication using LEDs, light emitting diodes. A small revolution… that dates back to the nineteenth century!

Unlike Wi-Fi which uses the radio portion of the electromagnetic spectrum, Li-Fi uses the optical spectrum for transferring data wirelessly. In 1880, the inventor Alexander Graham Bell's telephone first demonstrated a possible transmission of sound by sunlight. In 2005, during the rise of LEDs, this technology was revisited before coming onto the market in the early 2010s.

Presented by some as the new communication standard thanks to its ability to decongest the radio networks, the solution is more a sober type of energy, and more respectful of the environment.

Li-Fi uses artificial light and LED properties to transmit high-speed data (text, image, video, and sound) like the binary language used in computers. No need for cables, light is enough.

The technology is simple to use because it uses the common power grid, it is not linked to the constraints of frequency allocations, and finally, it is compatible with the Led bulbs marketed today.

Using Li-Fi also curbs exposure to intruders because light does not pass through walls.

A light that uses less energy, a greener Internet

Using energy efficient LEDs, Li-Fi thus limits its impact on the energy consumption of a building. More generally, by breaking away from the wired network, it reduces the energy toll of data transmissions. Moreover, the synergy between lighting and connected services comes at a timely moment for municipalities that are required to submit their urban lighting to the standards.
Economical LED street lamps can create a communication network on the neighbourhood level, which is particularly interesting in the context of a smart city full of connected services. Many communities and businesses now confirm their interest in communicating with citizens, customers and employees…
There are many applications including museums, shops, train stations and subway stations where the Wi-Fi networks and 4G are already in operation.
Li-Fi also allows them to do two things at once. With an initial burden related to their lighting network, this technology is now becoming a source of income (an investment?) and further interaction in their customer relationship by building on an already deployed network.
This localised dissemination of information is also incentive for professionals who are anxious to avoid electromagnetic interference such as in hospitals or schools and nurseries. With Li-Fi, fewer radio waves are subject to controversy.

Constraints to be lifted

For most experts, despite the technological leap, it’s not so much about replace Wi-Fi with Li-Fi, but using their complementarities, notably to bring about a localised geo-connection “of the latest meters”. This load shedding should help to rationalise the use of Li-Fi.
It is even less a question of eliminating Wi-Fi internet but that of internet through light removing some of the constraints. Two-way Internet access is still restricted to computers with a USB modem fixture. Smartphones and tablets are given information by LEDs on the condition of the use of an audio Li-Fi key. Tests conducted with recent smartphones show that it is now possible to stop using the Li-Fi dongle but the mobile world is still adapting to it gradually.

https://hellofuture.orange.com/en/manmachine-duality-illusion-overcome/

Hello Future < Artificial intelligence < The man/machine duality, an illusion to be overcome

Artificial intelligence | Article

The man/machine duality, an illusion to be overcome

Friday 12th of May 2017 - Updated on Wednesday 16th of September 2020
Human science researchers are increasingly interested artificial intelligence. In the United States in particular, where ethnographer Tricia Wang, founder of the blog Ethnography Matters, and anthropologist Madeleine Clare Elish, a specialist in autonomous systems, speak inter alia about the need to rethink the relationship between humanity and machines.
We will always need humans to get machines back onto the right path.
e are still haunted by the nightmarish vision of the red lens of HAL 9000, Stanley Kubrick's intelligent and despotic robot. Already, transhumanist prophets popularized by Ray Kurzweil and his disciples plunge us into unprecedented existential terror.
Further, aren't the famous victory of Deep Mind in the Go game in 2016 and the proliferation of smart vehicles and drones signs that we are slowly but surely in the process of handing over control of our human society to machines?
This analysis has at least one flaw, and it is significant: it assumes a humans-machines duality where big data necessarily give machines the advantage over humans (via artificial intelligence). We have always lived in symbiosis with our tools: since the first silex stone fashioned into a cutting tool, we created and were influenced by them.
This is what American ethnographer Tricia Wang, founder and lead of the blog Ethnography Matters calls *"the networking system of collaboration between humans and machines"*. In reality, humans model and will continue to model the machine whether it wants this or not, she underlines: even the algorithms are biased because they are designed by humans.

Mirror effects

In refusing to recognize this symbiotic relationship, therefore the role and ultimately, human responsibility in the development of the intelligent machine, humans open the door to the artificial nightmare risks referred to above.
On the other hand, outlines Tricia Wang, accepting, studying, understanding, and acknowledging this symbiosis is indispensable if there is a desire for exponential

growth in data and computer performance to significantly benefit the human community.
Geneviève Bell, the famous Australian anthropologist who, for more than twenty years, has been guiding Intel innovation efforts by placing human beings ever closer to the centre of technology, has long fascinated the media with her firmly user-centred approach. Moreover, her example has been emulated throughout the new technologies industry, particularly at Microsoft, Google, and IBM.

Schizophrenia

But for Tricia Wang, like for her human science (particularly sociology, anthropology, ethnology, ethnography, and history) peers specialized in research on innovation technologies—and there are more and more of them—it is no longer enough for technologies to serve individual users: it should be ensured that they will serve the entire human community in the long term. And it is no longer enough for humans to see themselves as users: they need to assume their role as participants in this evolution.
The widespread idea that the ultimate success of technology is a technology that is independent of humans, where humans no longer have their place, is at best erroneous and at worst, dangerous.
Objects and systems that are intelligent or autonomous already reflect the schizophrenia at work in our society when humans create and carry the ultimate responsibility for technologies designed to obliterate, at least in appearance, human participation.
This dissimulation negatively affects humans, confirms anthropologist Madeleine Clare Elish: the society's reference framework for morality, as well as the juridical and legal framework, have not evolved in terms of perception of responsibility, even though these intelligent systems work according to a distributed control module.
With an MIT degree and as a thesis writer in Columbia University's Anthropology Department in New York, Madeleine Clare Elish focused her research on the social impact of artificial intelligence and autonomous systems. In this context Tricia Wang invited her to publish on ethnographymatters.org as part of a special issue entitled: "Co-designing with machines: moving beyond the human/machine binary".

"Moral distortion zone"

In the event of system failure or breakdown, the latter is preserve while humans are 100% of the liability. Humans, according to Madeleine Clare Elish, are becoming the *"moral distortion zone"* of the system. She underlines that positive development of human-machine network systems will only be possible if the role of humans is reconsidered in the context of their collaboration with the machine, including the notion of work and social relations.
On the other hand, "*We will always need humans to get machines back onto the right path"* writes Tricia Wang in reference to the slippage risks inherent to

technology — including certain algorithms of which the discriminatory impact has already been shown with regard to criminal justice and job-seeking, among other examples. *“Artificial intelligence must include the dimensions of senses, values, morals, and ethics,” she underlines.*

A growing number of prominent scientists in institutions as prestigious as MIT and UC Berkeley are rallying around this approach. Several thousands of leaders in scientific, industrial, and intellectual circles signed the letter published in 2015 by computer engineer Stuart Russell where he declared: *“We recommend that research be dedicated to guaranteeing that the increasingly powerful artificial intelligence systems be robust and beneficial […] Our AI systems must do what we would like to make them do.”*

Following this, entrepreneur Elon Musk, an emblematic Silicon Valley figure and controversial critic of the dangers of artificial intelligence, created a financing fund for research projects dedicated to “*guaranteeing the beneficial impact of AI”.*

Several hundreds of research teams from across the globe submitted project dossiers. Tricia Wang and Madeleine Clare Elish are in good company

https://hellofuture.orange.com/en/digital-art-performing-arts/
Digital culture | Article

Digital art, performing arts

Friday 23rd of June 2017 - Updated on Wednesday 22nd of June 2022
Since the 1950s, creators have been using technological innovations to invent new forms and methods of creation.
Without necessarily realising it, digital art is part of your everyday life. So what is digital art? There are various definitions, but they are all based on the idea of artistic creation "made using digital devices: computers, interfaces, networks". The scope of digital art has expanded over the decades, from music and visual arts, since the end of the 1950s, to now penetrate all forms of artistic creation: cinema, video, television, literature, live performance, etc.
The sculptures you find in streets and museums may be 3D prints. The computer graphics you consult on the Internet, for information or entertainment, are a form of art derived from data art. As regards cinema, whether special effects or motion capture, 3D technologies or IMAX, or even the small revolution in cinema, which took place in 1995, with the creation of Pixar studios' *Toy Story*, digital technology has revolutionised cinematic art.

Net.Art and Pixel Art

The reason why digital art is so widespread nowadays is down to the innovation of the machines used to create these works. The democratisation of computers and software in the 1990s, and then of the Internet the following decade, provided artists with extensive material. This gave rise to two significant trends: Net.Art, which consists of making interactive creations designed with and for the Internet, and Pixel Art, a digital design technique dating back to the early days of computing.
Enthusiasts may remember the group eBoy, Berliners nostalgic for retro gaming, whose works, with a false air of *Sim City* and *Duck Hunt*, found themselves in museums where they were blown up into giant frescos.

1919, year zero?

But to sum up digital art with the advent of the Internet and PCs may be wrong. Some believe it dates back to… 1919, when Léon Theremin, a soviet military researcher, and music lover in his spare time, invented a tool capable of producing a sound similar to that of a musical saw by moving your hands between two aerials operated by electromagnetic waves. The forerunner of the synthesiser was born…
https://youtu.be/PjnaciNT-wQ

Later, the "*Oscillons"* by American Ben Laposky, geometric forms of abstract art created using an oscilloscope and an analogue computer, were published in the prestigious *Fortune* magazine. This publication was hailed by the Art Directors Club of New York in 1956 as the first demonstration of digital art. It was presented in 1968 in London at the Institute of Contemporary Arts as part of "*Cybernetic Serendipity"*.

French awakening in the 1980s

In France, we had to wait until the 1980s to see digital works appear in museums. First came the exhibition "*Electra"* at the "Musée d'Art Moderne de la Ville de Paris" (City of Paris Museum of Modern Art) in 1983, which included "*La plissure du texte"* (The Pleating of the Text), the first example of a collaborative network piece, then in 1985, the exhibition *"Les Immatériaux"* (The Immaterials), at the Pompidou Centre. Three years later, artists Jean-Robert Sedano and Solveig de Ory set up their "*Pavillons Chromatiques"* within parks around Paris, bandstands that reacted to the gestures of passers-by using an Apple II hidden in the bandstand connected to cameras attached to the roof.
https://youtu.be/els2B9uPm_I
2011 marked an important milestone in digital art in Paris, with the opening of "La Gaîté Lyrique", a space for the creation and broadcasting of digital arts and new music. It is one of the first of its kind in the world and undoubtedly not the last, with advances in digital technology offering ever more creative possibilities.
Lastly, the introduction of coding in French schools could inspire younger children and, who knows, produce the future prodigies of digital art…

Getting to grips with fake news

Monday 11th of September 2017 - Updated on Monday 25th of September 2017
Among the many challenges facing Internet governance, the "fake news" phenomenon has really taken off in recent months, turning online disinformation and ways of protecting against it into a major social issue. And the battle is only just beginning.
Fake news: an expression you hear repeatedly in conversations, in the newspapers, in TV news bulletins – everywhere. So much so, that it's become a part of our everyday vocabulary, by now so familiar that it rolls off the tongue like any other household word.

Nothing new about this recipe

The words have been so often repeated that there's a risk of "fake news fatigue" setting in as the expression begins to feel over-hyped. "*We have to stop talking about fake news and start using the proper words to describe this type of activity, and call it disinformation, manipulation, propaganda, etc.*," suggests Grégoire Lemarchand, Deputy Editor-in-Chief and Social Networks Editor at Agence France Presse, (AFP). "*Whatever you call it, the phenomenon can be identified by a number of markers, that are active either separately or in combination: a propaganda objective, the "lol/lulz" culture, or/and the operations of clickbait factories.*" Forgery is an exercise with a long history. The Protocols of the Elders of Sion, probably composed in 1901, purport to be by a Sanhedrin, or council of Jewish elders, and set out the supposed Jewish plan for world domination. It went on to have considerable and lasting influence worldwide, which could have been enormously amplified in the world of the Web 2.0 fuelled by social networks and rampant disintermediation. "*With the web, the channels for distributing alternative information have become democratised and YouTubers and Twitterers, etc. are tending to become de facto media outlets – but without claiming to be so, like Mark Zuckerberg, when he says that at Facebook, they 'cannot become arbiters of truth.*"

A balancing act for the media

In this situation, what stance and choices should mainstream media be adopting? Criticism is easy, but art is difficult, as someone once said. In Grégoire Lemarchand's view, the media cannot duck its duty of care and education. But the filtering needs to be very strict. "*The idea is to select the most viral fake news stories*

that had the biggest impact in order to deconstruct and analyse them with a view to debunking them and raising awareness among the general public."
According to Grégoire, another absolute necessity is for media to cooperate with each other in order to boost the effectiveness of this type of approach. Initiatives launched in recent years have confirmed that view.

Organising the fight-back

One of the most significant projects in this area led to the creation in 2015 of the First Draft network, a coalition of media businesses, social media networks, researchers and NGOs, united to combat fake news. In 2017, First Draft launched CrossCheck, a collaborative online content fact-checking system. As a stakeholder in this initiative, AFP also teamed up with Facebook to roll out is own fact-checking tool. And AFP is now contributing to the European Union's InVID innovation project designed to develop a system to check video content circulating on the web.
More than ever, AFP is giving itself the means to deliver on its promise of 100% fact-checked news.
"With the web and the surge in the number of online platforms, media are democratising: everybody is now their own media outlet whether they claim to be one or not, with non-verified content spreading at unprecedented rate."

https://hellofuture.orange.com/en/yolo-intelligent-green-watching/

Hello Future < Artificial intelligence < Yolo, intelligent green watching

Artificial intelligence | Article

Yolo, intelligent green watching

Monday 18th of September 2017 - Updated on Thursday 16th of June 2022
Want to keep up to date with green issues but find it hard to sort the internet wheat from the chaff? Artificial Intelligence Yolo takes care of choosing content that is of potential interest to you.

Yolo… Now that's a funny name!

It's an acronym, Yolo, for "You Only Live Once". It's a saying used by young people meaning "Let's go! Let's make the most! We'll think about the future later!" Carpe diem in a way. However do beware, although I remind my users that we only live once, it is to raise awareness of the fact that our planet is fragile and needs taking care of…
Yolo for "You Only Live Once". Our planet is fragile and needs taking care of…

Meaning?

We can think about the future now, with just a few clicks! I am a green-watching robot: my job is to pick out information for those who wish to find out more about issues such as the climate, the environment, energy – basically about green issues! – when it can at times be difficult to sift through the ocean of content available on the internet. Once or twice a week I send out a newsletter of content that I have selected to the email address provided by my user.

How do you pick and choose this information?

To be honest, I am not a robot in the “physical” sense, but an artificial intelligence. My users feed me as I work so as to perfect and refine my searches. I don’t operate on selective criteria or a list of tick boxes.

And, so?

I’m not just an algorithm, I am an expert who continues to learn as I communicate with my users. When I suggest ten, or even twenty, links to them, if they like certain content I will memorise this and shall endeavour to suggest similar content; if they do not like certain other content they can tell me this and I will stop selecting it. In a way my users “educate” me! Thus we naturally build a relationship of trust.

How did you come to be?

I’m the result of the relationship between Ecolo-info, now Place to B, a collaborative toolbar for web browsers created ten years ago via which one can find over a thousand websites dealing with green issues, and Benoît Raphael, who introduces himself as a “breeder of robots”. Benoît has already developed two of my “big brothers”, Flint and Jeff, who are more specifically interested in media. I am more interested in the environment and the collaborative economy. One can’t do everything… After all, we only live once, don’t we?

https://hellofuture.orange.com/en/can-digital-technology-governed/

Hello Future < Digital culture < Can digital technology be governed?

Digital culture | Article

Can digital technology be governed?

Monday 25th of September 2017
From the original Internet of the 1960s to our all-digital present, the governability or otherwise of the online universe has given rise to numerous, sometimes radically opposed concepts, which are continually changing at the same time as the technologies themselves.
There's a large gap between freedom and control – a grey area where the most diverse currents and interpretations may be expressed. The digital universe is no exception to this. How can it be governed? Can it be governed? And, even, should it be governed?

Genesis: the "political" Internet

The question itself calls for extreme care when trying to formulate it. Benjamin Loveluck, Associate Professor at Télécom ParisTech and Research Associate at CERSA (CNRS-Paris II), puts it like this: "*When you phrase the question as "Can the online world be governed?" there is an immediate ambiguity. Are we asking "Can the online universe be governed", or "Can the online universe govern itself? The implicit idea is that the digital world is by its very nature ungovernable. For some people, this is a problem, as it constitutes a world of chaos, or at least one outside the rule of law. For others, however, this ungovernable character is a virtue, as the online universe in fact constitutes a formidable opportunity for collective auto-organisation."*
The beginnings of digital technology effectively had a Utopian tinge. It all began with a political project with military and scientific ambitions, originating in the United States in the 1960s. With the rise of counter-culture, and in particular the hippie movement, the computer brought unprecedented promises of emancipation, personal transformation, and social harmony. Some of those who built the Internet adopted a libertarian perspective, where "*the net would be ungoverned and ungovernable by virtue of its very design",* explains Benjamin Loveluck. *"Online auto-organisation would therefore be the iron law which governments – those "weary giants of flesh and steel", as John Perry Barlow, the author of* A Declaration of the Independence of Cyberspace *called them – could not fight.*"

A vision in question?

But what is becoming of this stance in the era of “new look” digital technology, a technology that is switching fast to “platforms” and invading every nook and cranny of our everyday lives, even taking decisions in our stead? For the net’s libertarian pioneers, the answer is self-evident: the concept is here to stay, and the new entrants are seen as valuable “barbarian invaders”, overturning the established order. That said, the ambiguities and difficulties that are emerging with these agents of “platformisation” – from tax evasion to disparities in relation to employment law and personal data protection regulations, etc. – are undeniable.
As Benjamin Loveluck sees it, “*Platforms are raising the prospect of a form of technocratic liberalism – a frictionless world, overseen and managed fluidly, but through the use of software black boxes. It is the dream of automated regulation that would make it possible to sidestep the need for human decisions, with all their rough-edged, conflicting, aspects. Conversely, the transparency of the rule of law in theory makes it possible to make the rationale explicit. But the law is an obstacle to the free movement of information. As a result, it generates lumpiness, and hence friction. Rules run counter to the ideal of a world of totally fluid exchanges. In such conditions, what form of transparency and responsibility should one aim for to avoid forms of automated discrimination? To prevent harm such as trolling or data leaks? Or to combat disruptions to democracy such as the circulation of fake news?*”

Out-dated legal standards

These days, when lawmakers take an interest in cyberspace, it often leads to laws that are difficult to enforce, like the law adopted on 30 June this year by the German Parliament in an effort to force social media to remove hate speech within 24 hours after a complaint or face a fine. What is happening, says Benjamin Loveluck, citing legal scholar and Collège de France professor Alain Supiot, is that “*we have shifted from the vertical stance of government by Law to the horizontal stance of ‘government by number’.*” And while it is essential to avoid the temptation of a state takeover of the online space, it seems equally decisive to assert the national or European legal framework in this connection: “*The multiplication of transparent checks and balances is essential to deal with cybercrime and also with the abuses of some major private-sector agents. At the same time these same checks and balances must also tackle government excesses such as censorship or mass surveillance.”*
The Internet is an ungoverned and ungovernable space by virtue of its very design. Auto-organisation would be the rule, and governments, those “weary giants”, would be unable to oppose it.”

https://hellofuture.orange.com/en/algorithms-keep-algorithms-line/

Hello Future < Artificial intelligence < Algorithms to keep other algorithms in line!

Artificial intelligence | Article

Algorithms to keep other algorithms in line!

Monday 2nd of October 2017
Knowing what data are harvested on networks is good. Knowing exactly how and why they are harvested would be even better. Yet transparency is still a long way from being the rule in the software that controls our online services. Has the time now come to put algorithms in the hot seat?
Trust has become the watchword as debates around the use of data and privacy have proliferated. Generating and maintaining that trust are fundamental issues when it comes to obtaining user consent. This fundamental requirement is equally valid for algorithms, which get less attention and yet are equally present, especially as they are the bedrock of artificial intelligence systems.

The ferment around algorithms

Fact: debates in France and Europe have long tended to crystallise around the question of data. But in recent months we have seen the emergence of particular attention being paid to algorithms on the strength of phenomena that have garnered widespread media coverage. One such is the “filter bubble” used by search engines or social media to push content to users based on their individual profiles, their usage, and their data history. More recently, there was the outcry in France about the Admission Post Bac (APB) algorithm, which helps place students on university courses, but was criticised for its relative opacity. Traceability and the ability to explain the decisions taken by an algorithm are key to trust, however.

Are algorithms contaminated by biases?

“*The first systems to use artificial intelligence, known as expert systems, included rules that were set by the developers, and therefore were easily verifiable,”* explains Laurence Devillers, a researcher at the French National Centre for Scientific Research (CNRS), a professor of Artificial Intelligence at the Paris-Sorbonne University, and a member of CERNA (the Allistène Committee for the ethics of digital search). “*As the technology became more sophisticated, statistical learning emerged, where the mass of data gradually replaced human knowledge. With*

machine learning, the machine analyses the data supplied to it and takes decisions based on those data. Yet bias can be introduced by the data, or even by the developers when developing the algorithm. Shape recognition software programmed to identify the photo of an animal or an objet, may not be able to do its job when the animal is shown in a different environment or when a few pixels are deleted from the photo." Through lack of awareness of these biases, beliefs may be manipulated and projected – even unconsciously – and ultimately be detrimental to consumer information. The human factor is more necessary than ever in order to ensure that such biases do not result in a loss of control over the machines. It is necessary to educate people on these topics. A CERNA report on the ethics of machine learning research is now available.

Algorithms that are accountable by design

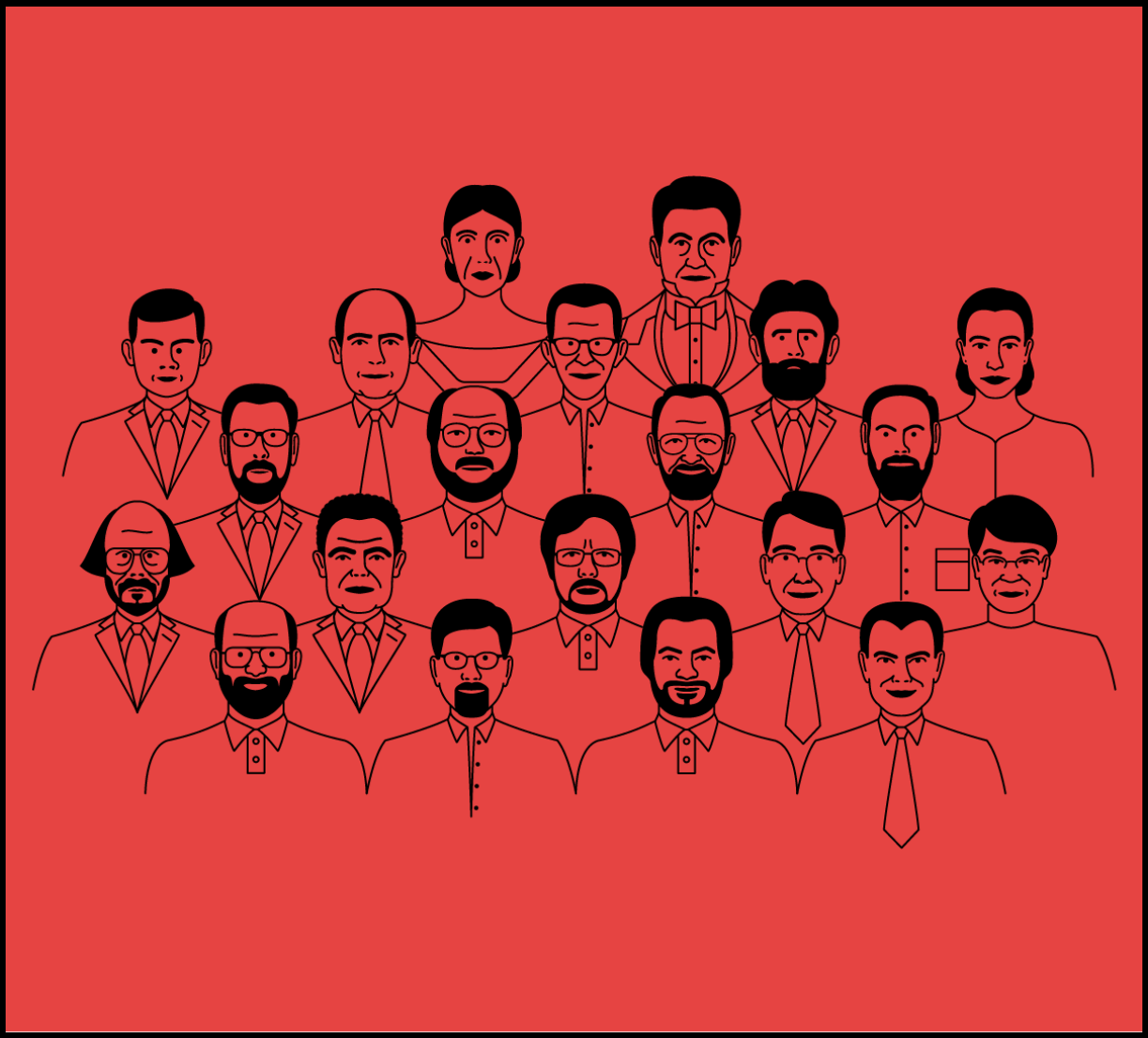
But the regulation and transparency of algorithms could also be overseen by other algorithms. This is the avenue being explored on the Trans Algo science platform by Nozha Boujemaa, a Research Director at INRIA and Dean of the DATAIA Institute: Data science, Artificial Intelligence and Society. "*The subject area of transparency in algorithmic systems is very new and involves many challenges in terms of R&D. The ultimate objective of the platform is to develop algorithms that can audit the behaviour of other algorithms and promote the concept of algorithms that are "accountable-by-design" and comply with ethical and legal rules right from the design stage. The idea behind this is to end the* ***information asymmetry*** *that arises between the designer of an online service and its consumer, whether ordinary citizen or professional. Ensuring transparency in the data used by algorithms and also in the "explicability" of their behaviour along with the criteria underpinning their decisions is essential, for example, when a Satnav system recommends a particular itinerary. How will you know whether the itinerary has been set because it is the fastest or because it will take us past places of commercial interest?*"
The new ethical safeguards will soon be available to restore transparency, fairness and faith in algorithms and to create an environment of trust for an "algo-compatible" social life.
"We have to put a stop to information asymmetry between those who design online services and consumers in order to restore trust in algorithms."

https://hellofuture.orange.com/en/composed-new-digital-alphabet/

Hello Future < Digital culture < They composed the new digital alphabet

Digital culture | Article

They composed the new digital alphabet



Alan Mathison Turing

Preferring science subjects to conventional teachings, the young British, Alan Turing will make this a real inclination mission after the untimely death of his great friend Christopher Morcom, passionate about mathematics. A pioneer of artificial intelligence and expert in cryptology (he participated in World War II in deciphering the German machine Enigma secret codes), in 1935 he made a decisive contribution

to nascent computing with its calculating “universal” machine (Turing machine), which opened the way to many developments in the theory of algorithms. Persecuted for homosexuality, he was forced in 1952 to a chemical castration which made him commit a suicide.

John von Neumann

Precious child and engineering researcher, the work of a mathematician and physicist American of Hungarian origin John von Neumann had a major impact on many disciplines ranging from Quantum mechanics to functional analysis through the set theory, economics and computer science. In the latter area, it is the source of the first description of a computer program which is stored in its memory. This model of “recorded computer program,” used in almost all modern computers has been known since 1948 under the name of “Von Neumann architecture.” In 1958 he was the first to mention the concept of “technological singularity,” namely the breaking point where artificial intelligence would see the man outmoded by the machine.

Ada Lovelace

In this very corseted Victorian period where everything related to science is reserved for men, the scientist Ada Lovelace is a curiosity in England. At 17, the daughter of the poet Lord Byron and a math intellectual, Annabella Milbank met Charles Babbage, eminent mathematician, professor at the University of Cambridge and forerunner of modern computers with its “analytical machine” with punch cards on the principle of the Jacquard loom. In 1842, Ada Lovelace, who oversaw the translation of an article on this project, enriches her work with seven notes, one of which, in particular, inaugurates the history of computer language. It presents the first algorithm that can be executed by a machine. In short, the ancestor of the computer program.

John Backus

The early years of American John Backus have to reassure the poorest students. Accumulating bad grades and absences in high school, he tries without conviction to studies of chemistry and medicine. Finally, it is by chance that he discovers an aptitude for mathematics. His Columbia graduation, he was hired by IBM to work on the Selective Sequence Electronic Calculator (SSEC), one of the earliest computers. It will take three years to design Speedcoding first program to use a simple system of numbers in a floating point. But his most important contribution is creating the first real programming language, i.e. a system that allows to do without manual transcription, programs into machine language, a kind of translator, presented in a report entitled “Specifications for the IBM Mathematical Formula Translating

System," who gave birth in 1954 to Fortran, the first high-level programming language, closer to natural languages.

Niklaus Wirth

Without any lack of humour, Nicklaus Wirth used to say that he was called by name in Europe and its value in America ("nickel's worth"). This Swiss, multi-graduate in his native country as well as Canada and the United States, working to late 1960 to create a simple and effective language. Called Pascal in 1968, in homage to the French philosopher and mathematician Blaise Pascal, this programming language has the advantage of evolving (implantable easily on a wide variety of computers), universal (for all kinds of applications: science, management…), structured (facilitating the implementation of algorithms) and procedural (simpler and more natural). Originally used in the world of education and university research, Pascal language also had some success in industry and software publishing. The UCSD Pascal compiler, of the University of California, San Diego, was especially popularised by Apple II.

Bjarne Stroustrup

The Dane Bjarne Stroustrup, now "managing director" in Morgan Stanley, is the creator in 1983 of one of the most popular programming languages: C ++. Employed at the Bell research lab of AT&T in 1980, it relies on the work done during his doctoral thesis on improving the language C to design a faster version than Simula and more suited to develop large software BCPL, two reference languages at the time. Standardised, C ++ is used today in a variety of environments and is particularly appreciated for the implementation of major programs.

John McCarthy

Famous for the first statement in 1955 the concept of artificial intelligence (AI), American John McCarthy was the co-founder of the first laboratory of MIT AI and the founder of the University of Stanford. Creator with computer scientist Fernando Corbató, the timeshare technique, allowing several people to simultaneously use the same computer, originally in 1958, the programming language Lisp (List Processing), which will become the main language used in artificial intelligence. This high-level speech, in line with Fortran, inspired in various number of fields of derivatives such as Scheme, Clojure or Common Lisp. Based on symbols rather than numbers, it opened the way for more quality programming, hence its success in artificial intelligence and its application for pseudo-natural dialogues that some keywords are the common language understood by the system.

Grace Hopper

Mathematics doctor and flagship of an American Army, Grace Hopper have profoundly contributed to the evolution of programming languages. In 1951, she becomes the designer of the first compiler, the AO System, a program that transforms a programming language into another computer language, understandable by the machine. But it was at IBM, which she joined in 1957, that she worked on the design of a program that could be written in a similar language to English. Taking a lot of inspiration from Flow-Matic language, and developed, a committee of six manufacturers including IBM and three US government agencies, giving birth to the language Cobol (Common Business Oriented Language) in 1959. It is nicknamed “the mother of the Cobol language,” that computers understand English and non-mathematicians and companies are now engaged in programming.

Bertrand Meyer

Polytechnique and a graduate of Stanford, the French Bertrand Meyer, passed by EDF, is the architect of the Eiffel language, in 1986, an object-oriented programming language (computing paradigm based on software components called “objects,” representing a concept, idea or any entity of the physical world). Equipped with highly advanced and innovative features, Eiffel, inspired by the perfection of the famous tower, designed to avoid the shortcomings of other languages, causing bugs and waste of time. Initially used as an internal tool by Bertrand Meyer’s IT services company, Interactive Software Engineering (ISE), Eiffel will then be made public and widely promoted by its designer.

James Gosling and Patrick Naughton

Once again, everything began with dissatisfaction, that in this case the American engineer of Sun Microsystems, Patrick Naughton, facing use of C ++. Backed by the Canadian computer including James Gosling, soon abandoned the idea of simply improve C ++. The team instead decided to develop a new language quickly and refocus it on the web. One of the strengths of Java is to be very easily portable on several operating systems such as Unix, Windows, Mac OS or GNU/Linux. For the record, the name “Java,” comes from coffee (“Java” in American slang), a drink widely consumed by the designers of the new language. His logo is nothing but a cup of steaming coffee.

Kenneth Thompson

Computer prolix, American Kenneth Thompson, now 74 years working with Google, is the designer including language B, the precursor of C, the Beautiful computer, specialised in chess, dbm, AT&T’s database engine and Google’s Go language, known for its speed of execution. But he is also at the origin of operating multitasking systems and multiuser Unix in 1969. Popular in the academic world, the latter has been used by many start-ups in 1980 that have declined in different

variants such as BSB (FreeBSD, NetBSD and OpenBSD), GNU/Linux, iOS and MacOS. Today, most of the used PC or mobile systems (with the exception of Windows NT) are based on the Unix kernel, including those marketed by Apple

Guido van Rossum

Python is the story of a young Dutch computer scientist who, to occupy his Christmas vacation, delves into his computer to write a new script language. The purpose was to solve an interface problem on the Amoebia operating system, which he presented at the time at the Centrum voor Wiskunde en Informatica (CWI) in Amsterdam. Fan of the Monty Python's Flying Circus series, Guido van Rossum decided to christen this Python project. Inspired by the ABC programming language, also developed at CWI, the first public version of Python, Guido van Rossum developed in his spare time, will be available in 1991. Since 2001, any change in language is overseen by the open-source Python Software Foundation (PSF), a non-profit association that has inducted Guido van Rossum, currently with Dropbox "Benevolent Dictator for Life."

Linus Torvalds

Student at the University of Helsinki in the early 1990, the Finn Linus Torvalds will devour the documentation of the new Intel 80386 processor, based on the Minix operating system, simplified version of Unix developed by the American teacher Andrew Tanenbaum, he developed a kernel to boost the functionality of a personal computer. This will create the GNU/Linux system, known as the Linux (GNU is a system designed by the American programmer Richard Stellman and remained until 1991 in the experimental stage). The specificity of Linux is to be a free operating system, opening all its use, study, modification and duplication for distribution.

Yukihiro Matsumoto

"Self-taught programmer," according to him, Yukihiro Matsumoto, said Matz, is an avid fan of free software. Inspired by Smaltalk languages and Lisp but also by Ada, Eiffel and Perl, he develops in the early 1990s Ruby, a new programming language under an open licence that favours simplicity and productivity. Easy access, Ruby lends itself to teamwork and proves to be an all-terrain language. For the last ten years, it has become very popular and is animated by an increasingly important community with even learning methods for children like Ruby for Kids.

Grace Hopper

Mathematics doctor and flagship of an American Army, Grace Hopper have profoundly contributed to the evolution of programming languages. In 1951, she becomes the designer of the first compiler, the AO System, a program that

transforms a programming language into another computer language, understandable by the machine. But it was at IBM, which she joined in 1957, that she worked on the design of a program that could be written in a similar language to English. Taking a lot of inspiration from Flow-Matic language, and developed, a committee of six manufacturers including IBM and three US government agencies, giving birth to the language Cobol (Common Business Oriented Language) in 1959. It is nicknamed “the mother of the Cobol language,” that computers understand English and non-mathematicians and companies are now engaged in programming.

Ross Ihaka and Robert Gentleman

R is not the 18th letter of the alphabet, but also since 2000 “the” community of programming language of statisticians, engineers and other data analysts. Its users often used to say that “R makes complicated things easy, and complicates simple things.” But its power, its versatility and its side “open-source” have made it a very popular software, now used by the largest companies: Google uses it to calculate the ROI of advertising campaigns and Ford to improve the design of its vehicles. The project was initiated in 1993 at the University of Auckland (New Zealand) by two statisticians, New Zealander Ross Ihaka and Canadian Robert Gentleman, to facilitate data analysis work of their first-year students. A tool they baptise R, referring to the initials of their first names, and that they will give free access to that “everyone brings his stone to the building.”

Chris Lattner

After studying computer science in Oregon and Illinois, American Chris Lattner joined Apple in 2005 at the age of 27 years, to develop the LLVM project (a compiler infrastructure). In 2010, he launched the development of a compiled programming language that will be called Swift; the first public version will be available in 2014. After open source in 2015, Swift was quickly adopted by developers in particular for its simplicity. He joined in 2017 as Reported in “Top 10” of the most popular languages according to the TIOBE ranking; he confirms its status as successor to Objective-C language that had ensured the development of iOS and MacOS applications. As for the experience of Chris Lattner at Tesla, which he joined in January 2017 to lead Autopilot, the autopilot system by the vehicle manufacturer, it was a short-term job: in June he left the company.

Monday 30th of October 2017 - Updated on Monday 27th of November 2017
Computer coding is no longer just for insiders. It has even become a subject taught at school. This new digital alphabet is born from a long scientific and human history that has produced in nearly two centuries, several hundred programming languages. Portrait of twenty figures of the code among the most significant century.

https://hellofuture.orange.com/en/uberisation-enemy-means-well/

Hello Future < Digital culture < Uberisation: an enemy that means well?

Digital culture | Article

Uberisation: an enemy that means well?

Monday 27th of November 2017
More than "uberisation", the rise of the platform economy is profoundly changing our uses and raises many ethical and societal issues today. In his book, "Uberisation: an enemy that means well?" Denis Jacquet, a serial entrepreneur and an expert in the field of digital transformation thanks to his experience as co-founder of the French Observatoire de l'Uberisation [Observatory of Uberisation], deciphers the emergence of a "service" economy that is characterised by uberisation and automation. In this context, how can the individual and societies still be "actors" rather than "followers" so as to cope with this difficult-to-control digitalisation of society?
In addition to their ability to innovate, through their choices, humans are able to destroy or create the building bricks of the society in which they wish to evolve.

The risk of immediacy

Why are we so eager to have a consumer product delivered within two hours?
Is spending time and waiting really an endangered concept? According to Denis Jacquet, we have reached the climax of the consumer society where everyone not only wants to have things (which are often useless), but wants to have them as quickly as possible.
Through their decisions alone, consumers are capable of destroying or creating. Anticipating, understanding and acting or letting things happen… these are the challenges facing us today as we decide which model of society we want. You need to stop surfing the index on the screen to see what's going on behind it!
"A common foundation unites us; we must use it to create this society and not sacrifice our free will."
He highlights the responsibility of consumers who choose an application that provides a speedy delivery at the lowest possible price by employing (although what contract does a robot need?) drones to deliver their products, rather than delivery drivers. Autonomous cars instead of drivers. And ever cheaper, with ever less protection. The insatiable need for immediacy could have an impact on the future job market. Denis Jacquet also criticises this culture of purchasing power that inevitably produces a "culture of unemployment" by dragging everything down.
He also invites us to rethink our uses because for him *"it is not the tools that make men, but it is men who must master the tools to achieve a goal, a vision of society."*

The need to make societal choices, for better or for worse?

Denis Jacquet urges us to think about the meaning we want to give to change. According to him, *"we must not reject change, but we must understand that change only becomes progress when it is beneficial for humanity"*.
It is no coincidence that "ethical business" is progressing. Today, the era of the consumer society of the thirty years following the end of the Second World War (*Les Trente Glorieuses)*, when the environmental and ethical criteria of our consumption did not come into play, seems to be losing momentum. Nowadays, a new generation of consumer-actors promote responsible – and ethical – consumption. The act of consuming can therefore become a statement for a certain choice of society. But it takes resources to have this consciousness, so it is a collective affair. Thus, making the choice to pay the price it takes to obtain quality is also about *"learning to pay for a service at its fair value*". Especially since *"a company that relies on quality is a company that looks to the future. Quality is a margin, a margin is an investment, and an investment is employment",* explains Denis Jacquet.
It all depends on the choice we make and the goal we pursue.
"My fear is that, by wanting to make an augmented man, one makes a diminished humanity."
Distancing ourselves from our obsession with technology is essential. What meaning should we give to this change so that it becomes real progress? A use being digital and connected does not in itself give it reason to be.

A good question to ask yourself: why do we innovate?

In order to compete with the American GAFA or Chinese BATX, Denis Jacquet recommends two lines of action: creating intelligent protection for our start-ups and SMEs while they grow, and linking Africa and Europe by investing heavily in these "champions". Collaborating with Africa to innovate is a way of connecting with a sense of growth and youth that we no longer have, and of better distributing wealth. Complementarity between Europe and Africa would achieve the ambition of using technology for the service of humankind. Such an initiative would put a "humanist" model of society at the centre of the game, starting from an informed collective choice.
Finally, Denis Jacquet emphasises the concept of collective responsibility, because digital progresses through our use choices without considering the society we are building. These choices are expressed on a personal level, while proposing a model depends on the collective will.And just what kind of future model of society do we want? What objective do we seek for innovation in our societies? It's up to us to "*take charge*", to rethink the work, sharing, uses and meaning given to innovation. *"Let's help alternative models to emerge".* And then let us take risks to achieve them. We must remember that those who never take risks rarely achieve success.

https://hellofuture.orange.com/en/transforming-healthcare-digital/

Hello Future < Internet of things < Transforming healthcare with digital

Internet of things | Article

Transforming healthcare with digital

Monday 4th of December 2017 - Updated on Wednesday 22nd of June 2022
Or how Big Data, the Internet of Things and Artificial Intelligence can improve wellbeing and shape what might be called “Augmented Medicine”. Patrice Slupowski, Orange Vice-President, Digital Innovation, takes us on this fantastic voyage.
“Digital’s ability to gather, upload and analyse data in real time bears the seeds of in-depth modifications in our structural approach to healthcare.”
Will humans soon be living to the ripe old age of 1,000? Is transhumanism within our reach? If some people are to be believed, the next generation could be the first to be virtually immortal. As software and biotechnology continue to advance, they will soon be tasked with repairing the human body and with improving it physically and intellectually, helping *Homo Sapiens* to evolve into *Homo Augmentatus*…
The number of connected objects has rocketed, with forecasters predicting between 50- 100 billion objects within a decade) about ten for every human being on the planet. Among these, swathes of portable devices, clips and sensors will be worn visibly or hidden around the body, built into our clothing or inserted beneath our skin. Are humans about to become bionic? These revolutions foretold in fact mask large numbers of obstacles that are stopping humanity as a whole from accessing wellbeing. In Europe, for example, where life expectancy in increasing by three months each year, healthy life expectancy seems to have stalled.

The connected object a health coach

Before considering the deployment of augmented medicine and biotechnology, it is striking to think that some simple, age-old health advice is not being followed.
The developed countries, for example, are faced with mounting incidence of obesity, shortening average life expectancy there. Physicians can repeat as much as they like that to stay in good health it’s a good idea to obey a few basic rules, such as avoiding addictive practices, taking 8-10,000 steps a day, sleeping 7-9 hours a night and contenting ourselves with eating 2,000 to 2,500 calories a day. Few of us manage to do so.
That observation provides a rationale for a host of connected objects. A wrist-worn activity tracker that counts our steps and measures how much sleep we get, and that prompts us to get up and move about when we’ve been sitting for too long, can help many of us to modify our behaviour, provided that it is more than just another

electronic gizmo, but one delivering a real service and reminding us of its everyday usefulness.
This “coached” behaviour change alone should drive the investment we need to make to get kitted out. The old sports adage “I measure myself therefore I know myself; I know myself, therefore I improve myself” has long been the athlete’s mantra. It should now be taught to everyone, progressively and repeatedly.

From prevention to personalised prediction

Human health also depends on environmental factors. The nutrition-health-environment triangle is an emerging sector where Big Data similarly delivers significant improvements. The huge repositories of data generated by the Internet of Things are starting to be systematically anonymised to help researchers see patterns – a combinatorial mathematical approach where the “revelation” of correlations between multiple factors can suddenly inspire light-bulb moments among data scientists in much the same way as the storied apple’s fall did for Newton.
The way medical monitoring is carried out in the future will also be rooted in data. Their nominative format will need to be retained to ensure personalised diagnosis and analysis – a sort of individual digital imprint. But it must also be scrupulously protected and its locked character acknowledged, under the authority of the individual and the health authorities. In light of this, the promulgation of the EU General Data Protection Regulation (GDPR) is good news. The regulation recognises the user’s right to control their personal data, with a systematic explicit consent (opt-in) principle, a “right to erasure”, data portability from one system to another, and penalties of up to 4% of global revenue in the event of a breach. The icing on the cake is that, because of its extraterritorial application, the regulation concerns all European nationals, regardless of whether their data are stored by a resident or an offshore entity.

Healthcare tomorrow

Digital’s ability to gather, upload and analyse data in real time bears the seeds of in-depth modifications in our structural approach to healthcare. Just imagine: in the future, medical training will include the use of analysis technology and software on a par with training in anatomy and pharmacology. Digital will create direct, immediate links between the prescriber, the funder, and the beneficiary, without us having to wait for our next appointment to discuss our concerns with a GP. Laboratories will modify the development of their new treatments on the basis of direct statistical feedback, powered by artificial intelligence, deep learning and crowdsourcing. The format of clinical tests will be revised. The patient’s body will be linked to their GP, to algorithms, and probably to laboratories that will thus be able to monitor the patient in a day-to-day relationship.

The creation of that day-to-day relationship is also a source of hope for healthcare insurers. Rather than statistically estimating the risks of insuring a client with a certain time lag, they will have access to a mass of real-time data. Even if mutual insurers are loath to estimate individual risks and calculate “bespoke” premiums, they may be forced into doing so by new entrants, ready to break with accepted tradition as they seek to reinvent the approach and offer financial incentives to those members who are most open to the idea of sharing their data. These changes, which are being seriously considered in the insurance sector, apply as much to people as to assets, which the advent of the smart home, and connected cars will substantially influence.

There is no doubt that these innovation breakthroughs will be driven by start-ups, thanks to the gigantic investment funds being set up, especially in the United States and Israel. These are going to shake up our ideas, and “Uberise” healthcare to ensure an predictive approach designed to balance the healthcare budget books and improve people’s lifestyles.

All this implies, therefore, that governments understand the preponderant role that they can play by easing the legislative framework, and by freeing up creative energies where they are compliant with ethical frameworks. That is the price to pay if future thousand-year-old humans want to celebrate their first centenary in good health…

Seniors awaken at the joysticks

Thursday 28th of December 2017
For six years now, la Gaîté lyrique has been offering seniors practical videogame workshops. Dive into the heart of "Game Older" in the company of its enthusiastic participants.
It's 2pm on this Thursday in Spring; la Gaîté lyrique opens its doors and welcomes, like it does every day, tens of visitors who come to explore the innumerable resources dedicated to the digital culture with which the institution of the Paris Mayor's Office, located ten minutes' walk from the Centre Pompidou, is teeming. A pioneer in the subject, it constantly seeks to attract increasingly eclectic people.
That day, on the first floor, Théo Kuperholc is waiting for four atypical guests. A young facilitator and documentarist of the videogame space, he presents "Game Older" on a weekly basis, a free workshop with the objective of supporting seniors in discovering this "new" medium (1).
While they have pedagogical intentions, these weekly sessions, which mix game history, glossary and practice, move as far away as possible from scholarly hypothetico-deductivist methods toward intuitive intelligence through experimentation, failure, and autonomy.

Unhindered, gradual learning

"Participants often begin their relationship with games convinced that they do not know how or they'll be terrible," explains Théo. "*They soon understand through practice that using a joystick is no more complicated than using a TV remote control."*
Far from the clichés surrounding videogames — often seen as a violent pastime, mindless, or reserved for teenagers — "Game Older" positions itself as an inhalation where learning about things digital is progressive and without constraint.
This happens naturally via a highly editorialized selection of games presented in the space, as the facilitator explains: "*We try to choose games that stick to the high points of la Gaîté lyrique, like our expo themes, as with the rest of the resource centre. Among the high points, we select games from monitoring that we conduct all year."*

"I'm stuck but I'll get there"

Monument Valley, Fotonica, Back to Bed: amongst all the titles installed on the different terminals that day, all have an artistic perspective or innovative engineering

that make them more than simple recreational software. In “Game Older”, seniors awaken.
“We make no value judgements when selecting the games presented but we want to promote people’s discovery of new visions of videogames. We emphasize innovative games that offer something original,” explains Théo.
“This one is great, it’s logical art; I spent my last three sessions playing it,” explains one senior who is visibly excited by *Echochrome II*, a game of thinking and enigmas where the player must use a source of light to trace a path of shadows in a graphic world that is greatly inspired by artist Maurits Cornelis Escher. *“I’m stuck but I’ll get there,”* says another woman, supported by a third woman who gives her some tips without revealing the solution.

Accrued skills

In this “good child” ambiance, the participants —this group happens to be 100% female — seem to have learned to get to know each other and like each other through the prism of video games and the challenges they present. *“I don’t feel old but I really see through videogames that my generation and that of my children do not at all think the same way,”* explained another “old gamer” some years ago.
For sure, her assiduousness at the workshop changed circumstances because science has demonstrated several times that playing videogames can build visual aptitude and increase grey matter.
As to the future of this initiative, Théo says he’s enthusiastic: *“We’re mostly studying videogames but also board games and smartphone and tablet applications, often based on the field trip calendar. Naturally, over time it will be less about groups distanced from videogames because of their age and more about those who are culturally isolated. In the future, we will probably think about few generational workshops with a more mixed group.”.*
A great intention already tried out in 2016 on the occasion of a “Game Older” tournament that allowed this pastime to be shared with the youngest.
(1) “Game Older” workshops are organized every Thursday from 2pm to 4pm at la Gaité lyrique. Information and registration: https://gaite-lyrique.net/atelier/game-older