Hello Future Articles Archive

Year: 2019

Welcome to the Hello Future articles archive for the year 2019. 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.

https://hellofuture.orange.com/en/how-it-containerisation-is-speeding-up-application-development/

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Networks and IT | Article

How IT containerisation is speeding up application development

Monday 28th of January 2019 - Updated on Thursday 16th of June 2022

For several years now, containers have been revolutionising IT as they change the way in which applications are designed, thus enabling developers to increase productivity. In what way? This is what is explained here by Alex Palesandro*, cloud engineer at D2SI, a consulting firm specialising in cloud and DevOps that works in cooperation with CIOs and digital entities to accompany them in their digital transformation.

Containers are transforming application development in order to provide “infrastructure as a service”.

What are containers?

Just like in the transport sector, IT containers store objects in order to transport them. They facilitate the sending of applications and their dependencies to multiple operating systems, whichever these may be. They guarantee that the content is identical at the start and at the finish, and that it is secure, thanks to their isolation.

What are they used for?

They are used to reduce the complexity linked to the setting up and administration of applications, to speed up application development and production cycles, and, thanks to their flexibility and portability, they make up one of the building blocks that enable “infrastructure as a service”, i.e. the automation of IT infrastructures.

How does containerisation work?

Containerisation is a method that enables the virtualisation, in a container, of the material resources – filing, network, processor, RAM, etc. systems – needed to run

an application. All of the applications' dependencies (files, libraries, etc.) are also stored in this space. To transport virtual applications from one operating system to another, the container connects to their *kernel*, which enables the various material components and software programs to communicate with one another.

What is its added value?

Containerisation offers a lightweight way of virtualising resources, with isolation being guaranteed by the operating system. These resources are thus more easily portable from one system to another. It is a powerful accelerator of application development.

What role does Docker play in containerisation?

In 2013, Docker was the first market player to launch the concept of containers for applications that retain their lifecycle. This changed the way in which containers were perceived, as until then they were considered as lightweight virtual machines. Docker developed the open source software enabling container management. Meaning that it created an image reconstruction format and runtimes, which were subjected to a standardisation process by the Open Container Initiative (OCI) – a consortium founded by a group of companies to develop open reference standards for containers.

The only other market alternative is that of Rocket, created by CoreOS, which was purchased by Red Hat, but since its standardisation, Docker is the market's most used solution.

So, there is only one major player in containerisation?

Yes, however new ones are emerging in the area of orchestration. Orchestrators are tools that enable container lifecycle management by providing an overall view of them, so as to be able to configure applications on demand. That is to say that they orchestrate the lifecycles of applications based on containerisation. This is what is being done by the Kubernetes project – a project originally launched by Google in 2015, that then became open source as it was given to the Cloud Native Computing Foundation. In terms of open source projects, it is the largest after that of the Linux kernels project, and the first to be considered mature amongst those hosted by the Cloud Native Computing Foundation. The aim of Kubernetes is to work with any container systems conforming to the OCI standard. It enables programmers to concentrate on the way in which they would like applications to function rather than on the details of their deployment. Thanks to an abstraction layer allowing management of container groups, functionalities are dissociated from the components that provide them. It is competing with Docker Swarm, the native clustering solution for Docker containers.

In what way is it a technological breakthrough?

Containerisation is a true technological breakthrough because it fits perfectly into the continuous development and delivery chain of applications. It allows reduction of the notorious “time to market”, thus helping to speed up the time between the forming of an idea and its materialisation as an application functionality. Containerisation enables much faster delivery of new functionalities. For example, Facebook, Instagram, etc. release around one hundred new functionalities per day without us realising, thanks to containerisation and all the mechanics of the integration chain and of continuous deployment.

What are the limits of containerisation?

Concerning containerisation, the tools are maturing bit by bit. In other words, containerisation and the system on which it is based are starting (within the Linux kernel) to be totally reliable. We no longer observe the flaws that, several years ago, allowed containers to be broken into and resources fraudulently accessed. Today, this is no longer possible because the code used is successful and because ITOps are much better trained in limiting the opportunities for intrusion. For example, by limiting rights on applications.

However, for container orchestrators, there are still limits. For example, in terms of managing large amounts of data, there is still progress to be made for integration with cloud providers. Furthermore, many applications to be migrated to the cloud are unable to benefit from the advantages of container orchestration for scaling and portability. They would need to be rewritten in order to be adapted to this new approach, but this would require too much time.

How is containerisation going to evolve?

When all programmers master container orchestration perfectly and orchestration security is improved, we can imagine having groups of machines that will host containers belonging to completely heterogeneous systems. This will enable any application to securely use resources that do not belong to it. Containerisation and its orchestration will thus enable unified management of heterogeneous resources, which is highly useful for IoT usages as it has a wide range of different processor architectures.

*He joined D2SI a year ago after having spent three years in the cloud security department at Orange as part of his thesis on the subject of multiclouds (at the University Lyon 3). He studied all forms of container-based virtualisation and his chosen fields are: multicloud, DevOps, System Virtualisation, Software Defined Networking, and Network Function Virtualisation.

https://hellofuture.orange.com/en/viva-technology-followanalytics-the-next-generation-mobile-marketing-solution/

1. Hello Future
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Digital culture | Article

Viva Technology: FollowAnalytics, the next generation mobile marketing solution

Tuesday 21st of May 2019 - Updated on Thursday 16th of June 2022

Specialising in the field of mobile marketing automation, FollowAnalytics, a start-up, has developed a platform that is among the most advanced and complete on the market, with a strong emphasis on the issues of engagement and retention. We take a closer look at this start-up, and its world-class product, operating on both sides of the Atlantic.

One of the most complete and comprehensive platforms on the market, with over 150 features and various analytics tools combined with advanced segmentation and engagement processes.

In recent years, mobile phones have come to play an increasingly important role in our lives, with smartphones leading the way. As a direct consequence, the explosion of mobile commerce has been a major phenomenon, requiring brands to invest

massively in these platforms. Having previously been focused on responsive web design, this investment has gradually been extended to mobile and web applications. According to a Criteo study published on 24 December 2018, mobile transactions accounted for 40% of e-commerce sales in North America in Q3 2018. And the key finding was that the conversion rate on shopping apps in the region was more than three times greater than the rate for mobile sites.

The next generation of mobile marketing

In 2012, Samir Addamine, then CEO of the interactive mobile agency ClicMobile, began to focus his attention on this trend as he saw more and more of his customers getting into mobile. At the time, the field of mobile analytics was still relatively unexplored and Samir Addamine carved out a niche for himself by creating FollowAnalytics in 2013. A next generation mobile marketing automation platform, combined with an engagement tracking dimension and, more recently, mobile app development features. The business started with a team in Paris in 2014 and the product soon generated a lot of interest, registering a dozen customers in the space of just a few months. By late 2015, the company completed its first round of financing of $12 million, primarily from North American investors including Salesforce Ventures and SAP Ventures. With this financial support, FollowAnalytics enriched its application suite and expanded its activities on the US market, where the start-up signed a partnership agreement with Salesforce to distribute its product. By the end of 2017, the company had successfully raised a further $11 million in a Series B financing, with a group of investors that included Orange Digital Ventures.

One of the most advanced platforms on the market

Hosted on Amazon Web Services' Cloud and available in SaaS mode, the FollowAnalytics platform is one of the most comprehensive and mature on the market. In 2018, the start-up was featured in the prestigious 'Magic Quadrant for Mobile Marketing Platforms' report, where it was lauded as one of the most promising challengers in this field. Its product, which is geared to optimising engagement and retention among users, stands out from the competition in several ways, in particular for its quality. Delivered in the form of an SDK that can be integrated with any mobile app and providing access to some 50 metrics in just a few hours, the platform offers more than 150 features. It includes mobile/user/attribution/crash analytics and sophisticated segmentation tools, and is combined with real-time engagement technology supported by machine learning algorithms. It allows retailers to refine and personalise their communications to customers with a view to ensuring engagement and retention, whether it is a transactional or contextual push.

A package of value-added solutions

In addition to its capabilities and extensive functional scope, the product bases its added value on other essential building blocks. “It can be integrated with the leading CRM platforms on the market, including Salesforce, via integrated connectors that ensure immediate consistency with customers’ systems,” says Samir Addamine. “It stands to reason that we were, therefore, interested from a very early stage in the issues of personal data protection and GDPR compliance. As such, FollowAnalytics has adopted the principles of privacy by design since 2016. And we provide customers with a ‘DataWallet’ to help them to manage their personal data and monitor and ensure their own compliance.” Finally, in 2018, FollowAnalytics launched a disruptive mobile app development solution under the name ‘Build’. It is disruptive because it allows apps to be created in just a few hours using existing web platforms, in a no-code configuration and offers several additional benefits: accelerated time to market, reduced costs, increased ROI. Already marketed by Salesforce in the US, this product is expected to be launched in France shortly, in partnership with Orange Applications for Business. Just one of the many innovations presented during live demos at the VivaTech show!

https://hellofuture.orange.com/en/at-roland-garros-the-future-is-now-orange-unveils-new-video-technology-with-5g/

1. Hello Future
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3. At Roland-Garros, the future is now: Orange unveils new video technology with 5G

Networks and IT | Article

At Roland-Garros, the future is now: Orange unveils new video technology with 5G

Monday 3rd of June 2019 - Updated on Wednesday 5th of June 2019

3D images, 8K, 360° video, virtual, augmented and mixed reality, and more, including on mobile devices: the future of video applications has never been brighter and it will be driven by the upcoming roll-out of 5G networks. At the French Open at Roland-Garros stadium, Orange and France Télévisions are revealing a glimpse of the revolutions to come by showcasing live 8K content retransmission via an experimental 5G network deployed with Nokia.

A live demonstration of the multiple possibilities that 5G opens up by providing high-performance for video applications.

For the general public, video is arguably the most exciting development out of the many areas of innovation that will demonstrate 5G's capabilities. New advancements are emerging, including 8K resolution, which promises to be a major leap forward and offer a more immersive experience in the consumption and display of ultra-high definition content, with complex 33-megapixel images.

A world premiere

The audio-visual production and broadcasting sector has already begun to transition to 8K. France Télévisions is a media pioneer in France for the new format, and Roland-Garros is a life-size playground for exploring its potential. Last year, the French audio-visual group carried out its first 8K capture tests during the Grand Slam tournament. This year, in partnership with Orange, a new milestone has been achieved with the live transmission of the Philippe-Chatrier court matches in 8K and 5G throughout the competition. A world first: 8-hours a day of continuous live broadcast during a two-week event.It is also a practical demonstration of the many

possibilities that 5G opens up in terms of performance, quality of service and flow segmentation and prioritisation.

An on-site experimental network

For this project, Orange worked with Nokia to deploy an experimental 5G network on site in anticipation of the event. The network will operate at 3.6 – 3,7 GHz, and the technology deployed includes two antennas installed on the sidelines of the Philippe-Chatrier court. A use case is being presented during the tournament with the live transmission of matches on the centre court, captured by 8K cameras of France Televisions, on 8K 70 and 80-inch TV screens set up on the Orange and the public audio visual group stands. “5G provides new functionality for segmenting and securing flows in isolation, with the appropriate service capacity to meet each need” said Jean Pierre Casara, Orange 5G Innovation Expert. When the new mobile phone standard is rolled out, a stadium like Roland-Garros will be filled with spectators using their 5G smartphones and AV professionals broadcasting interviews and live reports using the new mobile network. The objective is to ensure that network availability and performance are not negatively impacted when it is being used by many people for different activities. “This demonstration will sharpen our understanding of customer needs and allow us to better understand this concept in practice in preparation for its future implementation.”

A complex chain and technical challenges

France Télévisions brought together many French and international partners for this event and developed the technical video architecture set up to support the demonstration, including the core encoding link of the device, to support this new image format to Orange’s 5G antennas. For its part, Orange has chosen Nokia’s 5G platform to broadcast these programmes live on the stadium and 5G Oppo’s mobiles as a modem connecting TV terminals to 8K TV sets in the demonstration stands.
The technical challenge is made even more complicated by the fact that the complete interoperability of 5G equipment is still in its infancy, as the work on standardisation was only finalised this past December.

5G, the launch pad for new video uses

This demonstration illustrates how 5G is already shaping the future of video.
“5G networks will support the bandwidth levels necessary for the implementation of 8K, as well as for the new formats that will emerge or become more widely available in the future,” concludes Jean-Pierre Casara. “The challenge for networks is to ensure that this dynamic is effectively supported with enhanced capacities and performance.”

https://hellofuture.orange.com/en/health-applications-and-wearables-impacts-on-the-medical-ecosystem-and-practices/

1. Hello Future
2. Internet of things
3. Health applications and wearables: impacts on the medical ecosystem and practices

Internet of things | Article

Health applications and wearables: impacts on the medical ecosystem and practices

Tuesday 12th of February 2019

In producing health data, smart objects bode well for a revolution in the health sector. Curative until now, practices are becoming more preventive, personalised, and collaborative around multidisciplinary teams. These smart objects impact the health ecosystem and raise questions on the evolution of responsibility as well as the modes of operation of public and private health insurances.

"Thanks to smart objects, medical practices, which until now were mainly curative, are evolving towards more early screenings, more preventive and more predictive medicine."

Watches, bracelets, armbands, clothes, plasters, implants, etc. *Wearables* or health-related smart objects abound. On the market for the past four or five years, until recently they were still considered to be gadgets. But with the development of Medical Devices (MD), little by little they are earning their legitimacy, giving reason to believe in a true transformation of the health sector. These smart objects not only encourage users and patients to pay more attention to their health and manage their chronic illnesses, but they also have an impact on the ways in which all health professionals work: doctors, analysis laboratories, hospitals, clinics, paramedical professions, nurses, social security, etc. Thus, medical practices, which until now were mainly curative, are evolving towards more early screenings, more preventive and more predictive medicine. These smart e-health objects also encourage the entire profession to coordinate and collaborate more, and to develop remote monitoring. Finally, these technologies provide patients with more autonomy and place them at the heart of the medical process.

Blood sugar levels, blood pressure, infections, etc.: smart objects reveal certain malfunctions of the body

Equipped with all kinds of sensors, many smart health objects are capable today of spotting a wide range of malfunctions in the human body: blood sugar level imbalance, variation in blood pressure, atrial fibrillation, infections, etc.
Thus, CardioNexion from @-Health, integrated into clothes, detects strokes thanks to a device that captures and analyses biomedical signals in real time; the Apple Watch Series 4 or smart watches Move and Move ECG from Withings and presented recently at the Las Vegas CES are, for their part, capable of producing an electrocardiogram in just a few minutes thanks to the integration of a digital stethoscope; the Withings smart blood pressure monitor BPM Core detects valvulopathies (malfunctioning heart valves). The market also offers smart plasters that can identify infections and smart patches that measure blood sugar levels and inject the correct doses of insulin.

When these smart objects are linked to the medical network, health professionals are informed in real time of any abnormalities and can then take action remotely.

Smart health objects to the rescue of medial deserts

Medical deserts or remote areas are ideal for using this type of tool. Thanks to these objects, health professionals can monitor elderly people and patients with chronic diseases, or carry out post-op follow-up remotely. An alternative that is interesting on two levels. On the one side, these connected tools enable patients to be kept at home in complete safety, and on the other, they reduce hospitalisation costs and unclog hospitals and clinics.

It should also be noted that data-sharing and videoconferencing tools enable health professionals to remotely obtain a colleague's opinion on a diagnosis or a protocol. Doctors are supported and "augmented" in their actions and patients receive better care.

Many obstacles still need removing

Although the health benefits of these objects are real, the market is having trouble breaking through. According to Philippe Marcel, south-east interregional director and manager of the CAP'TRONIC* programme, several elements are at the origin of this situation. "*Among the main reasons: the difficulty assessing the benefits of these technologies. Thus, the value created by smart health objects is not always proven. Not only can users question the reliability of the data collected, but also the conditions under which they are collected because, when taken out of their different contexts, the data are sometimes meaningless to the medical staff. These objects*

will therefore fully play their part if they simplify the actions of health professionals and cater for their needs", he highlights. Another obstacle is the lack of interoperability between the objects and data collection and processing platforms, as well as insufficient network infrastructures in certain regions.

The law: "Under French law, health data, which is recognised as being sensitive, receives enhanced protection. Gathering data from these smart objects requires user consent. Some health professionals still fear that users and/or patients will do without their services. So, once data provides certain conclusions, patients can for example contact a specialist directly without going through their GP. A fear that is also present in analysis laboratories: with certain smart objects being able to perform some of their tasks", Philippe Marcel adds. Finally, it's highly likely that other technologies such as AI or machine learning will revolutionise the entire health ecosystem. Let's not forget that Watson, IBM's AI, is said to not only have succeeded in diagnosing lung cancer with a success rate of 90%, versus 50% for a doctor, but also to have offered a patient treatments after having worked out their degree of relevance.

Health insurance and professional insurance forced to evolve

All of these technologies are not just going to spread without raising a number of questions. "Who is paying for these MD (medical devices)? Are they reimbursed by Social security? At what rate? And what about liability?, questions Philippe Marcel. Who gets blamed for the mistake when a doctor bases their diagnosis on an AI? Who is responsible, the doctor or the AI? All professional health insurance companies are currently studying these types of topics. And complementary health insurance won't be left out either." It's in this way that for two years now, Generali has been offering its member companies a behaviour insurance programme. Named 'Vitality', this programme enables voluntary employees to receive vouchers in exchange for following certain nutrition rules and a certain lifestyle. On their side, Axa and Harmonie Mutuelle reimburse some smart e-health objects so as to encourage their members to adopt healthy living. Nevertheless, in France insurers cannot access their members' health data and thus use it to price or terminate a contract. The use of these smart objects evidently raises the question of their security: how to ensure they won't be the target of piracy or data theft, or even failure through intrusion. And even if there is no such thing as zero risk, putting certain good practices into place can help prevent these wrongdoings: choosing recognised brands, updating software regularly, changing passwords, checking internet connection security, etc. Although all of these elements are slowing down the deployment of these e-health objects, they could rapidly disappear in the face of the benefits and the enthusiasm of all the stakeholders engaged in this field. Apple, Amazon, Google, but also Samsung, Sony, Philips, Panasonic, or LG; not to mention all the traditional pharmaceutical companies such as Sanofi, Novartis, Roche,

Johnson & Johnson, or Merck; medical device manufacturers; brands like Nike or Adidas, and of course startups (Visiomed, Withings, Voluntis, Bluelinea, iHealth, etc.), today they are all investing massively in this market. Lastly, entered into the DMP (the French shared medical record), the data from these smart objects has, since November 2018, enriched the medical knowledge of all patients.

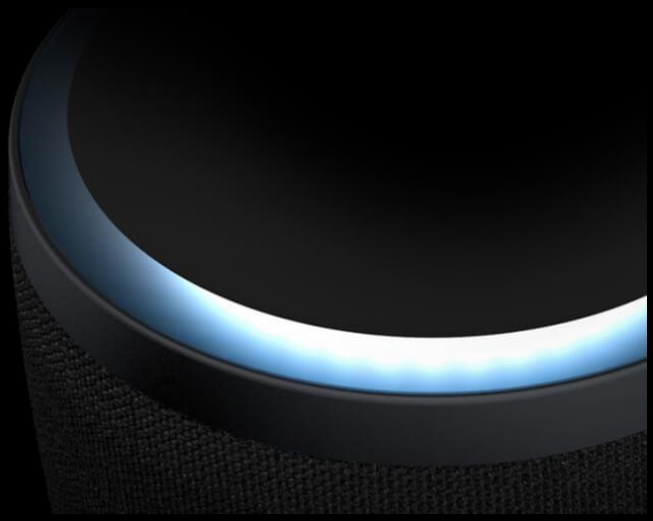
* CAP'TRONIC Programme: Helping French startups and SMEs to improve their competitiveness thanks to the integration of electronic solutions and onboard software in their products.

https://hellofuture.orange.com/en/mwc-2019-the-djingo-ecosystem-is-opened-up-to-partners/

1. Hello Future
2. Artificial intelligence
3. MWC 2019: the Djingo ecosystem is opened up to partners

Artificial intelligence | Article

MWC 2019: the Djingo ecosystem is opened up to partners



Monday 25th of February 2019 - Updated on Thursday 16th of June 2022

Djingo is Orange’s multi-service and multi-interface virtual assistant, co-developed with Deutsche Telekom. It is also an ecosystem that is open to many partners and is set to be showcased by Orange at the Mobile World Congress 2019.

Orange co-innovates with its trusted partners to create unprecedented experiences and an open ecosystem.

In the spring of 2019, Djingo, a virtual assistant based on artificial intelligence, will be marketed in France in the form of the Djingo speaker – a connected speaker that enables customers to access core Orange services by voice. Djingo will then be launched in all new UHD TV decoders, thanks to its remote control equipped with a microphone, and will eventually be available through a smartphone app. Djingo will allow its users to control Orange TV using their voice, listen to music with Deezer, make telephone calls through the speaker, access practical services and much more.

European AI for the general public

“With its twin Halo Magenta for Deutsche Telekom, Djingo is a major European industrial project in the field of AI intended for the general public. It is therefore attracting interest from a lot of players on the continent”, Mathieu Ducrot, Head of Product, Djingo Anticipation & Partnerships, explains enthusiastically. In Barcelona, Orange will demonstrate some unique experiences that its virtual assistant offers and also outline the open nature of the ecosystem that respects personal data. From Deezer to OUI.sncf, from Radio France to FoodTech players, and even including RATP, many partners are already integrated into the Djingo ecosystem. The Mobile World Congress is therefore the perfect opportunity, according to Mathieu Ducrot, “to raise an even greater awareness of Djingo among players with whom we could create new experiences that cannot be rivalled elsewhere”.

An integration model adapted to each partner

There are three ways that our partners can be integrated into Djingo:

- **Bot Party:** Orange’s “plug-and-play” solution, which is compatible with a wide range of bot creation tools. With Bot Party, partners that already have a bot under their own brand can connect it to the Djingo ecosystem with just a few clicks. According to Mathieu Ducrot, “Thanks to Bot Party, it only took a few seconds to connect the OUI.sncf bot. This means we can now work on a more advanced integration with unprecedented functions”. Visitors can find out how users of the OUI.sncf bot are able to search for their train tickets using their voice via the Djingo speaker.
- **Open API:** Orange also offers its partners the option of becoming integrated into existing Djingo services through open APIs. In Barcelona, the demonstration will cover the Djingo “shopping list”, a feature that is now open to all mass retail players. A user can add products using their voice via the Djingo speaker. These are then automatically added to the shopping basket of their preferred distributor. Then all they need to do is finalise their purchase via the distributor’s app to place the order, which can be delivered to their home or collected.
- **Co-design:** this integration model brings together Orange designers and those of a partner with the aim of creating a unique experience in a specialised field. The demonstration will cover the partnership formed between Orange and a key FoodTech player, which offers a multi-interface voice-controlled recipe experience. This service enables a user to ask Djingo to suggest a recipe based on a product of their choice. Djingo connects to the partner’s service to help them make the recipe step by step. As Mathieu Ducrot explains, “the result is a very fluid experience that is achieved thanks to recipes specifically designed for voice mode – you will not find an experience elsewhere that is as successful as that of Djingo”.

Orange and Amazon – a unique experience

In order to offer a wide choice to their customers, Orange has also partnered up with Amazon. The Djingo speaker is even more intelligent and offers more services with Amazon Alexa. Indeed, Orange shares the same vision as Amazon of artificial intelligence systems complementing each other to offer the customer the best possible experience. Integrating Alexa with the Djingo speaker is an example of this. But this is just the beginning: Orange and Amazon are working on the joint integration of their assistants in their future products.

https://hellofuture.orange.com/en/future-20xx-the-future-in-play/

1. Hello Future
2. Digital culture
3. Future 20XX, the future in play

Digital culture | Article

Future 20XX, the future in play

Monday 15th of July 2019

Could a game help us to reflect on the world of tomorrow and conceive a common future? This is the premise of Future 20XX, a forward-looking applied game that brings all the company's players together in a fun and participatory approach.

"The key characteristic of the approach is to 'forget' Orange and its own particular future at first, in order to focus on a larger concept – the world."

Foresight – an intellectual approach that aims to anticipate the changes to our society as accurately as possible. It gets us thinking – what will tomorrow be like? The aim is not to predict the future. Instead, it seeks to shed light on the choices to be made in the present, the ones we are faced with today and whose impact will be visible in the medium or long term. Very widespread within businesses at the end of the 20th century, it gradually lost its influence on strategic planning under the strain of short-term pressure, with businesses now experiencing increasing difficulties anticipating a future considered distant and uncertain. Distant future? With climate change, the need to bring about the energy transition, increasing inequality and the ramp-up of political tensions, today's world is changeable and unstable and the future could be viewed with fear. And yet, it is within precisely this environment that, more than ever, we should be asking questions about what the future could be like and about the kind of future we want, in order to guide our activities in the short term.

Reverse the trend

This premise was the basis for **BlueOrange**, a cross-functional working group within Orange whose objective is to rethink the way in which foresight is used and to share its tools and methods within the company. Two initiatives were born as a result: the creation of "Club Open Prospective" to share reflections and collaborate with other businesses and organisations, and the design of Future 20XX, an applied game for considering the future and the challenges facing citizens and employees. "We were convinced that in order for this forward-looking work to lead to action and generate results, it was necessary to encourage widespread involvement by sharing and

involving as many people as possible in these matters. That is what led us to work on original, open and immersive concepts," explains Philippe Michel, one of the game's lead designers.

An applied game for imagining possible futures

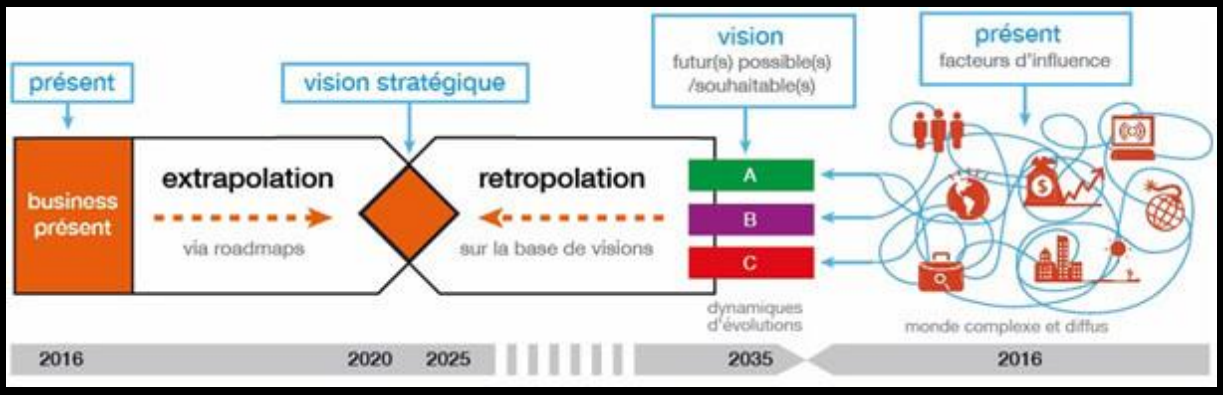
Future 20XX takes the form of a board game, with cards, handouts and a board, which brings all the elements together. The aim of the game? To imagine different possible futures, based on so-called structuring lines and fault lines: 'bricks' representing various structural trends or tensions that can currently be observed on the planet and within society. Based on their observations of the present, players then explore various world views, which are referred to in the game as 'Development dynamics'. Future 20XX applies the principles of Design Fiction, which uses imagination and narrative to create visions of the future and allows these to be shared in order to assess challenges and consequences. Tested with various groups both internal and external to Orange, the initial prototypes of the game led to enhanced content.

In-house, the game is taken seriously

Within Orange, Future 20XX has served as the basis for a cycle of forward-looking workshops, the aim of which was to support work forecasting possible futures. As stipulated by the rules of the game, the participating employees started by immersing themselves into major future challenges before examining three different visions of the world. With the help of the game, they looked ahead to the year 2035 to imagine the world these three dynamics could foster. This was achieved by writing press articles setting out various aspects of these projections in concrete terms. The articles were then combined to create three fictional magazines, each representing a different version of the future: technological, collaborative, or even resilient in the face of a major breakdown.

More than a game, a genuine tool

The content of these three magazines has become an integral part of the game and helps participants to immerse themselves in the concept at the beginning of a workshop. That is not the only purpose it serves – these same articles are used by the **BlueOrange** team during a one-day seminar attended by nearly 500 Orange managers. Over the course of an afternoon, the managers began to reflect on the links between long-term challenges and short-term business practices. Future 20XX addresses various situations associated with increasingly ambitious objectives: it promotes not only team cohesion, but also the construction of a useful future vision to guide the actions of Orange.



See the world and not just the business

As well as being fun, Future 20XX has been designed as an additional means of supporting businesses' strategic thinking. The idea is simple – a new global financial crisis or a one-degree increase in the global average temperature would have a greater impact on business than the launch of a new product by a competitor. For this reason, the applied game proposes an alternative approach. Whereas businesses tend to make future predictions by extrapolating factors in their direct environment, "the key characteristic of the approach we are proposing is to 'forget' the business and its own particular future at first, and instead focus on a larger concept and field of view – the world – which we seek to grasp in all its dimensions and complexity."

Paving the way for new strategies

The holistic nature of this approach allows for reflection and promotes a better understanding of the mechanisms inherent in the system and its potential flaws. The visions generated by playing the game can then be used as raw material to address the potential impact on a business sector or on a specific situation in a less distant future. The approach is based on comparisons with the past, highlighting the changes that we are experiencing currently and speculation as to how these changes could materialise in the years ahead. It is by using these visions as context that we can better reflect upon the future of a business and enhance its strategic thinking.

An open-licence version

A version of Future 20XX is available under a Creative Commons licence. It can be used by anyone wishing to implement game sessions within their business or organisation. The open licence under which this version runs allows both the use of the game as well as the ability to enhance the game, no matter the user. In parallel

with the work carried out within Orange, the game's content has already been offered externally. The CNAM has shown particular interest in this scheme in the context of its business foresight masters courses. Various elements comprising this version, presentations and the tools required to organise sessions in your businesses will soon be accessible.
For more information on Future 20XX, please contact Philippe Michel:
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https://hellofuture.orange.com/en/broadband-at-sea-will-soon-be-possible-thanks-to-5g/

1. Hello Future
2. Networks and IT
3. Broadband at sea will (soon) be possible thanks to 5G

Networks and IT | Article

Broadband at sea will (soon) be possible thanks to 5G

Wednesday 13th of November 2019 - Updated on Thursday 16th of June 2022

Be it satellites in low orbit, drones or stratospheric balloons, the telecom sector is working on innovation and cooperation to build a seamless 5G connectivity experience from land to sea. Satellite constellations in Low Earth Orbit will be able to deliver download and upload speeds of up to 1 Gb/s. What provides connectivity at sea? Today, geostationary satellites still provide the vast majority of bandwidth, limited to a few hundred kb/s, which is equivalent to the first ADSL boxes. That's enough to cover today's main uses such as voice-based operations. However, communication at sea is gathering pace, with increasing quantities of advanced data and services, from collecting technical information from vessel-mounted machines to providing VOD or remote virtual reality, etc.

So there's no 4G at sea?

In addition, licences used by operators in France stop at the coastline. Thus the sea is not covered by mobile networks, although in practice, connectivity can commonly be found up to a few kilometres from the coast. If Orange provides connectivity to

400 ships, it is thanks to its Satellite Business Unit. Having distributed satellite offers for over 40 years, Orange provides coverage for 100% of maritime routes and 90% of the Earth's surface. Once installed on ship, its Maritime Connect box constantly seeks the best match between the means of connectivity, pricing and the service required aboard.

A sea change with the advent of 5G

Now a major development in satellite systems is promising a completely different outlook in terms of offshore connectivity. Many players in the sector are investing in the launching of satellite constellations into Low Earth Orbit (LEO). Located between 500 km and 2000 km above the Earth's surface, these satellites fly in coordinated groups and, unlike their predecessors, they are moveable. Within a decade, they will be able to deliver download and upload speeds of up to 1 Gb/s and perhaps even higher. Offshore broadband is close to becoming reality. This space-related development will be accompanied by a significant reduction in terrestrial reception methods: satellite antennas on ships will become increasingly horizontal, and will become significantly lighter, slipping under the 100 kg threshold, possibly even less. A ship's fuel consumption is highly dependent on the weight of its equipment, thus these new antennas will lead to a marked reduction in energy usage. State-of-the-art antennas, combined with the new LEO constellations, will provide further opportunities for users deprived of connectivity due to weight or cost considerations, from fishing and coastal traffic to pleasure boats, regattas, and so on.

National and international cooperation

Previously, the 3GPP (3rd Generation Partnership Project), the global organisation of telecom operators and suppliers, had never thought about connectivity services at sea. For the first time in fifty years, the consortium approached satellite managers to include them in the ongoing discussions on standardising offshore 5G. We can thus imagine continuity between 5G services on land and connectivity at sea. Several partnerships are being established. Orange has just entered a partnership with the Brittany Atlantic Maritime Cluster (Pôle Mer Bretagne Atlantique). A joint innovation platform is set to open, to share ideas and projects and to include other players, such as antenna or software suppliers.

Other avenues open to 5G at sea

5G at sea could be covered from the stratosphere, using balloons or drones with embedded radio equipment. 20 km above ground, and thus above air traffic, this would make it possible to provide for the increase in traffic between the French mainland and Corsica, for instance. At a much lower altitude of 800m, a network of

tethered balloons could be used, connected by cables to vessels forming a sea-based network. By creating their own network, rescue boats equipped with this technology could optimise their rescue operations. Lastly, from Earth, the antennas of the terrestrial mobile network could be focused just off the coastline, an area known as the near sea. These data navigation corridors would be useful for automated maritime patrols or for fisheries control: costly helicopters would be replaced by drones sending back images in real time. These diverse technological avenues, explored as part of the 3GPP with the contribution of all players, sketch the outlook for a connected future for sailors, travellers and pleasure boaters alike.

https://hellofuture.orange.com/en/o-ran-alliance-opening-up-the-5g-networks/

1. Hello Future
2. Networks and IT
3. O-RAN Alliance: opening up the 5G networks

Networks and IT | Article

O-RAN Alliance: opening up the 5G networks

Monday 4th of November 2019

5G networks require new radio access network (RAN) architecture. As part of this major change, the global O-RAN Alliance (Open RAN) is laying the groundwork for more innovative RANs that are more open to multiple providers. What does the success of this concept depend on?

Ultimately, a new community of mobile network providers will find opportunities with operators the world over

The O-RAN (open radio access network) Alliance is bringing together many of the world's players in telecoms to develop openness in access networks. Five operators, AT&T, China Mobile, Deutsche Telekom, NTT DoCoMo and Orange, announced their founding of this global alliance in February 2019. Their shared objectives were to encourage innovation and new providers to enter this market, thereby making access networks as innovative and flexible as possible.

Fostering the emergence of new players

Three providers (Ericsson, Huawei and Nokia) dominate the mobile networks market. This state of affairs has a bearing on the cost of equipment and the scope for innovation. By producing interface specifications that are truly open, the O-RAN Alliance's aim is to allow any provider to offer hardware and software solutions that will work with its standard 5G architecture. Thanks to these interfaces, O-RAN enables the access network to be spliced virtually into smaller pieces. The entry threshold in terms of R&D is thereby lowered, which in turn enables new players to enter the market.

The Orange Group is playing a leading role in this field. While the operator is a contributor to all eight O-RAN working groups, it is leading the group that defines the open interfaces that enable the base station "as such" to operate, and to manage the "lower layers" of the mobile network. "Over time", explains Olivier

Simon, Head of Innovation for Radio Networks at Orange, “the access network has become a very complex system that is constantly seeing new functions added. For new players in the market, developing all of these functions is therefore difficult. With O-RAN, we are creating open architecture and open interfaces, and allowing new players to develop some parts of the access network rather than having to develop the access network in its entirety. “Ultimately, a new community of providers will be able to find opportunities with operators the world over, even when they only offer sub-systems of the access network”. In this way, the O-RAN specifications allow for greater flexibility. For example, “where we want to use 4G and 5G networks from two different providers, the O-RAN specifications can simplify the integration of both networks. Another option that becomes possible is the use of active 5G antennas connected to the networks of two different providers,” explains Olivier Simon.

Virtualisation of network functions

The RAN architecture of the future uses virtualised network functions rolled out across data centres that use servers that are as generic as possible. Olivier Simon confirms that O-RAN has a prominent place in this field: “O-RAN provides a guide to carrying out this long and complex transformation in a uniform way whilst achieving economies of scale”.

Here again, Orange has an important role in the process as leader of the O-RAN working group responsible for defining the network function virtualisation infrastructure (NFVI). Thanks to the specifications produced by O-RAN on the virtualisation of network functions, operators use infrastructure elements that have been approved by everyone. According to Olivier Simon, “the purpose of the alliance is to ensure that, for example, all operators that use the O-RAN specifications work from the same definition of what a data centre is. The providers of network functions can then rely on this definition, which makes both the integration phase and life cycle management easier”.

Sharing the integration effort

Nevertheless, Oliver Simon warns that “the virtualisation and openness promised by O-RAN come at price” and that “this can be seen in the complexity of the testing and integration phases”. If several manufacturers are involved in an access network, it is effectively more difficult to guarantee that the system works properly. The reasons behind any given problem may lie with a single participant or several at a time.

Presently, it is the equipment suppliers themselves that carry out the testing and propose their own integration solutions. In the future, an integrator role will be needed to carry out this same task.

In order to minimise integration costs, O-RAN operators are working on establishing joint integration and certification laboratories that will allow the bulk of this effort to be pooled.

Open source code: innovation and flexibility

In April 2019, O-RAN partnered with the Linux Foundation to set up the "O-RAN Software Community". Its purpose is to provide the open source code for a number of modules along the access network. In this way, these software modules, just like some parts of the 5G network, will no longer be exclusive to any one given provider. In addition to the field being opened up to new players, everyone can pool their own "white box" software development (in full view of everyone else) with the software development of other stakeholders, thereby saving time and money. The first open source code will be released in November 2019.

https://hellofuture.orange.com/en/artificial-speech-at-orange-fluency-is-the-priority/

1. Hello Future
2. Artificial intelligence
3. Artificial speech at Orange: fluency is the priority!

Artificial intelligence | Article

Artificial speech at Orange: fluency is the priority!

Monday 4th of February 2019 - Updated on Thursday 16th of June 2022

The process of creating synthetic speech, or Text-To-Speech (TTS), begins with human speech recordings, an essential raw material. Teams at Orange are working to make artificial speech as natural as possible without humanising it.

"We instead have a system of questions and answers devised on the basis of predetermined scenarios with a great deal of human intelligence behind artificial speech"

Speech is one of the most important forms of human communication, and goes far beyond a mere juxtaposition of words. It incorporates several forms of expression, such as its pitch, its melody, or even its silence. These are all contributory factors in how far a given message can reach, and the Orange teams currently working on artificial speech are taking inspiration from such messages to transcribe the spoken word.
“Working on this technology to make it sound natural is one of the most challenging aspects of our business”, says David Carvalho, Vision & Design Director at Orange. To do so, the teams must first observe how the human phonatory system works as the original producer of speech and how it is perceived.

Voiced and unvoiced sounds, pitch, phonemes and logatomes

The timbre of the sounds produced by each individual is defined by how the vocal cords vibrate. When the cords are stretched, the air flow causes them to vibrate and push the air through the various cavities. This allows for the production of what is known as a voiced sound. By contrast, when the vocal cords are relaxed, air passes freely through the larynx without vibrating them. This results in an unvoiced sound, such as silence.
The movement of the vocal cords produces a sound intimately linked to the way in which it is perceived. This is known as the pitch, in other words the frequency

containing information about the intonation of the sentence and also about the speaker, including their emotional state. Variations in pitch help to distinguish an affirmation, a question or an order. These are all characteristics of human speech that are integrated into synthetic speech technology. Human speech can even be considered the raw material, as synthetic speech is created by selecting units from a recorded text, also known as Text-To-Speech (TTS).
At Orange, the voice of actress Catherine Nullans embodies the brand's sound signature. She recorded dozens of hours of texts with a timbre and tone which had to remain neutral and uniform throughout the reading of the script. "The quality of the synthetic speech relates directly to how the speaker's voice performs and in particular its consistency", emphasises David Carvalho.
Once recoded, the text is then broken down into phonemes, which are themselves composed of logatomes. A phoneme represents the sounds that must be spoken. "For example, in the word "Papa", there are two phonemes because the intonation of the first "pa" is different from the second", notes Pascal Taillard, a Sound Designer at Orange. The French language is formed of 36 phonemes, while English has 46.
Logatomes consist of syllables or groups of syllables with particular articulatory and acoustic characteristics. They have no precise meaning, but sometimes serve to aid pronunciation. There are more than 1,000 for French.

Composing speech as a series of notes

These sentences are then transcribed phonetically and organised one after the other. This is known as the concatenation of the phonetic chain. Algorithms then fix the phonemes in place by applying a prosody, i.e. the correct melody (changes in pitch), the correct rhythm (changes in duration) and the correct intensity (changes in energy). "You have to look at the composition of speech as a series of notes, which can be used to form sentences with the help of specific tools", notes Pascal Taillard.
At the same time, information architects build dialogue trees that structure the message path in the form of a tree-shaped diagram, with each branch representing a major field of skills, such as weather, time, etc. According to David Carvalho, "everything is programmed in a fairly traditional way using automated processes to recognise what is being said, before this is linked to the correct field of skills".
Once these steps are complete, linguists listen to how the words are pronounced, check whether the articulation is correct and whether the links are in place, as well as correcting any errors. "This is also when we are able to identify if certain sounds do not correspond to natural speech", explains Pascal Taillard. For example, voiced sounds that should not be voiced, or vice versa. Certain words may be removed from the text, whereas others may be added. Sentences may appear far too long, without time to breathe. Lastly, texts written in the affirmative may be converted to the interrogative in order to respect certain conventions, such as courtesy. "The process of concatenation does not allow for emotion to be transcribed. However,

emotion is required for artificial speech to be as natural as possible", observes Pascal Taillard.

Three existing systems to inject expression into artificial speech

Furthermore, there are several existing systems that are used to avoid remaining in a constantly neutral tone and to give some meaning to oral expression:
The first involves inserting SSML (Speech Synthesis Markup Language) tags that vary the neutral speech base and allow for improved control of speech output.
For example, the <break> tag can be used to add a longer pause between two sentences and the <prosody> tag speeds up speech.
An alternative solution is to add interjections like "Hmmm" and "Um", even sound gimmicks inspired by video games. This is one way to add emphasis to the speech at a given time for specific information.
The last solution is to use pre-recorded phrases. "The audio file gives us the intonation that Orange wanted", says Pascal Taillard. The fact is that all vocal output requires preliminary written work in order to consider several types of responses, taking into account the personality of the virtual agent. Analysed using algorithms, the scripts are formulated by databases that are fed by teams of scriptwriters from the worlds of film, comic strips and television series. In other words, people who are accustomed to creating character identities (e.g. through style, tone and personality). This work is also approved by the Brand Division teams in order to maintain a tone that is warm, down-to-earth, bold and positive.

Knowing how to understand questions

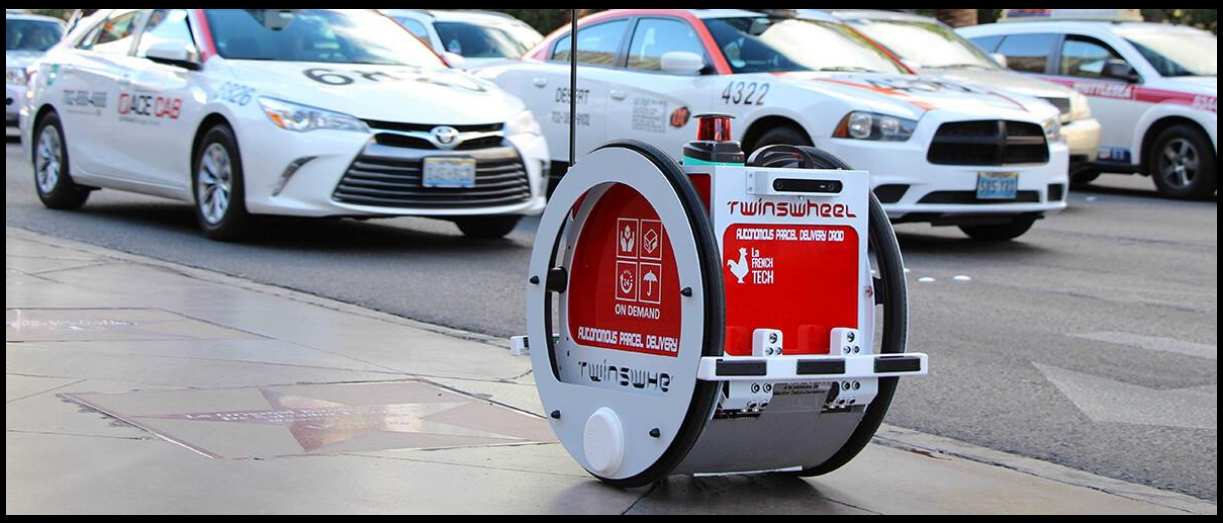
The algorithms identify the different contexts by characterising them and providing a response adapted to the environment. If the virtual agent has not recognised the area of expertise required by the question with a sufficient degree of confidence, it is able to ask another question to ensure it provides the right answer. "We plan to create a book of dialogue which will help in deciphering the meaning of the question, without actually arriving at a dialogue that takes into account the response of the speaker asking another question that references the first", explains Pascal Taillard.
"We instead have a system of questions and answers devised on the basis of predetermined scenarios and, even now, with a great deal of human intelligence behind this artificial speech", says David Carvalho.
The Orange teams are working to observe the development speeds of these technologies into which artificial intelligence (AI) is increasingly being introduced.
In the future, virtual agents may be given the chance to imitate or even emulate the methods of human expression, starting with speech.

https://hellofuture.orange.com/en/twinswheel-the-robot-that-carries-your-shopping/

1. Hello Future
2. Internet of things
3. TwinswHeel, the robot that carries your shopping

Internet of things | Article

TwinswHeel, the robot that carries your shopping



Wednesday 5th of June 2019 - Updated on Wednesday 22nd of June 2022

Capable of transporting heavy loads, moving about alone or following a guide, this robot is set to revolutionise logistics and home delivery services. Taking second prize in the Orange 5G Challenge at Vivatech, TwinswHeel has more than one trick up its sleeve...

“With 5G we will be able to pilot dozens of droids remotely, and safely”

What if from now on all heavy loads could be carried not on your back but by a robot? Already operational in maintenance services at SNCF and Renault, and undergoing testing at a Paris supermarket, as well as in Toulouse with operators in

charge of power grid maintenance, logistics droids created by start-up TwinswHeel, took second place at the Orange 5G Challenge. Fitted with cameras and sensors, these small “R2-D2s” operate like autonomous vehicles. The road to the future!

The robot trolley

Depending on what they will be used for, three types of machines are available: a three-wheel standard that can tow up to 100 kg, a six-wheeler that can carry up to 150 kg - both models are autonomous and designed for enclosed sites (plants, warehouses) and semi-enclosed sites (airports, train stations, hospitals, shopping centres) – and lastly, the third, which is more compact and can carry up to 40 kg but is also designed to travel on city roads for deliveries and shopping… But even though the robots are not yet authorised to travel unaccompanied in public spaces, this model exists for the moment in a semi-autonomous version: the robot must be accompanied by a guide. Currently being tested in a superstore in Paris’s 13th arrondissement, it can assist elderly or disabled individuals by transporting their shopping to their homes.

Operationally, the logistics droid follows the same principles as autonomous vehicles. It is equipped with a LIDAR (light detection and ranging), system with six 2D cameras and one 3D, in addition to a multitude of sensors. Three modes are available: full autonomy, the *“Follow Me”* which operates by image recognition, and remote control via Wi-Fi or 4G- and soon 5G!

Droids will be rolling autonomously in downtown Montpellier this summer as part of testing being done on the autonomous ADEME vehicle.

Piloting dozens of droids remotely

What benefits can the next generation mobile network bring to this project? “Although piloting a droid remotely is possible with 4G, piloting dozens of droids remotely with no latency is not: for that we will absolutely need 5G,” says Vincent Talon, co-founder of TwinswHeel, before listing the other virtues. “We also need 5G to be able to supervise the fleet of robots, to avoid risk of collision, for example, or vandalism.”

In fact, public safety is an important issue for the start-up. “With 5G and its lower latency and secure bandwidth, it will be possible to test new robot piloting apps. This will make droids as safe as possible,” explains Vincent Talon.

What is the next step for TwinswHeel? “We plan to work more on the machines’ interface and their design to create a droid that is physically acceptable by the population,” explains Vincent Talon. Indeed, just like us, the robot has an image to uphold…

https://hellofuture.orange.com/en/document-searching-reinvents-knowledge-management/

1. Hello Future
2. Research
3. Document-searching reinvents Knowledge Management

Research | Article

Document-searching reinvents Knowledge Management

Tuesday 2nd of April 2019 - Updated on Thursday 17th of September 2020

How do you make the most of a company's existing content, ranging from text to audio and video? How can you easily explore this content to build new knowledge? Demo of a totally new solution for semantic document management.

Offer a more effective search in all content formats including often-underused videos and audios.

In most companies, data is all over the place, often organised in silos, by entity, or by business segment. Finding any particular information can sometimes be an obstacle course in itself and can involve investigating numerous channels and sources, having to identify yourself over and over again, spending time watching or listening to an entire conference or reading the entire transcript.

Faced with this reality, Orange’s Data Search and Knowledge researchers, who have been working for several years exploring and developing multimedia Knowledge content, have produced a prototype of a multimedia document database for businesses. This unique and innovative solution called Sema4KM, which is a database-cum-search engine, uses speech recognition technology, semantic analysis and keyword extraction tools, as well as speaker analysis and indexation tools developed by Orange Research and combined to create value. The goal?
A multimedia document management database that offers user-friendly navigation and a more efficient search engine for all content formats including often-underused video and audio. The operating engine also offers the ability to cross-link knowledge sources.

“We have invented the term ‘Explorescence’, to describe this new way of using content to create Knowledge,” says Géraldine Damnati, Automated Language Processing Research Engineer at Orange.

Featured video and audio content

The demo at the 2019 Salon de la Recherche is based on documents produced by Orange Research, a corpus composed of webinars, filmed conferences, blogs, internet & intranet sites, a Yearbook, and a whole raft of presentations… Based on requests for information about topics such as Blockchain, a search can quickly lead to a wide selection of additional content in various formats. In addition to these texts, new features include extracts from conferences dealing with broader topics, and the canvassing of consensus on those topics.

This is one of Orange's new knowledge management tools, and its Data and Knowledge researchers are working hand-in-hand with the Knowledge Management and the Digital Business teams to tailor solutions to handle the content and other problems that businesses are facing. "We're already thinking about developing the tool further. For example, searching by word or phrase similarity, multilingual search, and conversational searches that allow the user to ask questions to get even more precise answers."

https://hellofuture.orange.com/en/orange-a-multiservice-operator-a-key-player-of-the-digital-transformation-in-africa/

1. Hello Future
2. Digital culture
3. Orange, a multiservice operator, a key player of the digital transformation in Africa

Digital culture | Article

Orange, a multiservice operator, a key player of the digital transformation in Africa

Monday 7th of January 2019 - Updated on Wednesday 22nd of June 2022

Orange is firmly engaged in the economic development of African countries. Thanks to the many digital services that it has developed, the operator is placing itself as a true trusted partner, at the cutting edge of technology, at the service of the continent's digital transformation.

Orange is actively participating in the economic development of African countries by placing itself as a multiservice operator, at the service of the continent's digital transformation.

The evolution of the African continent's needs

Orange has observed mobile usages in African countries in order to develop services that meet users' needs. It has not gone unnoticed to the operator, who is represented in 20 countries in Africa, that the population's enthusiasm for all things digital is on the rise. With a demography made up of 41%[1] of young people under 15, the continent does indeed have a lot of "*digital natives*". For Arnauld Blondet, Innovation manager of the MEA (Middle East Africa) region at Orange: "*These young people have an extraordinary appetite for digital and it is thanks to this that new usages can be adopted very quickly, more so than in Europe. For example, the majority of them already use mobile money.*" Telecommunications have also developed at high speed – in particular thank to Orange's investments over the past ten years. "*Africa has leapfrogged, i.e. the continent has made a phenomenal and historical catch-up. Ten years ago, there was only 2G, and it was only used for voice, whereas today internet use is predominant.*" In the majority of the 20 countries in which Orange is present, indeed users access the internet via 4G. The smartphone market is also set to extend considerably with, by 2020, 660 million

African smartphone owners[2]. O*ur ambition, for several years now, has been to provide services that live up to this evolution of usages and needs. This means being a multiservice operator, who is a reference partner in the digital transformation of the continent, as this will have a tangible impact on the economic development.*"

A multiservice approach

In keeping with the content (music, current events, news) services available for smartphones that it offers, Orange is now extending its offering to multiple digital services in many areas:

- **Banking services**
  With only 15.7%[3] of people using bank accounts, the financing of Africa's economic activity is being held back. So, Orange has developed the money transfer and mobile payment service Orange Money. It enables subscribers to deposit money onto an account that is linked to their mobile number, to make withdrawals, buy telephone credits, transfer money, or pay their bills (water, electricity, television, school fees). This service is already used by over 35 million people on the continent. Building on this success, the operator is extending this offering to other services such as insurance and loans.
- **Energy**
  Thanks to the opening up of regulatory frameworks in Africa, Orange has developed services in the energy sector with Orange Smart Metering. Thanks to IoT (Internet of Things) technology, it is now possible to deploy smart meters that enable local electricity operators to more easily collect payment from their customers, to combat fraud, and to work around the difficulties linked to the networks' disrepair. Orange has also launched the Orange Energy service, which enables inhabitants to rent an "energy box", a solar panel kit, so as to compensate for the inadequacies of the electricity production in certain areas.
- **Agriculture**
  The agricultural sector accounts for 61% of employment and 36%[4] of the continent's GDB. To help fight the effects of climate change that compromise both production and rearing, or still the proliferation of diseases that affect plants and animals, Orange has developed mobile services such as mAgri. Through their smartphone, farmers can receive information relating to weather forecasts or the evolution of production prices; but also increase their income thanks to the provision of a marketplace dedicated to exchanges between buyers and sellers of agricultural goods. Thanks to IoT, Orange is also developing services which, with real-time information reporting, will provide farmers with precious decision support tools.
- **Education**
  Africa is the youngest continent in the world and all of this living strength needs to be trained in the trades of the new economy. These professions are

of course all those linked to new technologies (webmaster, community manager, website designer, mobile developer, etc.). Orange is pursuing the ambition to develop educational programmes that will enable the countries to master the knowledge and expertise linked to digital.

- **Health, entrepreneurship**
  Orange isn't stopping here, because it is otherwise active in the area of health. Indeed, the operator is establishing partnerships with different governments and NGOs so as to provide them with health and epidemiological data analysis services, and is participating in the development of telemedicine in rural areas. It is also active in the area of entrepreneurship through the setting up of startup accelerators: The Orange Fabs. Present inter alia in Côte d'Ivoire, Senegal, and Cameroon, these centres enable entrepreneurs to be supported in their development, from the financing of their projects to the development of their products and services.Thanks to the spread of internet access and the use of smartphones in Africa, Orange offers services that contribute to the digital transformation of the continent and thus its economic development. The group offers innovative offerings, at the cutting edge of technology, and is backed up by an extensive network of local expertise. "*With a simple smartphone that fits in the hand, Africans have in their possession, thanks to the internet accesses and the many digital services that we have developed, an extremely powerful tool that will profoundly change the economic landscape of their countries*", concludes Arnauld Blondet.

1 – Injeep, *Proportion des moins de 15 ans dans la population mondiale*
2 – Rapport Deloitte, *TMT Prédictions Afrique 2018*, avril 2018
3 – Jeune Afrique, *Bancarisation, la rentabilité ne se mesure pas à court terme*, 11/2017
4 – FARM, *International conference 8 December 2016 "Employment in Africa: what if the agri-food sector was a solution?"*

https://hellofuture.orange.com/en/the-race-is-on-to-make-smart-devices-safe/

1. Hello Future
2. Internet of things
3. The race is on to make smart devices safe

Internet of things | Article

The race is on to make smart devices safe

Monday 14th of January 2019 - Updated on Thursday 16th of June 2022

Is the Internet of Things (IoT) a secure ecosystem? Acutely aware of the seriousness of this issue, Orange is publishing its White Paper on IoT security, and sharing its latest observations on the subject.

“For the future, the key challenge will be incorporating security criteria in our industrial standards, and perhaps even creating a system of certification labels.”

Orange has a hand in every aspect of the IoT chain of services: in networks, via its investments in LoRa and LTE-M, in device and data management, via its Datavenue service and its Live Objects and DataShare platforms, but also in the devices themselves, having established a position in the smart device market in partnership with a number of other companies. Networks, platforms and objects: three key pillars of the IoT with the same pressing security needs. In an environment in which new digital threats are emerging every day, confidence is an essential prerequisite for the success of the IoT, and this can only be achieved through the design of highly secure solutions capable of protecting users’ privacy.

The threats remain the same – for now

When we think about risk in the IoT, what often springs to mind is a specific type of vulnerability: the ability of a hacker to remotely take control of a device, such as a camera or car. However, the type of cybercrimes being seen thus far in the IoT are usually fairly standard: hackers attempting to create a network of “zombies” for attacks on sites, or to penetrate IT systems by using the smart device as a point of entry. The recent case of a casino whose database was hacked into via a smart aquarium is a perfect example of this type of vulnerability. In most cases, the hackers are not particularly interested in the function of the device itself; rather, they are simply going after an easier target.

The weak point of a smart device: the device itself

Orange's teams of experts carry out security audits on all kinds of smart devices. "We're looking for both material weak points and software vulnerabilities that could allow the devices to be remotely accessed and controlled, explains Sébastien Allard, Manager of the Terminals and Systems Security team. We observe the ways in which the device communicates using radio waves, and look for any open ports or unencrypted keys, etc. Our observations are widely shared in the sector: as things stand, a very large number of devices remain insufficiently secure. The reason behind this is a lack of security culture within many of the companies launching products in this sector. While they possess strong expertise in their respective fields, this is not always the case when it comes to IT security, and they often end up buying pre-manufactured pieces of hardware and firmware in order to get things rolling. The variations in technology, proliferation of contractors, and the constant emergence of new protocols all have the end result of weakening the security performance levels of the smart devices produced.

Platforms and networks under control

Conversely, the networks and platforms via which these devices operate are benefiting from reinforced levels of security. "Networks have always been our home turf, and we apply a zero-tolerance approach: we audit every single port of entry to the LoRa network, we use standardized processes, and we correct faults where they are found. The IoT also benefits from the native security protocols of the mobile network." As for platforms, the same logic applies: the My Livebox application and the Smart Home household automation platform are held to similar security requirements. The specificity of the IoT resides solely in the quantity and highly private ("my body, my home") nature of the information generated, but the issue of personal data protection is similar. For Orange, there will be no change to the commitments already made: we will continue to adhere to our Personal Data Charter, in full compliance with the GDPR.

Raising maturity levels among operators

A bill of specifications does exist for the ideal smart device – "at Orange, we use the GSMA stipulations, which were drawn up during a working group on the IoT in which we participated. We've shared this widely with our partners, along with a self-assessment questionnaire," explains Mr. Allard. The challenge of getting industrial groups to adopt best practices goes beyond Orange alone, but the Group is actively contributing to making this happen – notably via the Orange Cyberdefence team, whose expertise is being made available to more and more projects all the time, with increasing levels of sensitivity. "For the future, the key challenge is to incorporate security criteria in our industrial standards, and perhaps even to create a system of product certification labels.

What solutions are available already?

Achieving optimal device security is still a ways off, but in the meantime Orange is not content to rest on its laurels: at Show Hello 2018, the Group presented the Security Scan, a service loaded onto the software bundles of the Livebox, which protects the client's LAN network. From the My Livebox application, users can now verify the security and update status of all smart devices in their home network. The service also includes a connection cut-off system, in order to limit potential damage from a compromised device. "We believe that an operator such as Orange has a role to play as a mediator in everyday uses of the IoT, not only in order to help users manage their data privacy, but also to manage device security (e.g. by ensuring all necessary updates are made). We want our platforms to offer security services for devices and users," stresses Sébastien Allard. At the same time, Orange will continue to invest in research and development of security standards, provide guidance and support for its partners, and share best practices with the sector as a whole. The Group has set its sights on bringing about an IoT ecosystem with end-to-end security.

> Download the White Paper – IoT Security by Orange (Document : pdf)

https://hellofuture.orange.com/en/the-digital-hub-for-africa-by-orange-is-building-the-continents-future/

1. Hello Future
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Digital culture | Article

The Digital Hub for Africa by Orange is building the continent’s future

Monday 21st of January 2019 - Updated on Wednesday 22nd of June 2022

For five years, Orange has been building a centralised shared platform to disseminate content and services without going via the internet. A Pan-African offering that will soon be accessible in around twenty countries.

Thanks to this API, customers can access a service in a few seconds, subscribe to it directly, and pay with their Orange communication credits.

The number of smartphones is set to increase considerably in Africa. At least that is the opinion of Deloitte, who estimate in a study published in April 2018 that the continent will be home to 660 million smartphone owners in 2020, which is twice as many as in 2016. But for now, the traditional “feature phone” remains dominant. Its market share could even have gone from 55.4 % in 2016 to 61 % in 2017, whereas that of smartphones could have reduced from 44.6 % to 39 %, according to firm IDC. The expansion of markets such as those of Ethiopia or the Democratic Republic of the Congo, where up until now market penetration of the mobile phone remained low, explains these figures: new users favouring cheap telephones.

Africa, a laboratory for telecoms

However, as stressed by Deloitte, Africa remains more than ever a laboratory for the telecoms world and even a model in some sectors, in particular in terms of digital financial transactions. With a strong presence on the continent, Orange never stops innovating, thus actively participating in the digital transformation of Africa.

In this region, developers, startups, content providers, and mobile service distributors in general must indeed adapt to a market that is still underequipped in smartphones and where internet access is far from being widespread, in particular in rural settings.

To overcome these constraints, for six years now Orange has been developing a "Digital Hub": "It is a centralised shared platform that today offers Orange partners a unique, secure, and simplified access enabling them to connect to the entire set of technical platforms of Orange subsidiaries in the MEA area [Middle East Africa], made up of around twenty countries, the majority of which are African. They will thus be able to design, develop, and distribute their VAS (Value Added Services) ad hoc services of all kinds, even without internet or via a basic mobile telephone" explains Adama Dieye, Open Ecosystem Services Manager at the Orange Technocentre of Abidjan. This here is "the only Pan-African offering of this type", he specifies.

A Hub for monetizing services without internet

Orange's approximate one hundred partners and content providers – multinationals (Google…), regional players (Digital Virgo, TPAY, Immobile, etc.), or startups – thus have access to a scalable, high-performing hub that is adapted to market requirements so as to develop, distribute and, most importantly, monetize their services.

To this effect, Orange has designed a suite of API (Application Programming Interface) offerings specifically for all partners or mobile service providers of the Africa-Middle-East region, covering basic needs, which are: to communicate (SMS API), distribute (#303# My Store), and invoice (Direct Carrier Billing MEA and Orange Money Web Payment). "*This catalogue of API offers is available and sold online in self-service mode, and is usable through information and telecommunications protocols that are very simple to use*", specifies Adama Dieye.

In order to communicate, partners (providers, startups, or even simple developers) who do not have a bank account (roughly 80 % of the population) can buy SMS volumes online via their Orange communication credits thanks to the SMS API. Likewise, to monetize their products, they can use the payment APIs that are Direct Carrier Billing (Pay With Orange) and Orange Money.

The first provides the possibility to invoice Orange clients at the price of the content bought directly from their top-up (communication credits). The second meets the needs of partners who sell goods and services online at higher prices. It provides a trusted solution for Orange Money certified merchants that is easy to incorporate in a website thanks to a few lines of code.

As for the dissemination of their content, Orange's partners and providers can reference their services via #303# My Store, a shared USSD portal based on the USSD API. Little-known in Europe, USSD (Unstructured Supplementary Service Data) technology has the particularity of being able to replace mobile internet access using the GSM network, thus reaching out to all users, even those with traditional mobile telephones.

A service that will soon be available in around twenty countries

“Orange’s USSD APIs really add value, especially in terms of customer experience, with a unique Pan-African portal and a simplified thematic search function, notes Adama Dieye, who adds that #303# My Store, which is currently available in six countries (Cameroon, Congo, Côte d’Ivoire, Guinea-Conakry, Mali, and Senegal), will soon also be present on the other markets where Orange is established.”

Used until now by operators to enable their customers to perform basic operations (check balance, top-up communication credits, etc.), USSD access has now been widened and made easier thanks to standardisation and large-scale commercialisation, as undertaken by Orange with the #303# My Store API. Ultimately, there will be around twenty countries, amounting to 100 million customers, who will have access to this B2B2C platform. Thanks to this API, customers can access a service in a few seconds, subscribe to it directly, and pay with their Orange communication credits.

In order to support the development of e-commerce in Africa, Orange has managed to find solutions that are adapted to the markets by making a multitude of products and services accessible from any telephone.

https://hellofuture.orange.com/en/start-ups-taking-it-to-the-next-level-with-oranges-5g-challenge/

1. Hello Future
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Networks and IT | Article

Start-ups taking it to the next level with Orange’s 5G Challenge

Thursday 24th of January 2019 - Updated on Friday 25th of January 2019

Orange is organising the 5G Challenge to give start-ups the opportunity to boost their products and services by testing the new network. And the best part? Tailored support from the Orange experts to help start-ups implement their innovative solutions.

What is the Orange 5G Challenge? It is a co-innovation approach with start-ups to prepare for the arrival of the 5G mobile network.

When asked why they created their businesses, directors of start-ups usually answer: “to change the world!” However, such ambition requires both investment of money and time, a plethora of skills and expertise, and the necessary technical resources. In a nutshell: changing the world is no easy feat. That is why Orange has decided to collaborate with start-ups to demonstrate how the new 5G network will help with the development of new products and services and support new uses. How, you ask? Jean-Pierre Casara, Orange 5G Innovation Expert, and François Dufour, Director Start-up Scouting at Orange, present to you the 5G Challenge.

5G – mobile network of the future

With this challenge, Orange is targeting European start-ups that create solutions in the following areas: health, industry, transport and automotive, entertainment and connected objects. “The sixth category ‘theme of your choice’ is just as important, because we welcome many other topics. In fact, we are in a position to examine and assess entirely new concepts,” shares Jean-Pierre Casara.

Up to 10 times faster than the 4G mobile network, 5G will be absolutely key for some of these companies in terms of development. It is a real advantage to be able to test products and services now that were developed from feedback and collaboration with these start-ups. “The speed of the 5G mobile network is not the only thing that has improved,” continues Jean-Pierre. The enhanced responsiveness of 5G will allow almost real-time use and will offer new experiences with virtual reality or augmented reality, for example. More flexible than previous generations, 5G will provide the necessary level of performance required for an extensive Internet of Things, offering a perfectly connected world: robots in health and industry, driverless cars and sensors for the smart city.”

A challenge with multiple goals

The 5G Challenge is an opportunity for future winners to be assisted by Orange in developing their projects. They will benefit from the support of a team of 5G experts and will also have access to Orange resources, including the 5G Lab at Orange Gardens (located in Châtillon near Paris). With the help of customised devices, they will also be able to access the future mobile network and test their solutions in the French pilot cities. There are also plans to include monetary prizes in the rewards. A key reward for start-ups is the chance to test their concept in advance, benefitting from support and resources from Orange in the field of 5G, thereby boosting the development of their business. “Depending on the solutions proposed, the winners may also attend Orange events and potentially develop business relations with us,” announces François Dufour. “This active collaboration with start-ups will enable us to make progress in our work, validate our concepts and determine which features should be showcased to better target our market,” adds Jean-Pierre Casara. François Dufour continues: “Beyond helping us gain a better understanding of the new uses that 5G will offer, this challenge is a part of the Orange open innovation and co-creation approach. Supporting start-ups with their 5G tests will also help us to add to our commercial offering. We actively scout for start-ups to develop new business partnerships so that we can offer our customers end-to-end solutions, sometimes incorporating third-party components.”

How can you take part?

Start-ups should demonstrate how 5G will contribute to the development of their product or service, or how it will help enhance existing services, before 15 March. A jury from Orange will select around 20 start-ups to go through to the next stage. The selected participants will then flesh out their proposals with more details about their usage contexts, economic model and vision for their partnership with Orange. During this stage, they will benefit from the support of experts in 5G. Five finalists will then be chosen, including one selected by Orange employees. At the final stage, the five start-ups selected will be invited to pitch their projects before a special jury at the next Viva Technology conference in Paris. At the end of the day, the top three projects will be awarded prize money. These start-ups will then have the opportunity to get their hands on what 5G has to offer before anyone else.

https://hellofuture.orange.com/en/mobile-world-congress-2019-discussions-will-focus-on-5g-ai-and-iot/

1. Hello Future
2. Digital culture
3. Mobile World Congress 2019: Discussions will focus on 5G, AI and IoT

Digital culture | Article

Mobile World Congress 2019: Discussions will focus on 5G, AI and IoT

Saturday 23rd of February 2019 - Updated on Thursday 16th of June 2022

MWC is the must-attend mobile and connected technologies event organised each year by GSMA. It brings together all major telecom and digital transformation players. Orange's booth will feature its latest innovations, including its advances in 5G deployment.

"This global event is conducive to sharing and discussing opinions and experiences with our peers, partners, and all players within our ecosystems."

From 25 to 28 February, the Fira Grand Via conference centre in Barcelona will host the 2019 Mobile World Congress (MWC). Mobile operators, manufacturers, and innovators of all types will meet there to exhibit their new products, discuss upcoming trends and their solutions to mobility and connectivity challenges. In keeping with its commitment during previous editions, Orange will serve as both exhibitor and speaker. GSMA's new chairman Stéphane Richard will deliver the

keynote address for this year's congress on the theme "Intelligently Connecting the World". His main focus will be on the role of operators as digital economy drivers and network technology pioneers.

Towards pervasive mobile connectivity

This year, in addition to network modernisation and digital transformation, 5G deployment will dominate discussions. It is likely that we will witness the launch of the maiden 5G devices. Orange, for its part, will be sharing the results of its tests with industry peers and the media. With speeds ten times faster than those of current mobile networks, 5G will meet the inevitable need for greater speeds and larger bandwidth, a glimpse of which today's usage has already afforded us from ultra-HD videos, streaming, virtual and augmented reality to the Internet of Things. In 2019, Orange will roll out pilot projects in 17 countries and deploy the network in 17 European cities.

An ever-expanding IoT and AI presence

The IoT and Artificial Intelligence will be MWC's two other major themes. "AI's scope of application is vast. We want AI that is well-thought-out, useful, and available to all; AI that serves both people and society," says Mari-Noëlle Jégo-Laveissière, Orange's Deputy Chief Executive Officer, Chief Technology and Global Innovation Officer. "AI already has very tangible applications. With Djingo, our virtual assistant, we are developing AI that understands, interprets, and responds to customers through certain apps like Orange Bank, and soon through a connected speaker and new TV remote. Djingo's AI is therefore rendering services more accessible and making life easier for our customers."

What's more, the IoT revolution has already begun and holds the promise of making life easier for users, while affording them greater peace of mind.

According to Orange, the Internet of Things must be useful and tailored to many different needs (of the home, cities, business). It must also be transmitted over secure and reliable networks and on devices that are environmentally-friendly and in tune with the needs of each individual.

Co-construction is the only way to grow the ecosystem

MWC is a great opportunity for all industry players to get together and talk with one another: discussions involving all partners are numerous. Orange, for its part, is building its innovations in collaboration with a number of different ecosystem partners: operators within GSMA, several industry players involved in IoT and networks… start-ups and, more broadly, all those helping to build the world of tomorrow.

“The Mobile World Congress is an opportunity to showcase our latest innovations and assess how mature the technologies we’re following are. It’s an indispensable chance to talk to all players in the ecosystem,” concludes Mari-Noëlle Jégo-Laveissière.

https://hellofuture.orange.com/en/mwc-2019-a-5g-network-with-multiple-service-instances-network-slicing-proves-its-worth/

1. Hello Future
2. Networks and IT
3. MWC 2019: a 5G network with multiple service instances: Network Slicing proves its worth

Networks and IT | Article

MWC 2019: a 5G network with multiple service instances: Network Slicing proves its worth

Monday 25th of February 2019

Although already in use with 4G, the concept of network slicing reached its most advanced developmental stage with the advent of 5G, which opens up new opportunities for the simultaneous delivery of service levels adapted to several types of uses, objects or customers. This immense potential is demonstrated by Orange through a live demo at MWC 2019.

5G network slicing to support multiple consumer and enterprise services simultaneously

At last year's MWC, Orange presented the results of a network slicing experiment on 4G and demonstrated its effectiveness in a use case related to the connected car domain. In 2019, Orange will take the next step and demonstrate the network slicing technique (splitting the network into "logical" sub-networks answering to different service levels) on a 5G network.

Dynamic and flexible virtual networks

As a reminder, two main architectures have been defined for the 5G: 5G Non Standalone (5G NSA) and 5G Standalone (5G SA). The 5G NSA is based on a coupling of 4G and 5G radios and possibly uses the 4G core while the 5G SA relies on an independent 5G radio (4G radio) on the new 5G core network and is the target for term of 5G networks.

Network slicing consists in splitting a network into several virtual slices, operated from a common shared physical infrastructure. Each of these slices is "configurable" according to the use cases they support, in order to deliver an appropriate level of

performance in terms of reliability, latency, bandwidth capacity, coverage, etc. In this architecture, virtualisation is the technical facilitator of flexibility, allowing the network to be aligned as closely as possible to the specific needs of different customers, between customised and on-demand.

While numerous studies and experiments are being carried out in this area within the operators' ecosystem, the demonstration carried out by Orange is unique in two ways. Firstly, it is based on a standard end-to-end standalone network architecture (5G SA), and secondly, it features a network supporting both corporate and consumer uses.

Standalone 5G network slicing – pure 5G

Qing Shen, project Manager "5G SA experimentation" at Orange, led the implementation of the demonstration, in collaboration with Olivier Simon, Director of Innovation in Radio, and Nabil Charkani, Head of Network Control Architecture. "Orange is among the first ecosystem players in Europe to be in this standalone configuration" they explain. It is on the basis of this architecture that the first 5G SA voice and data call was made at the end of 2018. This standalone version is pure 5G, but first deployments are not expected until 2021 at the earliest. It offers more advanced features than non-standalone 5G and its hybrid architecture that leverages existing 4G networks."

Orange's demonstration of 5G network slicing at MWC is an example of this development.

Consumer and enterprise applications simultaneously

It is accordingly based on an experimental 5G end-to-end standalone architecture deployed in Valencia, Spain, in collaboration with the Orange Spain teams.
Under such a configuration, several network slicing strategies are implemented to support three types of real-time usage. Two of these usages are based on improved mobile broadband for a 360° camera solution and for cameras fitted to an autonomous vehicle, while the third usage is focused on a multi-player gaming service. For the latter, it is possible to compare the latency performance of one standard generation with that of another: from about thirty milliseconds with 4G to 5 milliseconds in 5G in the long term. At the Barcelona booth, visitors can also view the images captured in Valencia via a VR helmet using the 360° camera. Finally, the status of the slices (network slices) are displayed in real time from a dedicated web interface and application, in order to ensure that resource management mechanisms are behaving correctly and dynamically in line with traffic trends in a context of multiple network slicing.

Closer, more accurate, faster

“The end-to-end network slicing makes it possible to more efficiently meet specific needs, and virtualisation offers the possibility to instantiate on demand and provide the required function in a manner that is as close to the customer as possible.
We can thus achieve maximum flexibility through the automation of slice assembly.
The demonstration in Barcelona reaffirms these commitments. More generally, it reflects the fact that 5G standalone is not limited to an improved mobile broadband network for the consumer. It also has genuine ambitions in the corporate sphere and paves the way for the introduction of new dedicated services. By positioning itself at the forefront of this cutting-edge pure 5G, Orange emphasises its desire to support all its corporate customers, regardless of the business sector in which they operate, and to help them to take ownership of this new ambient connectivity.”

https://hellofuture.orange.com/en/mwc-2019-orange-live-booster-the-turnkey-and-all-in-one-solution-for-connecting-your-objects/

1. Hello Future
2. Internet of things
3. MWC 2019: Orange Live Booster, the turnkey and all-in-one solution for connecting your objects

Internet of things | Article

MWC 2019: Orange Live Booster, the turnkey and all-in-one solution for connecting your objects

Monday 4th of March 2019

Facilitating access to 2G and LTE-M cellular networks and eliminating the operational and technical constraints faced by manufacturers are the objectives of Orange's Live Booster solution. This innovation programme is the solution that manufacturers have been waiting for to connect and geo-locate any object.

Live Booster combines the advantages of a turnkey and all-in-one solution for our industrial partners.

Orange Live Booster is Orange’s first all-in-one prepaid IoT solution that integrates a cellular connectivity module, a SIM card integrated into the module and a long-term prepaid cellular connectivity package.
In a nutshell, Orange Live Booster = a radio module + a SIM card + a prepaid data plan with:

- turnkey **2G** and **LTE-M** connectivity, without any prior configuration. The object is therefore autonomous and there is no longer any need for connectivity,
- the guarantee of network coverage in 33 European countries, without additional roaming costs and without recurring subscription costs,
- a single supply channel for object manufacturers and hence reduced operational costs.
  By partnering with EBV Elektronik, Orange is now targeting manufacturers from the design stage.

Currently, Orange already offers two versions of its Live Booster module:

- the first one is based on 2G connectivity for manufacturers requiring size optimisation and low transmission rates,
- the second one is compatible with 2G/LTE-M and is designed to support manufacturers in the transition from the historical 2G M2M world to tomorrow's LPWA network world, but also to meet the challenges of energy consumption.

The use case presented at the Mobile World Congress

Jérôme Pisarz, Head of the Live Booster program at Orange, bases his demonstration on the use of an electric scooter, which becomes connected thanks to the new Heracles 224G module which is 2G and LTE-M.

"The scooter will use the data rates and bandwidth of the cellular networks to report different usage data on the Live Objects platform: battery level, temperature, humidity, pressure, air quality, etc. A mobile application will display this data in real time and allow the scooter to be locked remotely. Thus, in the event of a break-in (detected by the accelerometer), the module will block the scooter's motor," explains Jérôme Pisarz.

Thus, although the entire design of the scooter was developed in France, the object will be functional in Spain without any adjustment. This is possible thanks to roaming agreements.

Different use cases will also be of interest to the industry

Live Booster combines the advantages of a turnkey, all-in-one solution for our industrial partners: connectivity, geolocation and user services. Use cases are endless, from start-ups to large industrial groups, Live Booster represents an easy-to-use solution that gives them access to the advantages of our cellular networks:

- an optimal coverage for indoor and/or outdoor mobile use,
- a sufficiently high throughput and bandwidth for the uplink and downlink of messages in real time,
- native security, thanks to the SIM card integrated in the module, and the use of a licensed network.

The main advantages of the Live Booster solution:

- for industrial manufacturers of objects

“By integrating a SIM card and a prepaid connectivity package into a module, manufacturers can make their objects autonomous. Orange also allows them to reduce operational costs and product launch times by offering a single supply channel,” Jérôme asserts.

- for customers

“They benefit from true user comfort that eliminates the tedious steps of pairing, but they also have the assurance of being connected at all times without ever having to worry about it.”

- for Orange

“The ability to interact with manufacturers from the very outset of the design of their objects,” concludes Jérôme.

The partnership between Orange and EBV Elektronik (leading distributor of electronic components) makes it possible to reach new customers who were not previously interested in cellular connectivity and allows them to benefit from local EBV sales forces throughout Europe.

In short, with Live Booster, Orange offers a powerful solution to make life easier for manufacturers and position itself as a legitimate and key player in the Internet of Things (IoT).

https://hellofuture.orange.com/en/mwc-2019-indoors-is-the-new-playground-for-geolocation/

1. Hello Future
2. Internet of things
3. MWC 2019: indoors is the new playground for geolocation

Internet of things | Article

MWC 2019: indoors is the new playground for geolocation

Monday 4th of March 2019 - Updated on Thursday 16th of June 2022

Having been explored in recent years through Wi-Fi Positioning and the advent of Beacons in particular, indoor geolocation opens up new perspectives for tracking objects and people. Orange, through its Orange Applications for Business entity, is at the forefront of this new technological field with solutions tailored to key issues in different business sectors, such as industry and health.

New technologies dedicated to indoor tracking, as GPS is blind inside buildings.

For more than 20 years, GPS has been the common reference in the field of geolocation and has shaped the digital life of both the general public and businesses. Having previously focused on outdoor environments, this revolution has recently moved indoors with the rise of new technologies, as GPS is still “blind” inside buildings.

A key issue for economic and industrial players

“Indoor tracking” is a source of potential additional intelligence for many organisations. Particularly in the context of Industry 4.0, digital indoor geolocation is perceived as a major driver for the rationalisation and optimisation of operations in factories, allowing objects, materials and tools to be tracked and data to be processed according to their location. Retail is also regularly cited among the sectors with the most to benefit from “indoor tracking”, with use cases mainly relating to “geofencing” to promote mobile marketing in situ.

The implementation of services based on indoor geolocation is mostly based on a combination of three building blocks – equipment (sensors, beacons, etc.), data processing software, and connectivity. As regards connectivity, there are three main families: Wi-Fi, Bluetooth and Ultra Wideband. Bluetooth is one of the most mature

technologies in the field, in terms of both performance and cost. It is at the heart of the range of Smart Indoor Tracking offers developed by Orange.

Bluetooth, at the forefront of “indoor tracking”

Through its Orange Applications for Business (OAB) structure, which specialises in supporting companies around the themes of Data/Analytics and connected objects in particular, Orange offers solutions tailored to the specific needs of its customers. Of these, two are presented at the Mobile World Congress and are distinguished by their unique technical and operational characteristics. Both are powered by Bluetooth Low Energy (BLE).

The first is developed in partnership with Quuppa, arguably the world’s most advanced company in the market for positioning/locating technologies using BLE. It provides an extremely accurate location in real time, thanks to the combination of several technological building blocks. “Tags positioned on the objects that we wish to track transmit a regular BLE signal,” explains Grégoire Thillaye du Boullay, Product Manager IoT/Smart Indoor Tracking at OAB. Advanced antennas retrieve this signal and data is then processed using the Angle-of-Arrival (AoA) method. The solution is thus able to provide a location, instantaneously, with positioning accuracy down to around 10 cm.” As part of the demo, the antenna system shows how these lightweight plastic labels can fit on any type of object for industrial use cases. They can also change colour depending on the area where they are used – a major security feature for tracing critical or sensitive materials.

Deployment flexibility

The other solution presented highlights two key issues in the adoption and ownership of new indoor geolocation technologies: simplicity and cost. The Orange Beacon Tag offers accessible, easy-to-deploy and flexible indoor tracking. “The system is based on a connectivity mix, with BLE communication between tags and antennas, and LoRa technology between these and the processing tool. Unlike the Quuppa antenna device, the Orange Beacon Tag offers neither real time nor as precise positioning. But it is perfectly suited for use in geolocation and high-level monitoring at a reduced cost. It is distinguished by its flexibility of deployment: antennas support all connectivity to optimise the size and lifespan of tags, and are equipped with magnets so they can be quickly attached to different types of objects in a Plug & Play configuration. They have also been designed for operations in harsh industrial environments, and are sufficiently robust to operate in metal environments in particular.”

An “agnostic” HMI (Human Machine Interface)

With a view to providing a simple and user-friendly product, the management and control of geolocation services offered by all Orange solutions are provided via a single interface. “The range of Smart Indoor Tracking offers is grouped under a single operational customer application. Whether the user opts for the beacon tag or the Quuppa antennas system, they will be able to monitor their equipment from this platform alone, and select the uses that interest them: inventory, data processing, geofencing, etc.”

Internet of Things dives into aquaculture

Monday 11th of March 2019 - Updated on Thursday 16th of June 2022

How will we be able to feed an ever-growing population without compromising biodiversity? Like connected greenhouses, aquaculture farms supported by IoT technology could also provide an effective response to the growing needs for food production worldwide.

IoT allows us to offer a solution to the cross-productions for new agricultural jobs.

This is one of the most worrying concerns faced today: meeting the food needs of a global population that is expected to reach nearly 10 billion people in 30 years' time, warns the UN. With the pollution and intensive harvesting of the seas, fishing is no longer able to satisfy demand in terms of quality or quantity. Faced with this stark observation, the AMP group (Aquaponic Management Project), an aquaculture expert, is looking to offer a smart and environmentally-friendly agricultural alternative system that produces fish (trout) and vegetables (fruit, vegetables and herbs) in symbiosis without soil. This is what is called aquaponics.

It recreates a natural mini-ecosystem, where the waste from one element becomes the food for another element. This offers a range of benefits: minimal discharges, virtually zero use of chemical additives, low water consumption levels and combined production of fish and vegetables, with reduced requirements for space. This virtuous and innovative system could contribute to global food security, thanks in particular to control over the quality of the produce reared and grown.

Bespoke solution for AMP

Control is the key element here. Controlling the quality of course, but also for the fish, the water's pH, oxygenation and temperature levels, and for plants the concentration of nutrients, as well as monitoring the power supply for running the water pumps. Which raises a challenge: how can we effectively meet all of these needs? Julie Benoît, Aquaponics Project Director with the AMP group, explains how her company decided to call on Orange to help it achieve this goal: "The solutions that exist today are specialised in fish farming or horticulture, but rarely both. We are

positioned at the crossroads between these two areas of production. We had heard about the connected greenhouse set up at the Orange Gardens site. We were interested in this technology, so we got in touch with Orange to see if they could offer us any responses." And after one month of developments, this was accomplished. Orange developed a bespoke IoT solution for AMP. "As their technical monitoring is carried out remotely, we have provided them with a centralised monitoring solution making it possible to have an overview of the facilities, as well as sensors and connectivity adapted for their business model," explains Laurent Chivot, Innovation Project Manager at Orange.

Promoting widespread IoT adoption

For financial reasons, the sensors chosen are products available on the market: Orange then adapted by enabling them to communicate with its networks. Here, it is thanks to the Starter kit LoRa that the development was done very quickly. In terms of connectivity, Orange's LoRaWan network stood out as a natural choice, with its low-speed, low-cost and low-power consumption communications protocol designed specifically for IoT applications.

As with connected greenhouses, the IoT offers an innovative technological solution making it easier to carry out environmentally-responsible agricultural projects. Even on a small scale: according to Laurent Chivot, "thanks to our sensors and analysis of the data collected, users can better understand how to optimise their production phase, as well as how to transform the way they work. We enable people to make their lives easier, freeing up time so they can focus on their core business. A project like the one we have carried out with AMP clearly illustrates the future of the IoT, with the widespread adoption of solutions, accessible for all businesses, even SMEs and mid-market firms." IoT for all, and above all, a reality soon?

https://hellofuture.orange.com/en/beyond-ai-ambient-intelligence-for-an-attentive-environment/

1. Hello Future
2. Research
3. Beyond AI: ambient intelligence for an attentive environment

Research | Article

Beyond AI: ambient intelligence for an attentive environment

Monday 1st of April 2019 - Updated on Tuesday 23rd of April 2019

Ahead of the opening of the Orange Research Exhibition on 2 April 2019, Nicolas Demassieux, Research Director at Orange, shares his vision of Ambient Intelligence, which will profoundly transform our relationship with the objects around us and with our environment in a broader sense.

Ambient Intelligence, a profound revolution like that of the Internet 30 years ago, could change our relationship with the world and with objects.

Artificial Intelligence is on everybody's lips nowadays, and is such a part of our everyday lives that we are sometimes unaware of its presence and the part it plays. Its potential is already significant, but it is far from fully utilised. Used in the right way, Artificial Intelligence could be an immense factor for economic and societal progress. The powerful tools of Artificial Intelligence (machine learning, deep learning, etc.) amplify the digital transformation. These tools transform raw data into usable knowledge more efficiently. They replace the explicit programming of software by human developers with machine learning from a large data set. They make it possible to interact more naturally through vocal interfaces.

An alignment of technological planets

Not only is its future already being written, it is being written consistently and in synergy with other technological transformations. The age of ubiquitous computing, which was preceded by the ages of the central computer and the personal computer, is a game-changer. We are surrounded all the time by devices with the capacity to calculate and communicate: smartphones, cars, dishwashers, remote controls and more. In this way, more and more devices are taking on a little extra intelligence as well as benefiting from the ambient connectivity provided by our networks, soon to be amplified by the deployment of 5G. This trend will expand in the coming years in ways that are practically unimaginable to us now, highlighting

the omnipresence of information technologies that are being incorporated into all the objects around us to create, little by little, a more intelligent and capable environment. The convergence of these worlds, Artificial Intelligence, ambient connectivity and the IoT, will bring about the emergence of this Ambient Intelligence: a kind of Artificial Intelligence 2.0, soft but all-encompassing, sensitive and with the capacity to create a responsive universe for its users that is attentive to their presence and needs.

For smart surroundings

Make no mistake, this revolution is a profound one, like the Internet revolution 30 years ago, and it could change our relationship with the world and with objects. It could even go as far as upending some of the concepts inherited from philosophical tradition, such as Aristotle's distinction between animate and inanimate objects which characterised inanimate objects as devoid of any ability to perceive and act and, in particular, to transform themselves on their own initiative. This new ability is now being granted to objects by machine learning technologies.

By transforming our ways of thinking and our interactions with what is around us, this ambient intelligence opens up unprecedented new perspectives. It can give us a better understanding of ourselves, particularly when it comes to its applications for healthcare, by detecting signs that could be early warnings of diseases. It can provide us with a better analysis of our planet, in terms of major societal and environmental challenges such as climate change, for example by putting Ambient Intelligence at the disposal of soft mobility or frugal and circular economy. Finally, it can help us to anticipate probable futures thanks to the optimisation of Big Data and Smart Data techniques – the development of predictive maintenance in particular comes to mind, among other implementations.

These are just some of the expected benefits of the increasing capabilities of Ambient Intelligence: it is, in short, a fantastic vehicle for improving and simplifying everyday life for everybody.

Orange's conviction and its role

Ambient Intelligence is already a reality, but it is not necessarily or systematically "connected". Its foundations have been laid and new technological building blocks will soon be added to solidify them – led by 5G, which will make it possible to connect together, in places where this is necessary until one million objects per square kilometre! Scaled to the size of a city like Paris (100 km^2, two million inhabitants but also… 200,000 trees or 350,000 light sources), that means around fifty connected objects and sensors per inhabitant.
5G ensures that environmental sensors are energy efficient, only activate when strictly necessary and can act locally when possible. This makes it possible to

“connect” inhabitants, trees or urban equipment in order, for example, to better manage resources.

The Ambient Intelligence of tomorrow will therefore take on a new dimension. We are convinced that this transformation provides opportunities and possibilities, but we are also aware that it brings with it new challenges. Seen through the prism of our Human Inside philosophy, Ambient Intelligence needs to exist to serve humans, society and the planet. It must be used within a reasonable framework. This means a framework that takes into account the fundamental requirements for protecting personal data and respecting private life and safety, and is marked out by rigorous ethical considerations.

Because we are experts in the different aspects of Ambient Intelligence, we are at the cutting edge of this revolution when it comes to developing its technologies and considering how to use them responsibly. By capitalising on our research expertise in AI and linking it to the IoT world thanks to Orange’s connectivity know-how, we have been building Ambient Intelligence for many years now and we continue to shape it every day. Our three research platforms, Home’in, Thing’in and Plug’in, are working on each of these aspects.

Orange assumes this role as a pioneer of Ambient Intelligence with resolution and responsibility, in connection with its ecosystem and in line with the aforementioned principles.

The intelligence of the 21st century will be ambient or not at all.

https://hellofuture.orange.com/en/alloscope-a-tool-to-help-those-in-vulnerable-situations/

Research | Article

Alloscope, a tool to help those in vulnerable situations

Tuesday 2nd of April 2019 - Updated on Thursday 17th of September 2020

Could it be that analysing a person's call records may reveal unusual behaviour? This theory, developed by a team of researchers at Orange, is set to enhance the range of medical and social monitoring tools. Known as Alloscope, the project will be demonstrated at the 2019 Research Exhibition.

This research work was recompensed by the Grenoble Faculty of Medicine at the 2018 Medical Research Day.

“Tell me who you call and I’ll tell you how you are”. This phrase, borrowing heavily from a well-known proverb, is the watchword for Alloscope, a research project led by a team of scientists from Orange. Targeting professionals in the medical and social sector, this project aims to analyse the telecommunications patterns of people in vulnerable situations that reflect changes in their behaviour. An illustrative demonstration will be presented at the 2019 Research Exhibition.

Your phone, the first port of call

In France, a grid called AGGIR is used to measure the degree of a person’s loss of autonomy. Among the activities assessed, the loss of ability to use a telephone (and thus to alert as required) is a sign of significant loss of autonomy. This encouraged Hervé Provost’s team to get their thinking caps on. As Hervé, a project manager at Orange, explains: “We realised that telephone usage was in fact an excellent way to measure variations in a person’s condition (for instance, social links, psychological status, or physical shape).What’s more, it has the great advantage of being part of life on a large scale in almost every sector and geographic region. While environmental or wearable sensors are being studied to monitor the elderly, among others, our researchers realised that Orange’s information system was already a huge source of information.”

Telecom indicators

When looking at call records (CRA), in other words itemised billing, they found that their analysis elicited very valuable behavioural data. Traces from the 3 network types (RTC, ToIP and mobile) contain time-based items (call time and duration), social items (call direction and number of different numbers dialled or received), and spatial items (the various antennas used during mobile calls). Thus, incoming and outgoing telephone calls show changes in the intensity and diversity of the individual's social links. "Of course this is only data from operators! It does not include any content. All those wishing to benefit from this scheme must give their consent", adds Hervé Provost. Using this information, professionals would be in a better position to monitor vulnerable persons in the long run, as well as the effects of certain treatments, for example.

Monitoring – from individual to populace?

Another observation is the correlation between circadian rhythm and telephone usage. In a study recompensed by the Grenoble Faculty of Medicine at the 2018 Medical Research Day, Timothée Aubourg, a PhD student working at Orange, noted that it was worthwhile studying telephone activity over a 24-hour period. Any asymmetry between incoming and outgoing calls on a one-day scale provides an additional indicator of a person's psychological status (more specifically, depression). Once all the indicators have been analysed, "an AI algorithm can be set up" explains the mathematician. This may well enhance the "digital phenotype" of the person monitored.

Though the project is still at the research stage, its large-scale deployment is already under consideration. In fact, by broadening the process to include the inhabitants of a city, for instance, the indicators collected could in turn act as a barometer. Another way to gauge the famed mood of French people. Using Big Data technology, there is no need for identification or consent, as the analysis would be completely anonymous.

https://hellofuture.orange.com/en/the-iot-is-making-life-easier-at-the-office-as-well/

1. Hello Future
2. Internet of things
3. The IoT Optimizes Office Occupancy in the Age of Remote Working

Internet of things | Article

The IoT Optimizes Office Occupancy in the Age of Remote Working

Wednesday 10th of April 2019 - Updated on Thursday 16th of June 2022

Adapting to the new, hybrid ways of working has become a major priority for many companies in recent months. Jooxter has developed an application to optimize the occupation of office space. Based on the IoT anditsLoRaWAN™ connectivity, this solution is being presented on Orange's stand at the SIDO Paris event. Demonstration.

"LoRaWan™ connectivity enables occupancy data to be collected anonymously"

The health crisis has led many companies to sign framework agreements on remote working. Many employees, depending on their industry, role and corporate culture, can now work from home for part of the week. This new situation implies great changes in terms of management styles, team collaboration and inevitably the use of office space. There is now less individual space and more collaborative space for working together. However, it is still far too early to draw conclusions about employees' needs.

What should be done with the unoccupied space left by employees who work from home? How can we help “flex-office” employees, who no longer have a fixed office, to quickly find the space they need for their work?

In order to tailor workspace supply to demand, the IoT (Internet of Things) can be a very useful building block in providing objective and reliable occupancy data.

To support employees as they navigate these new ways of working, the start-up Jooxter has been developing an IoT solution for seven years that makes it possible to inform employees about workspace availability. How does it work?

“It’s very simple. A real-time presence detector is set up in the room to be monitored. This very fine-grained infrared and therefore very sensitive occupancy sensor is able to detect the slightest movement, indicating whether the room is occupied or not,” explains François Cosyns, Project Leader at Jooxter.

Anonymous Data Thanks to the LoRaWan™ Network

Users simply log in to the application or web portal to find an available space available that meets their needs, i.e. a closed office, a meeting room or a collaborative space. The dashboard is updated on a real-time and predictive basis thanks to the information sent by the detectors. In terms of connectivity, Jooxter has chosen Orange’s LoRaWan™ network, designed specifically for the Internet of Things.

“This connectivity offers a clear benefit: As well as its wide coverage, it makes it possible to collect occupancy data anonymously. As such, we remain independent from the building’s proprietary network,” explains François Cosyns. “And thanks to Orange’s Live Objects platform, we can manage our fleet of devices independently and with complete security, Orange provides us with its convenience and expertise. This really is a collaborative effort.”

Reducing Energy Spending

For more complex cases, when network penetration is not optimal, as may be the case with an old building, a high environmental quality (HQE) building or a high-rise building, which may even block radio waves, Orange offers a LoRa extender. This makes it easier to provide indoor coverage for offices.

In addition to optimizing space, Jooxter’s services have different uses depending on the businesses’ peaks in activity. For example, during off-peak periods, certain meeting rooms could be closed to reduce the need for cleaning services and to cut energy spending by avoiding any unnecessary use of heating or air-conditioning. The IoT facilitates responsible energy management in buildings.

Update: October 28, 2021

https://hellofuture.orange.com/en/viva-technology-biggerpan-turns-words-into-actions/

1. Hello Future
2. Artificial intelligence
3. Viva Technology: Biggerpan turns words into actions

Artificial intelligence | Article

Viva Technology: Biggerpan turns words into actions

Thursday 16th of May 2019 - Updated on Thursday 17th of September 2020

Imagine the scene: you're chatting with a friend via text message about going to see your favourite director's latest movie, when the messaging app "pushes" the current film times at cinemas close to your location directly onto your phone. This is one of the promises of the technology currently being developed by Biggerpan, which aims to facilitate the user experience by turning thoughts into suggested actions.

If 10% of the messages sent contain an intention, that means there are 15 billion messages worldwide every day that could be turned into actions.

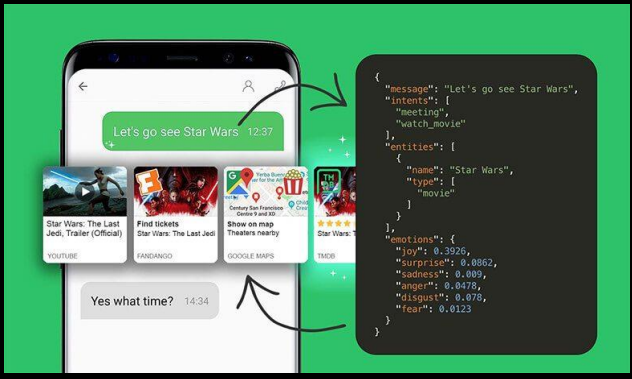
More specifically, Biggerpan specializes in artificial intelligence that can enhance the user experience on mobiles through the implementation of automated language processing techniques. Before achieving this objective as it is stands today—and developing the underlying technologies that support it—the Franco-American company, which has offices in San Francisco and Paris, explored various playgrounds.

15 billion "search-friendly" messages per day

"We examined various use cases," explains Eric Poindessault, co-founder and CEO of the start-up. In Internet browsers, for example, we analysed the text of media articles with the aim of predicting—in real time—what the user would do next based on what they are currently reading. We started by focusing on messaging—instant and SMS—where the difficulty level is increased because the language processing covers only a short text. For the past three years, we have been working on understanding language, using various techniques that have enabled us to identify some 40 intentions, and then to link them to suggested actions." The challenge here is to optimize and streamline the user experience, so that users no longer have to switch between different apps. And the market is huge, if we consider that 10% of

messages sent contain an intention, which equates to 15 billion messages worldwide every day that could be monetized.

High-level language analysis technologies



But how can we detect intent, understand it and make a relevant recommendation? Biggerpan exploits the field of automated language processing from every possible angle, through the application of proprietary technologies. The start-up has, for example, developed a data generation model which it used to produce 60 million synthetic phrases that will go on to train predictive models via deep learning. These can then identify the intention and are linked to a “detector” of named entities, based on a keyword processor and an extensive knowledge base comprising 5 million street names, 200,000 cities, tens of thousands of movies, etc. A “disambiguation” function completes the work by taking into account various factors, such as semantic contexts, syntax or geolocation. The Magic Cards predictive platform, offered as a SDK to developers, then takes up the baton to deliver actions consistent with the intentions. Biggerpan receives a commission each time the suggested action is converted, and several affiliation agreements have been signed with major service providers such as Amazon, Uber, Rakuten and others. Important note: the services designed by the company comply with the data protection regulations and do not collect any personal information, simply because they do not need it.

An API and an app

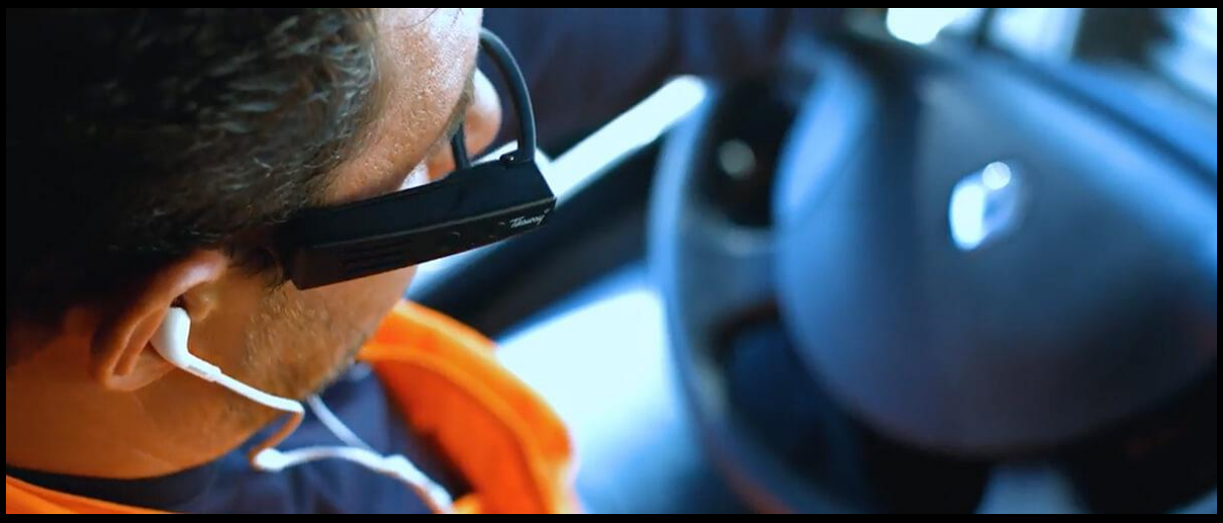
Currently, Biggerpan offers its service via an initial version distributed in English. The technology is made available to customers and partners in the form of an API in SaaS mode, on the Microsoft marketplace. It has also been rolled out as a consumer SMS platform, Magic Chat, available on the Google Play Store. “Magic Chat is, in a way, our testing ground and our showroom, through which we collect valuable data. We know, for example, that in 12% of cases, the user clicks when they are offered an appropriate action that is consistent with their intention—a significant accomplishment that highlights the appetite and commitment found among users.” Visitors to the Viva Technology event will have the opportunity to tap into Biggerpan’s technological expertise. And while it is currently focused on mobile messaging, it is likely to expand to new horizons, such as calendar apps. And why not expand it further to the world of voice assistants, which could themselves also become predictive? Watch this space…

https://hellofuture.orange.com/en/tikaway-affordable-connected-glasses-for-all-professionals/

1. Hello Future
2. Internet of things
3. Tikaway: affordable connected glasses for all professionals

Internet of things | Article

Tikaway: affordable connected glasses for all professionals



Wednesday 5th of June 2019

Taking 3rd prize in the Orange 5G Challenge at Vivatech, start-up Tikaway is making its connected glasses available to building & public works professionals, enabling them to launch a videoconference with an expert if there is a problem on a construction site. It is added proof that digital is infiltrating, and benefiting, every industry.

“We are offering affordable technology, as VR is often too expensive and not as simple”

In the building & public works sector, problems on construction sites or in workshops are common. What is a technician supposed to do when a problem with machinery arises? Call an expert? Have an expert come over? A Lyon-based start-up has the answer to these limitations: Tikaway. Taking 3rd prize in the Orange 5G Challenge at Vivatech, the new company has created glasses connected to a camera that can launch a live consultation with a remote expert. And soon, with the

arrival of the next generation mobile network, this solution promises to deliver even higher performance.

“Sort of like Skype but hands free”

“With Tikaway, you are teleporting the expert.” It is this metaphor that Brice Agnes, the co-founder of the start-up, uses to encapsulate the ingenious idea of the camera-equipped frames. How does it work? In the field, when a problem is encountered, the technician calls an expert by using the Tikaway glasses to connect to a videoconference. At his end, the expert “shares” what the operator is seeing via the live video. The expert can use that view to guide, assist, train, or troubleshoot the problem. All in real time. “Sort of like Skype but hands free!” adds Brice Agnes.

The Tikaway solution has already convinced Building & Public Works professionals. “The market is booming – digitising and modernising more and more every day. What is more, we are offering affordable technology, as VR is often very expensive and not as simple,” explains Tikaway’s co-founder. And the possibilities are endless… In fact, the solution can also help anyone who needs remote assistance via one of its field operators. The information can be instantly relayed to make decisions efficiently and limit travel costs.

Saves energy, time and money

Because travel is the real problem. “Reinvent the way you talk remotely with employees by cutting the time spent travelling, saving energy, time, and money. That is our hope,” says Brice Agnes. That is probably what the 5G Challenge jury liked too: an environmentally responsible promise connected with the future Orange 5G network. “We cannot wait to see our customers benefiting from the new network. It offers higher quality with lower latency and better bandwidth – ideal conditions for our solution,” says the entrepreneur, who also sees this prize as an opportunity to grow… before our very eyes!

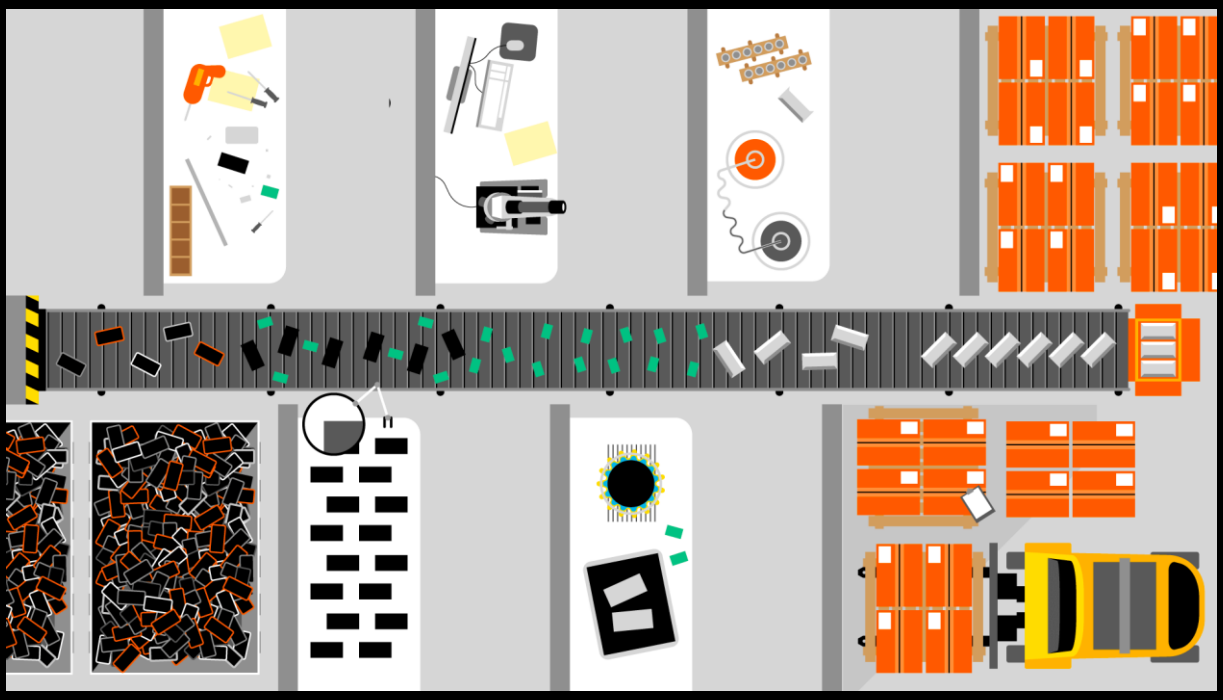
“By taking 3rd place in this challenge, we have the opportunity to do real-world testing of the future network, run demos live, follow Orange at various events… It is tremendous,” he says. And we have even heard rumours that some Orange technicians may soon be outfitted with these glasses 4.0!

https://hellofuture.orange.com/en/at-the-tokyo-olympic-games-the-rush-for-gold-will-come-from-recycling-smartphones/

1. Hello Future
2. Digital culture
3. At the Tokyo Olympic Games, the rush for Gold will come from… recycling smartphones

Digital culture | Article

At the Tokyo Olympic Games, the rush for Gold will come from… recycling smartphones



Wednesday 5th of June 2019 - Updated on Thursday 16th of June 2022

28.4 kg of gold, 3.5 tonnes of silver, and 2.7 tonnes of bronze: that's what Japanese authorities had collected in October 2018 from over 5 million old mobile phones. The aim? To make the medals for the Tokyo Olympic Games out of these precious metals that are found in small quantities in all of our electronic devices.

With 30 milligrams of gold per mobile, how many smartphones are needed to produce the medals for the 321 events of the Tokyo 2020 Olympic Games?

Keen to show its commitment to recycling and a more sustainable waste management, Japan is set to achieve its ambitious aim: to make the 2020 Olympic medals from materials (gold, silver, and bronze) entirely reclaimed from old smartphones. This achievement has been made possible thanks to the impressive system set up by the authorities: to collect the 47,488 tonnes of devices necessary nearly 1,600 Japanese municipalities were involved as well as NTT DoCoMO, the country's main mobile operator, and the Japanese Post Office. In less than two years, the establishment of dedicated collection points has made it possible to gather the impressive number of smartphones, laptops, and tablets needed to make the medals for the 321 Olympic events.

With this operation, Japan wanted to demonstrate its will to develop a rare metals and earths recycling industry. The three hundred thousand tonnes dormant in unused electronic equipment across the country could effectively guarantee its self-sufficiency for the next three decades. However, although the gold, silver, aluminium, and copper used in industry have a recycling rate of 50 %, other metals do not attract such attention from manufacturers. And this with good reason: currently, the retrieval of these minerals on a large scale is often more costly than their actual value. Yet the stakes of recycling are high, as with 30 milligrams of gold and 300 milligrams of silver per mobile, efficiency could be higher than traditional mineral extraction: a very good mine only enables the extraction of 5 grams of gold per tonne of mineral, whereas a tonne of electronic cards contains on average 250 grams… be that 50 times more! And mining is a heavy burden on the environment, when recycling is of obvious ecological benefit.

But just where are these precious metals in our smartphones and how does the extraction take place? Click on the images below to find out.

Recycling smartphones in France

While in France only 15 % of mobile phones are collected, there are 100 million used smartphones lying dormant in their owners' drawers. Based on a study by the French Environment and Energy Management Agency (Ademe) from 2010, a Senate report highlighted in 2016 the worth of creating a French industry for recycling such waste and that could create thousands of green jobs.

This circular economy implies an upheaval of the traditional supplier chains: it is no longer simply a matter of communicating with raw materials providers upstream of the production line, it is now necessary to also locate the users of the products downstream of the consumption cycle. A Copernican revolution that Orange has been carrying out since 2005 thanks to its partnerships.

Orange has set up a socially responsible branch that is coherent from end to end: collection of mobiles in France, extension of the lifespan of mobiles that can still be

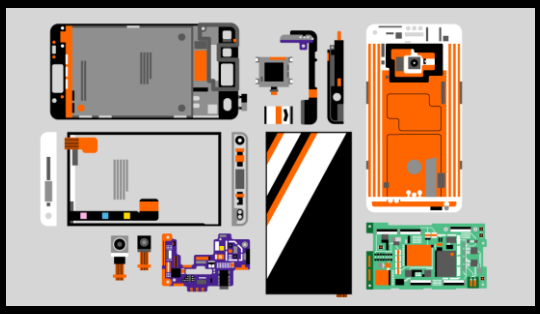
used, payment of profits to an internationally recognised NGO to collect mobile waste in Africa, and recycling of waste in France. A true demonstration of the circular economy.
The profits made from the recycling of mobiles in France are given to Emmaüs International. The NGO uses these funds, in partnership with Orange, to create mobile waste collection workshops in different African countries.
The waste is collected from local repairers, then sorted and massified before being sent in containers back to France to be recycled.

5 workshops have been opened since 2010 in Burkina Faso, Benin, Niger, Côte d'Ivoire, and Cameroon.

30 jobs have been created and over 300 tonnes of mobile waste collected and sent back to France to be recycled.

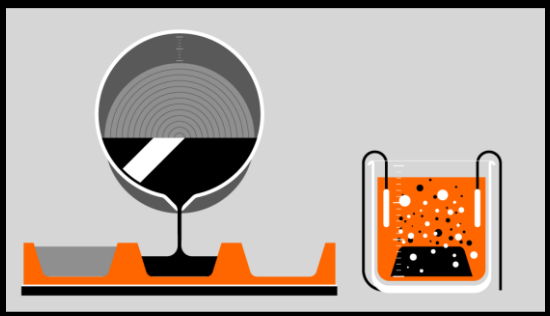
These workshops have enabled the creation of 6 jobs, meaning 30 jobs created locally.

The operator has thus taken part in the recycling of over ten million mobile phones across the globe, with half of these in France since 2010.
Its aim: to reach 30 % of mobiles recycled by 2020.



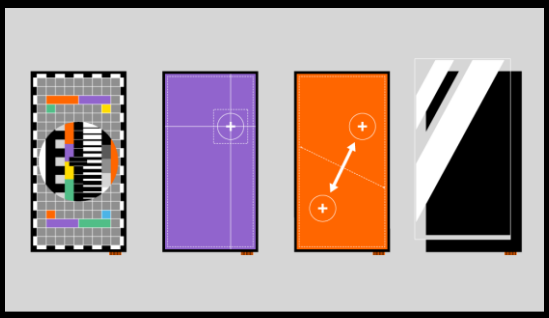
On arrival, the smartphones are taken apart: on one side the plastic shells, which are sent to specialists of this material. On the other, the screens and electronic components that Morphosis will recycle.

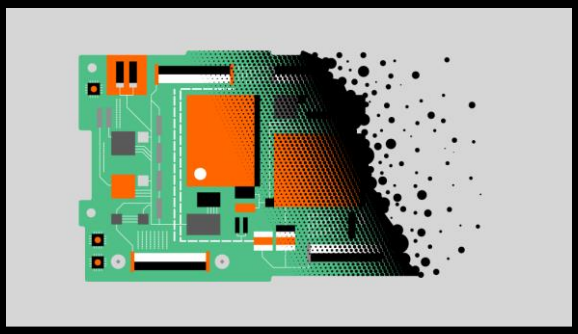
A sample of the electronic card is analysed in a laboratory so as to work out the quantities of metals to extract as well as the protocol to apply in order to maximise efficiency and avoid any pollution.



The liquid metal thus obtained is poured into sheets then undergoes a chemical and electrochemical treatment: the various baths and the electrolysis applied by the treatment company enable the separation of the different metals and alloys. This is "dealloying".

After being weighed and registered, the screens are tested. If their tactile sensors and LEDs are not damaged, a new screen is fixed to the display so that they can be re-used.





The cards are then burned at very high temperature: this is pyrolysis, which makes it possible to remove all organic matter. Then the black powder that contains all the rare metals is melted at a temperature of 900 degrees Celsius.

https://hellofuture.orange.com/en/with-holosport-sporting-events-take-on-a-new-dimension/

1. Hello Future
2. Internet of things
3. With Holosport, sporting events take on a new dimension

Internet of things | Article

With Holosport, sporting events take on a new dimension

Monday 17th of June 2019

Want to experience a sporting event as if you were there? That's exactly what was on offered from Orange at the 2019 French Open at Roland-Garros with Holosport. See how connecting future 5G networks and new spatial computing technologies, such as Magic Leap One, will serve to put spectators at the very heart of the action in the future, creating an experience that feels more immersive and interactive than ever before.

A new and improved sports experience through augmented and mixed reality with an incomparably immersive feel.

On your TV screen at home, in the stands at a stadium or from a court-side seat, even on your mobile device when you're out and about – how you view a sporting event differs hugely depending on where and how it is experienced. With Holosport, Orange – innovation partner of the show -, presents a new and improved experience that combines augmented and mixed reality for a truly immersive and interactive feel.

Between virtual and reality

The demonstration on show at Roland-Garros 2019 has given spectators the chance to relive the Berdych vs Chardy match from the 2018 tournament, in a shortened version and from a completely new perspective. Yvan Delègue, Head of Orange Digital Innovation, sets the scene: "The user is provided with the Magic Leap One headset, consisting of Lightwear spatial computing glasses and a handheld Control. From the start, multiple additional 3D elements appear in the user's live environment around the TV screen on which the match is being broadcast. Philippe Chatrier new court is reproduced on a table, positioned in front of the user, the roof opens, then practically life-size holograms of the two players appear along with their stats – age, weight, ATP ranking, etc. The match and rallies begin and are reproduced in 3D on

the table. Meanwhile, the user is free to move around, get closer to the action, check whether a ball is on the line, take control of slow motion thanks to the Control, and so on, with access to match statistics at any time, and the ability to project these wherever they like. The experience ends with the user becoming a spectator, experiencing the real thing as they are transported into the stands of Philippe Chatrier court alongside other tennis fans". This is a completely autonomous user experience that allows you to move to your preferred position, choose whichever viewing angle suits you best and take control of the action.

An experience supported by the Magic Leap One spatial computer…

How is this revolution possible? Firstly, all of the rallies from the match were reproduced in a motion capture studio so that they could be accurately replayed during the demo. Next to play a role was the spatial computing platform created by Magic Leap, which has developed one of the market's most promising solutions based on its proprietary Digital Lightfield technology. Its product is already on the market in the United States, and Orange has entered into a co-innovation agreement with the start-up with a view to designing new uses and experiences on the basis of this state-of-the-art system. This partnership has already produced Holoparty, an experience which marks a revolution in customer relations (mixed-reality sales and after-sales service), just as Holosport marks the future of sport. The overall design of the Holosport experience was entrusted to another partner start-up that specialises in new immersive uses, Emissive.

…and boosted by 5G

Already an impressive innovation at its demonstration stage, this new form of entertainment and immersion will become even more in-depth and high-quality once 5G networks are rolled out. "A service such as Holosport will benefit hugely from the performance of 5G," continues Yvan Delègue. "There are three reasons for this – it requires both high bandwidth and low latency, and also needs a specific and guaranteed quality of service for optimal usage, which is possible thanks to network splitting via 5G. These uses will therefore be accessible to as many users as possible, regardless of their location or device, whether they are at home or out and about in a public place, including when they are in a stadium where a sporting event is taking place". As capture and synchronisation technologies advance, future mobile networks will also support real-time integration of these experiences.

The Holosport demonstration is just for starters…

https://hellofuture.orange.com/en/khiops-the-solution-for-identifying-sohos/

1. Hello Future
2. Digital culture
3. Khiops: the solution for identifying SoHos

Digital culture | Article

Khiops: the solution for identifying SoHos

Monday 24th of June 2019 - Updated on Wednesday 15th of June 2022

How can we reach small companies without a formal status? SoHos (Small offices, Home offices) are companies that are not registered anywhere and there is no formal way of reaching out to make them targeted offers. Orange has developed a more effective machine learning approach to identify them sooner.

Khiops: Orange's machine learning solution for identifying SoHos, small informal companies in Africa and the Middle East

It is difficult for operators to offer micro enterprises services tailored to their needs. Although their requirements and use of digital technologies are unique and often intensive, it is nevertheless worth targeting offers and services at these unregistered businesses.

"Orange sees the informal sector as a promising area of growth, given the strong entrepreneurial spirit in emerging markets. This sector is mostly made up of very small companies that naturally rely on consumer products. This project is part of the search for a win-win formula for the operator and SoHo entrepreneurs through classic telephone service provision, which would lay the groundwork for services such as security, cloud access and methods of payment, etc.", says Ismaïl Rebai, the Head of Analytics at eLob.

To tackle the problem of identifying these informal companies, a machine learning solution was developed by Orange subsidiaries in Africa and the Middle East in cooperation with the "Emerg Data" research project and the "SoHo In Retail Acquisition" (SIRA) programme. Its name: Khiops.

Identifying SoHos

In marketing terms, these small companies, also known as SoHos (Small offices, Home offices) are a specific target. This is a relatively overlooked segment in need

of targeted offers, as a large number of customers are individual entrepreneurs or telecommuters. The basic idea behind Khiops is to gather usage data on these companies in order to draw up their behaviour profile and incorporate these potential B2B customers into our existing client base. This would lay the groundwork for an active campaign to identify and target such companies.

Global methodology

The operations management approach to identifying prospective B2B customers comprises several stages, each involving various stakeholders:

- First, the Business Intelligence (BI) and Information Technology (DSI) teams of Orange's subsidiaries have to work with the marketing team to select the relevant data:
    - Choosing a number of standard (non-professional) and known professional customers from within the client base
    - Collecting usage data.
- The data science team conducts an analysis to create a model for identifying professional customers.
- The model can then be used to attribute scores to the entire customer base so as to identify customers who behave like professionals.
- The data science team sends an interpretation of the model with high-scoring customers (i.e. customers who are most likely to be professionals) to the marketing team.
- The marketing team can then decide whether the model should be used, in which case it designs a campaign with a specific script for determining whether the potential customer is indeed a professional and what offer should be made.

The success of this process depends on several factors: the quality of the input data (relevance of the samples, the availability of detailed usage data and availability of a large enough group of SoHos), the performance of the learning algorithm and the design of the campaign script. To evaluate the success of the entire process, the positive detection rate (prospective customers who are actually professionals), the proportion of successful calls and the increase in sales are measured.

Data mining

Telecommunications data and data from Orange Money transactions are used for identifying prospective B2B customers from the customer base in the data mining phase. To recap, detailed call records or call reports summarise the customer's activity in terms of voice calls, SMS messages, data sessions and top-ups of pay-as-you-go accounts. Raw Orange Money data includes detailed transactions of all types (cash-in, cash-out, peer-to-peer transactions, merchant payments, etc.).

“This means that the solution is capable of generating data sets quickly. Each country can supply its own particular data set: detailed monthly data, or rather aggregated data, on the use of telecommunications and banking services”, explains Romain Trinquart, Head of the Emerg Data research project.

Score assignment

The goal is to produce two types of results for each country. The first provides a measure of performance and an outline of the main discriminating variables. The second assigns scores to all customers in the database after explaining the results to the data mining and/or marketing team in the country.

Finally, the teams at Orange Research plan to expand the use of scores from individuals already in the customer base to those appearing as contacts, either in call reports or in electronic payment transactions, to make marketing campaigns more effective. As part of this programme, the Africa and Middle East marketing departments and eLob (Enterprise Line of Business) will continue their efforts to spread this approach to other countries.

Khiops’ 4 strong points

- The solution has no parameters and produces first-rate results in terms of performance and resistance to data noise.
- It has the capacity to process detailed raw data, such as call reports, rather than aggregate values.
- It allows the model to be interpreted and amended.
- It handles large sets of data with ease.

https://hellofuture.orange.com/en/music-recommendation-algorithms-what-influence-do-they-have-on-what-users-listen-to/

1. Hello Future
2. Data
3. Music recommendation algorithms: What influence do they have on what users listen to?

Data | Article

Music recommendation algorithms: What influence do they have on what users listen to?

Monday 17th of June 2019 - Updated on Wednesday 22nd of June 2022

Based on a study involving a panel of 4,000 users selected at random on a music streaming platform over a five-month period, Jean Samuel Beuscart, Samuel Coavoux and Sisley Maillard, all researchers and sociologists at Orange, conducted a detailed analysis of the impact of algorithmic recommendation tools on their users.

Streaming platform users choose their songs and tend to use search engines and artists' discographies.

Currently, around 80% of French online users listen to music via streaming.
The success of specialised platforms like Spotify and Deezer, or more general platforms like YouTube are reflected in an increased share of income from streaming as part of music industry revenue. With 85% of digital income and 42% of overall market share, streaming is now the dominant way to consume music.

With several million songs available at our fingertips, these services offer a variety of algorithmic tools, ranging from a collaborative filtering tool (people who liked this song also liked that one), themed recommendations (other songs by the artist you listened to), to themed radio stations (featuring music inspired by this artist) or playlists "fully inspired by your tastes", not forgetting the many "atmosphere"-based playlists tailored to users' moods. Designed to help and guide listeners in their choices, the recommendation algorithms used in streaming services have a broad range which thus seems to meet their expectations.
To ensure success in this domain, Jean Samuel Beuscart, Samuel Coavoux and Sisley Maillard, all sociologists and researchers at Orange, conducted a study based on an analysis of the listening patterns of a panel of 4,000 users selected at random on a music-streaming platform and monitored this for a period of five months. It was the perfect opportunity to have a better understanding of the impact of algorithms

on users' music choices and to see whether or not the transition to digital listening had altered how they consumed, and above all, what they consumed.
It also provided a way to analyse whether or not these tools promote greater cultural diversity, as well as whether or not users actually follow the recommendations made by the algorithms, in which situations, how often and with what effects?

Principles of the study

The data collected provides information about user profiles (age, gender, place of residence, registration date, subscription type, favourite artists and songs), their consumption (date, duration, format used for listening) and characteristics of the content streamed (artist, song, release date). There is also the **listening context** variable, which helps to identify the type of device, recommendation or collection influencing a user's decision to listen to a given song.
The platform on which the study was conducted offers a catalogue of 35 million songs and two unlimited offers via a "freemium" economic model: one is free and financed by advertising, the other attracts a fee of €9.99 per month. The fee-based package allows users to listen to their music in high quality, offline and without advertising. These offers are available on computers and mobile devices such as smartphones and tablets.

Listener profiles

In terms of listener characteristics, it appears that the population tended to be young, male, and city-based. Only 37% of the sample were female. The median age was 28 and 80% of users were between 17 and 46 years old.
Most listeners were rather seasoned users: 53% of users joined the service more than two years ago and 18% joined more than five years ago.
Two thirds of the sample preferred to use their mobile phone to access the service, while one third used their computer. The type of subscription offer had an influence on the device used. In the case in point, subscribers to premium offers (with no advertising) used mobile phones more frequently and sometimes even exclusively, to listen to music, in contrast to free subscribers who tended to use their computer instead.

Variety, frequency and diversity of songs

To measure the impact of musical recommendation algorithms on listeners, this study analysed the intensity and diversity of streamed songs and how these were split between well-known and lesser-known artists.
Over five months, the sample's online users streamed over 17 million songs.
This figure must be weighted by the actual duration of streamed listening on the platform: just over half of the streams (56%) went right to the end of the song, while

one third did not last more than 30 seconds.
These streams covered nearly one million different songs. Each time a song was streamed at least once for over 30 seconds (81%), it was listened to on average 16 times by users. This means that the average song was listened to once a month for every thousand active users. “However, this average is misleading because the distribution of the number of streams is unsurprisingly very asymmetrical: 39% of songs were listened to only once by a single user, while only 5% were streamed more than 50 times,” says Samuel Coavoux.
The most popular songs therefore garnered a considerable audience: the five most-streamed songs during the study totalled more than 25,000 streams each and each of them was streamed by almost half the listeners on the panel.
In terms of frequency of use, this is rather high since on average, users logged into the platform for 86 days during the study (i.e. one out of every two days) to listen to some 50 songs each day they logged in. These results again show high disparities, because the most active 10% of users listened to over 10,000 songs over the period, whereas the least active 10% listened to fewer than 450.

“The promise of these streaming platforms is that, given their extensive offering, with both free and flat-rate subscriptions, and their finely-tuned recommendation tools, music consumption should be more diversified than on the physical or download markets,” notes Samuel Coavoux. If we look at variety, i.e. the number of different artists streamed, we can see that the consumption of a user subscribing to a full offer with an almost unlimited range of songs results in greater variety than that observed for other ways to access music. “Even then, the comparison of this variety with other formats is tricky because the listening conditions are not the same and we cannot measure offline listening with the same degree of accuracy,” explains Samuel Coavoux. In fact, compared to the physical or download markets, streaming a song does not incur any additional expense and compared to radio, the consumer plays a more active role in choosing the songs they listen to and the offer is much less restricted. The study revealed that the number of songs streamed on the platform by just 4,000 users over five months represented approximately 9 times more songs than those broadcast by all French radio stations in the course of a year. However, a recent study by the French Ministry of Culture showed that this increase in variety benefited artists at either end of the popularity scale, to the detriment of those in between.

The variety of consumption also varied greatly from one individual to another.
On average, a user listened to 1,149 different songs: 5% listened to three times that number, while one quarter of the sample listened to no more than 359. There was a correlation between variety and the age of the user. According to Samuel Coavoux, “This means, on the one hand, that younger consumers have less diverse listening patterns and on the other hand, that the most diversified consumption comes from more frequent users, who have more experience in using the platform, and are more inclined to use the recommendation tools – these users are older. They stand in

contrast to younger users who listen to more well-known artists on their mobile phones."
With 10% of artists accounting for 90% of streams, the study revealed that almost all individuals listen to songs by moderately popular artists. Niche artists represented only 17% of all artists listened to by the panel.
These differences are even more apparent if we consider streaming frequency rather than users' music libraries: one in four users listened almost exclusively to highly-popular artists and it was more common to listen to few or no niche artists (53% of users spent less than 5% of their listening time on 90% of the least-streamed artists).
"In fact, popular artists dominate the music libraries of users whose music consumption is low, while also often representing the most frequent streams by more active users," notes Samuel Coavoux.

Guidance and discovery

The authors of this study also analysed whether the various forms of guidance helped strengthen diversity of consumption, one of their promises, or whether it actually led to reinforced uniformity in terms of music listening?
The first observation was that, apart from "most listened to"-style charts, most recommendation systems tended to guide listeners to artists that were less well-known than the average first plays. First plays generally focused less on the most-streamed artists. However, this result varied greatly according to device: it was stronger with algorithmic recommendations, then with autonomous exploration of artists' discographies and new releases. "Contrary to what you might think, autonomous exploration systems are not particularly cutting-edge, although they offer a wider range than editorial recommendations and charts," notes Samuel Coavoux. However, these "discoveries" did not necessarily remain in the user's collections: songs discovered via algorithmic recommendations received fewer replays than others during the observation period.
This study also helped to put into perspective the contexts in which listeners tend to stream music. "Some songs are streamed more often in a multi-activity context, when music may simply be playing in the background. We choose a playlist precisely so that we do not have to consciously decide to listen to it."
The same was true of musical genres. The study showed that recommendations were unevenly distributed according to musical genre – some genres such as blues, jazz or dance seem to be better suited to guided listening. This is due to the fact that the use of recommendations depends on the listening contexts with which the musical genres are associated. We can see that some genres are particularly suitable for activities other than listening and are therefore more likely than others to be played in the background. For instance, dance music for parties, blues for a calm atmosphere, etc.

Conclusion

Tools for algorithmic recommendations seem to keep their promise to explore the wealth of catalogues and enrich the diversity of music consumed by users, by guiding them towards niche songs and those by artists who are somewhat well-known. However, the “algorithm-based” user is still in the minority in terms of use. Most streams come from an explicit, conscious choice made by listeners and active, autonomous modes of exploration are the norm. Users choose the majority of their songs and tend to use autonomous exploration tools like search engines and artists’ discographies.
Guidance systems tend to be used more, in a non-exclusive way, by frequent users. Above all, the results of this survey help to have a better understanding of emerging algorithmic cultures, in which listeners, according to their skills and situations, will reject algorithms, or use them on an ad-hoc basis without surrendering control of their musical experience. “Qualitative work will nonetheless be required to understand the contexts, the level of conscious listening, comprehension, type of attention, and the objective to which users agree to rely on algorithms,” concluded Samuel Coavoux.
This is one to watch…

GUIDANCE TOOLS

In this study, several major types of recommendation tools were distinguished:
– personalised algorithmic recommendations rely on users’ previous listening history to calculate their preferences and suggest appropriate songs Among them, we can distinguish ad-hoc algorithmic recommendations relating to an artist (you liked X, you should like Y), an album or a playlist, from those composed via an algorithm that creates a flow of recommended songs until interrupted by the user: a continuous flow of personalised recommendations, an “artist radio station” that plays songs similar to those by the artist.
– editorial recommendations are produced by humans, experts or other users: themed playlists, editorial radios, etc.

The platform also provides tools such as charts (most listened-to artists, most streamed songs this week) and editorial selections (a playlist created by a given artist, DJ, or commercial partner).
Context-based browsing tools allow users to search for an artist via the search engine and browse an artist’s discography.
The last tool is based on explicit links built up between users who are “friends”

https://hellofuture.orange.com/en/how-ai-can-help-reduce-inequalities/

1. Hello Future
2. Artificial intelligence
3. Gender parity, minorities, inclusion: how AI can help reduce inequalities

Artificial intelligence | Article | Discover

Gender parity, minorities, inclusion: how AI can help reduce inequalities

Happy computer programmers discussing about code that they working on while working at office. Young software developers working in coworking office.

Monday 2nd of September 2019 - Updated on Monday 4th of March 2024

- The use of machine learning tools, which suffer from significant algorithmic biases, can exacerbate inequalities and discrimination against minorities.
- Artificial intelligence (AI) systems can absorb our biases when they are being trained. However, it is also possible to programme automatic training models to combat inequalities. Several projects are underway to make AI more inclusive.
- Gapsquare, for example, is a human resources tool trained on data that has been screened to ensure gender and ethnic parity. Other programmes have been developed to ensure inclusive access to healthcare for minority communities.
- Artificial intelligences are blank pages. If we can pass our biases on to them, we can also teach them to avoid these.

While the medical community and human resources departments have voiced concerns about the growing risk that artificial intelligence systems may exacerbate inequality, actors such as Bill Gates still see AI primarily as an opportunity for the health and education sectors. Stakeholders in the sector are giving priority to limiting biases reproduced by algorithms. And above and beyond these initiatives, AI is seen by some as a valid tool in the fight against inequality: artificial intelligences are blank pages. If we give them our biases, we can also teach them to avoid them. In the United States, a study undertaken in early 2023 by researchers at MetroHealth at Case Western Reserve University (Cleveland) showed that AI can be used to evaluate the risk of minority patients failing to show up for their medical appointments. The goal of collecting this data is to enable hospitals to offer targeted alternatives like telemedicine and additional inducements like transport solutions to reduce their rate of non-attendance.

Towards a more inclusive artificial intelligence

In the United Kingdom, Dr Zara Nanu has developed the Gapsquare platform, which analyses employees' salaries while taking into account data on gender, ethnic origins and handicap, etc. She is convinced that, if nothing is done, AI will further discriminate against female workers in terms of recruitment and pay, given that it relies on historical data from the field, which leads algorithms to reproduce situations where men are paid more and occupy more important positions. By basing a system on equal and inclusive data, it can be transformed into a tool for achieving greater social justice in the workplace. In March 2018, French mathematician and parliamentarian Cédric Villani published a report entitled *Donner un sens à l'intelligence artificielle* (Giving meaning to artificial intelligence) in which he advocated an inclusive and diverse artificial intelligence (AI). In its conclusion, which remains relevant today, he argued that ***"with regard to AI, the inclusion policy must therefore take on a double objective: ensure that the development of these technologies does not contribute to increase social and economic inequalities; and use AI to effectively reduce these."*** As early as 2016, American data scientist and activist Cathy O'Neil denounced the potential abuses of algorithms in her essay *Weapons of Math Destruction*. Although algorithms are supposedly neutral, many examples (Amazon's recruitment software, the COMPAS justice software, etc.) have revealed that this is not always the case. Machine learning models and datasets can present biases, and even amplify them.

Algorithms are now used as a basis for decisions that have an impact on our lives (…) AI is used to recruit employees, grant loans, and make medical diagnoses, etc.

A diversity of algorithmic biases

In an article entitled *Algorithmes : biais, discrimination et équité* (Algorithms: bias, discrimination and equality), researchers at Télécom ParisTech identified three types of bias: those that are the result of the programmers' cognitive biases; then, statistical biases, linked to partial or erroneous data *("'Garbage in, garbage out' […] **refers to the fact that even the most sophisticated algorithm there is will produce inexact results that are potentially biased if the input data on which it trains are inexact"***); finally, economic biases, linked to cost-efficiency calculations or voluntary manipulation by companies. It is all the more important for these problems to be taken into account now that algorithms are being used as the basis for decisions that have an impact on our lives. Outputs of AI systems are no longer mere recommendations about films to watch on Netflix, or videos on YouTube, or books to buy on Amazon. Ais are now being used to recruit employees, grant loans, make medical diagnoses, and even to set the length of prison sentences. Fortunately, there are several solutions to limit and correct algorithm biases in such systems.

Encouraging diversity among developers

If algorithm biases are – in part – linked to the cognitive biases of those who programme them, we can understand the importance of diversity among developers. Yet, the IT and new technologies sector is largely dominated by white males. In 2023, the NGO Femmes@Numérique reported that in France "*women only represent 26.9% of the workforce in digital professions and less than 16% in technical positions which today play a key role in organisational strategies".* Furthermore, numerous studies have shown that ethnic minorities are also under-represented. As Mathilde Saliou, the author of *Technoféminisme, comment le numérique aggrave les inégalités (Technofeminism: how the digital world is exacerbating inequalities)* explains to Hello Future, it is *"urgent to enable dialogue with end users who are not necessarily aware of the data submitted to these systems"*.

How can things be changed? By combining education with equality and equal access to digital training in schools and through initiatives undertaken within companies. These can be tailored to support associations that encourage young girls to go into IT or programmes aimed at certain target audiences (like the Web@cadémie, which trains youths who have left the school system to be web developers); bringing female role models to the fore and developing mentoring; or making more inclusive development teams. For example, at the end of 2022, the digital training organisation Simplon proposed free web development classes to women in the French city of Rennes.

Machine learning for more inclusive programming

We can "disencode" discrimination and develop to include, notably through the careful choice of algorithms and predictor variables. Along with coding, the choice of learning data also plays a critical role, it is important, for example, to ensure diversity in learning databases. With this in mind, in 2019, IBM – whose facial recognition system had been flagged by researchers from MIT – presented its Diversity in Faces Dataset comprising one million annotated human faces, which is supposed to improve facial recognition technologies by offering a more representative sample of society.

The researchers at Télécom ParisTech describe two kinds of solution for limiting algorithm biases: the statistical leads, which are linked to the way in which the data are collected and processed, and the algorithmic leads, which seek to introduce equity right from the algorithm design that integrates various constraints: "[…] an area of research in machine learning is developing around what we call algorithmic equity. The objective of this work is to design algorithms that meet equity criteria, and thus avoid discrimination according to characteristics that are enshrined in law such as ethnic origin, gender, or sexual orientation". The task is a hard one, because equity is a plural not a universal concept, whose definition can vary from one society to another, from one era to another, and whose applications can be incompatible

with each other. There is in fact a whole range of criteria used in machine learning to judge an algorithm's fairness, but no individual criterion is backed by a consensus and several are mutually incompatible.

There are also AIs that can detect and combat discrimination. Some research centres and technology companies have launched their own projects, like Aequitas, developed by the Center for Data Science and Public Policy of the University of Chicago, or IBM's AI Fairness 360, open source toolkits that aim to track and correct biases in databases and machine learning models. In the US, mathematician Cathy O'Neil has also set up an algorithmic auditing company, ORCAA, while in France, the start-up Maathics is offering similar services that lead to the awarding of a Fair Data Use label.

Making algorithms that are more transparent

When an algorithm can have important consequences on people's live, it is important that they are able to understand the rules that it follows, and that they be given an opportunity to discuss it before it is put to use. Making algorithms transparent involves opening "black boxes" to gain an understanding of the internal workings of the learning models and the data that they use. The notion of "algorithmic transparency" has grown in importance in public debate and is the subject of a number of initiatives, such as the TransAlgo platform launched in 2018 by Inria, the French national research institute for the digital sciences and the European Centre for Algorithmic Transparency which was launched by the European Union in April 2023.

Combating inequality using AI

The Villani report established a dual objective: equality on the one hand and also the reduction of inequalities. It notably mentioned the creation of an automated help system to facilitate equal access to public services, and AI-based technologies that ensure more thorough consideration of the needs of people with disabilities and improve their living conditions. With these objectives in mind, Microsoft's Seeing AI and Google's Lookout applications, which make use of automatic image recognition, are now helping blind or visually impaired people to identify elements (individuals, objects, text, etc.) present in their surroundings. Projects that focus on sound are also playing role, among them DreamWaves, which combines virtual-reality-audio technology with a map-based guidance system.

Beyond this, AI has a great potential to simplify uses in the digital world and thus narrow the digital divide. The idea is to put AI to work for equal opportunities by combating discrimination and promoting diversity and inclusion in the workplace. Several initiatives that aim to take up this challenge are already underway, such as the creation of tools aiming to limit bias in recruitment procedures. And their

deployment can lead to real change. For example, when it began to make use of Textio, a smart text editor that makes job descriptions more inclusive, software publisher Atlassian succeeded in raising the percentage of women graduates it recruited from 10% to 57%. In France, the Data for Good community has brought together hundreds of data scientists, developers, and designers, who have volunteered to put their skills to work on projects designed to make a social impact. Although AI does carry risks, there are many examples showing that it also represents a fantastic opportunity for social innovation.

Sources :

– Donner un sens à l'intelligence artificielle : pour une stratégie nationale et européenne (Giving meaning to artificial intelligence: for a national and European strategy)
– Algorithmes : biais, discrimination et équité (Algorithms: bias, discrimination and equity)
– Concrètement, comment rendre les algorithmes responsables et équitables ? (In practice, how can we make algorithms responsible and fair?)
– Using Artificial Intelligence to Promote Diversity

Read more :

How to solve AI's inequality problem

AI Can Help Address Inequity — If Companies Earn Users' Trust

https://hellofuture.orange.com/en/the-connected-mobility-of-tomorrow-smooth-journeys-managed-from-end-to-end/

1. Hello Future
2. Networks and IT
3. The connected mobility of tomorrow: smooth journeys managed from end-to-end

Networks and IT | Article

The connected mobility of tomorrow: smooth journeys managed from end-to-end

Monday 2nd of September 2019 - Updated on Wednesday 22nd of June 2022

The Movin'On Summit held in Canada this June presented Orange with the opportunity to showcase its work on the connected mobility of the future, with a special focus on eco-driving thanks to 5G.

"In the future, a truly efficient self-driving car will serve a group of people, never parking, dropping them off and picking them up between errands instead," envisages Cédric Seureau, "Interconnecting Attractive Territories" Research Programme Manager.

Devoted to sustainable mobility of the future, the Movin'On Summit was held in June in Montreal, Canada. Orange was an event partner once again and was able to highlight its work and discuss this topic with experts from around the world.
"Tomorrow's mobility can only be conceived by taking into account all the stakeholders of a broad ecosystem," says Cédric Seureau, "Interconnecting Attractive Territories" Research Programme Manager at Orange. "To remain attractive, accessible and enjoyable places to live, territories must rethink the mobility of their users and work towards more sustainable mobility," he adds. Digital services and connectivity have a major role to play in responding to this issue and devising a mobility model that is adapted to everyone, viable and likely to be adopted as widely as possible.
Today, connected mobility is being addressed using 5G because it allows for real-time communication between the vehicles themselves and their environment. "But it is also a way to optimally manage flows and decongest cities," says Cédric Seureau. An example of this could be adapting car speed limits to avoid traffic jams or making it very easy for vehicles to park and thus preventing them from emitting more greenhouse gases by creating more congestion.

Sustainable mobility is a topic that is considered in a holistic sense: from the initial customer who needs to get to a meeting or travel to work, to the car manufacturers and then up to the architects and city planners who design neighbourhoods, roads, car parks, etc. “In the future, a truly efficient self-driving car will serve a group of people, never parking, dropping them off and picking them up between errands instead, which will change the whole appearance of neighbourhoods,” envisages Cédric Seureau.
Meanwhile, the communication between vehicles and their environment will have a very concrete impact on the way they are driven. “There’s no need for a car to speed up if the lights are about to change to red,” says Cédric Seureau. “It’s better for it to decelerate so that it doesn’t have to brake and can consume as little energy as possible,” he continues. The same will apply if a vehicle breaks down in an odd place, for example. Even without visibility, a car connected to its environment will know how to anticipate danger and will avoid emergency braking, risks of collision and unnecessary energy wastage.
In the connected mobility sector, 5G also enables the real-time collection and mass processing of data relating the locations, speeds and numbers of vehicles entering and leaving cities, etc., but we are not just concerned with a summary of these factors. To ensure fluid mobility and organise end-to-end movement around a city, users need to be connected and to synchronise their journeys in line with public transport. They need to know where to park their bikes and what time the next tram is coming… “Digital technology and connectivity are creating a dynamic trend in transport where all these services are orchestrated and driving is anticipated (pedestrians crossing, traffic at a crossroads, etc.), increasing safety and making real eco-driving a possibility,” says the “Interconnecting Attractive Territories” Research Programme Manager.
In the long term, the aim is to encourage residents to abandon their private vehicles in favour of soft or collective mobility. Orange has engaged in research in order to gain a better understanding of the socio-economic challenges and facilitate transition towards collective transport.

As part of its partnership with the University of Paris-Sud, Orange is supporting an economics thesis that will study “well-being and transport in the digital age” by comparing survey responses of employees in the European Silicon Valley outside Paris with those from tech companies in Cesson-Sévigné, on the outskirts of Rennes, where the arrival of the metro in 2020 is set to change habits completely. The idea is to understand how the use of smartphones changes the transport experience and to identify the future drivers of transformation in mobility. From a multitude of usage data (type of activities carried out on smartphones, apps used, duration of use, etc.) and mobility data (when, in what context, where, etc.), this study seeks to get the most value from the time that is no longer devoted to driving.

In parallel, as part of our participation in the Think & Do Tank “Movin’On Lab”, Orange and Michelin are launching a community of interest on mobile workspaces

called “Smart Bus”. For businesses whose employees have to travel to remote sites, the idea is to study how they can make the most of their journey times. “It’s about ensuring that the time previously spent travelling by car is no longer wasted by providing commuters with benefits that will make them choose collective transport, which may seem more restrictive at first,” explains Cédric Seureau. The study started this year and experiments and results are expected for next year.
To be continued…

https://hellofuture.orange.com/en/are-the-voices-channels-impenetrable/

1. Hello Future
2. Artificial intelligence
3. Are the voice's channels impenetrable?

Artificial intelligence | Article

Are the voice's channels impenetrable?

Monday 9th of September 2019 - Updated on Wednesday 15th of June 2022

A woman's voice, a man's voice, or a genderless voice: what is the best voice for a voice assistant? From psychologists to biologists, from sociologists to linguists, scientists are analysing the unconscious effects of these technologies that whisper into people's ears.

Must our voice assistants imitate the power mechanisms of our society in order to better integrate into our habits or do they, on the contrary, provide an opportunity to surpass these?

According to a Capgemini study, 40% of consumers will prefer to use a voice assistant rather than a website or application in three years' time. While one in two people surveyed already use voice assistants (in particular via a smartphone for 81% of them), one third of the 5,000 respondents, living in the United States, the United Kingdom, France, and Germany, stated that they are even ready to purely and simply replace the customer interface by a synthetic voice in physical shops. An appetite that is going to transform shopping experiences, from sales logistics and services to the consumer.

However, there are still some obstacles to the mass adoption of this technology, to start with the voice assistant's credibility: to what point can we make it possible to forget that it is only a robot and how can its synthetic voice seem friendly or empathetic enough to gain our confidence?

Futuristic films such as Spike Jonze's provide a glimpse of the turmoil that artificial intelligences would bring about if they were equipped with a voice and personality so charming that we could fall in love with them. But between this cliché and reality, there remains a valley to be crossed.

The "uncanny valley"

As roboticists have known since Masahiro Mori's work in the 1970s, an android technology must be extremely believable to be adopted. Conversely, any imperfect attempt to imitate a human will be purely frightening, arousing in us the fear of

illness and death – it is the notorious "uncanny valley", for which there is no lack of visual examples.

And in terms of sound, who has never felt ill at ease upon hearing the robotic voice of a bad customer service? In a TED Talk, speech-language pathologist and linguist Joana Révis explains that the synthetic voice lacks realism because it "*has no intention. It is neutral, in all circumstances*". By contrast, it is the huge variety of emotions colouring the tone of a human voice that give it its aesthetics… and its ability to persuade.

But this "valley" is it really so difficult to cross? In reality, the suavest synthetic voices are perhaps only a well-identified and accessible technological leap away: that of the artificial-intelligence-generated voice. An example is the engineers from the company Dessa, who managed to realistically recreate the voice of podcaster Joe Rogan by feeding the whole 1,300 hours of his show to an AI.

Not content with creating worries about potential identity frauds via this technology, Dessa declared that in the next few years we shall see it advance "*to the point where only a few seconds of audio are needed to create a life-like replica of anyone's voice on the planet*".

Social sciences to the rescue

Beyond the necessity for resemblance with the natural voice, biology and the social sciences are useful to guide innovators in the choice of a "good" voice for our voice assistants. Indeed, different studies show that some voices are more efficient than others depending on the situation, sometimes for hormonal reasons: a deep voice, for example, is an indicator of good health that we recognise instinctively and that unconsciously influences our choices… for the good of the evolution of the species.

Sometimes, unbeknown to us, we are influenced by political and social factors: in a society that is dominated by men, thus the deeper they are the more women's voices are found to be credible – which no doubt explains why the mass arrival of women in many professions and jobs with responsibility has gone hand in hand with a lowering in frequency of female voices (from 229 Hz in 1945 to 206 Hz in 1993).

Must our voice assistants therefore imitate the power mechanisms of our society in order to better integrate into our habits or do they, on the contrary, provide an opportunity to surpass these?

This is the question that motivated a group of Danish linguists, computer scientists, and sound designers to create Q, the first genderless synthetic voice for voice assistants. By working on this voice at the frequency between 145 and 175 Hz, which is common to both women and men and perceived as the most neutral, they

developed a voice that doesn’t reinforce gender stereotypes. And contributes to a more appeased future?

Digital culture | Article

Technological innovations against pollution in aquatic environments

Monday 16th of September 2019 - Updated on Wednesday 15th of June 2022

To combat pollution of aquatic environments, new tools are being implemented, such as environmental analysis, identification of micro-organisms and plankton monitoring. See other innovations.

Technological innovation also provides tools to directly address beach and ocean pollution. Alexandre Liccardi, Digital innovation and Big data Head of mission within the French Agency for Biodiversity (AFB) and Raouf Gnouma, director of the Water activity within environmental engineering consultancy BURGEAP; take a close look at two such initiatives.

New technologies at the service of the fight against pollution in aquatic environments and to facilitate the monitoring of ecological ecosystems.

Blockchain and tokens, with startup Empower

To use blockchain to clean-up beaches, that is the one-of-a-kind idea developed by Norwegian entrepreneur, Wilhelm Myrer. His startup Empower takes inspiration from the Norwegian deposit system to recycle bottles and plastic packaging that are polluting Indonesia's beaches, a system that consists in bringing back empty bottles to shops and being given back the extra money paid at purchase, with shopkeepers then sending the bottles to waste processing centres.

Empower's solution for beaches? To install certified recycling stations that provide an incentive to people who deposit plastic waste picked up from the beach,

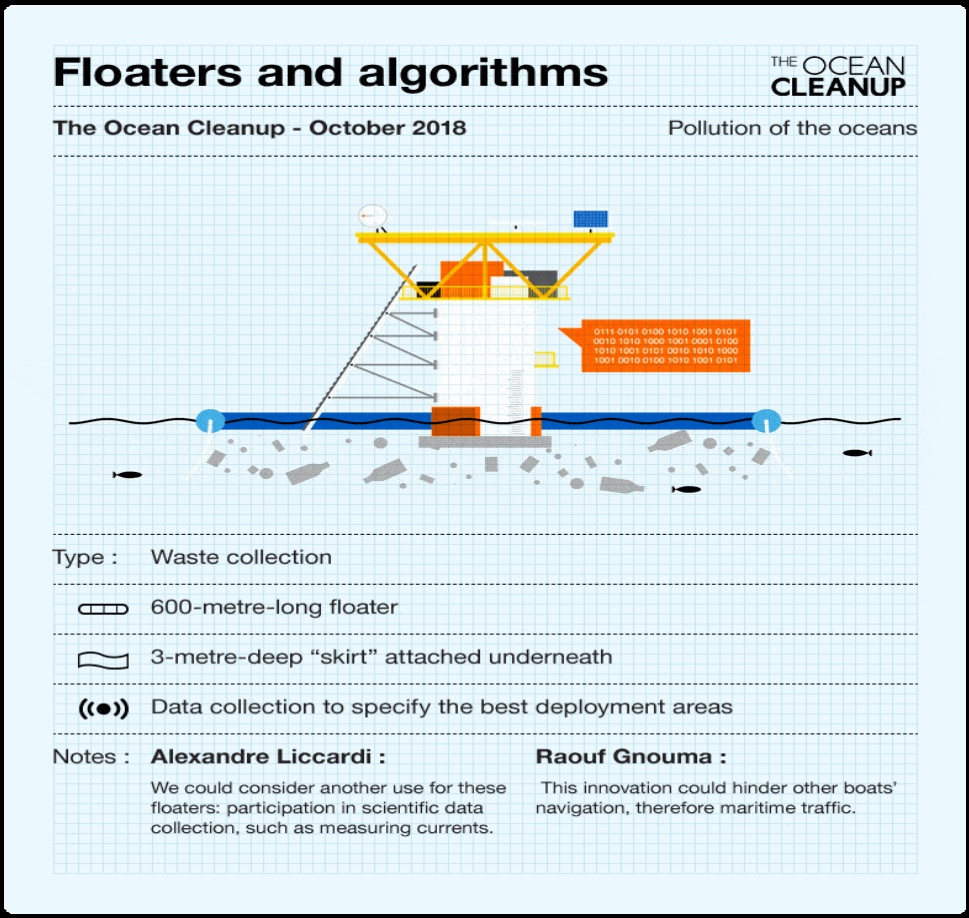
rewarding them not in the local currency but in “EMP”, a cryptocurrency whose token has a fixed value of one dollar. Financial incentive being a highly efficient approach to waste collection, and the target population being largely unbanked, the idea of cryptocurrency payment, as enabled by blockchain technology, seemed obvious to the developer.

This solution makes it possible to take part in ocean pollution reduction, whilst providing access to banking to disadvantaged populations.

Alexandre Liccardi. It is a valuable mobilising undertaking, as it proposes a new economic model that promotes financial independence while having an ecological aim. However, in terms of real economy, this approach doesn’t convince me entirely because cryptocurrencies are highly volatile (and EMP is no exception) and their use entails transaction fees that, once removed, lead to capital loss. Furthermore, from an environmental viewpoint, the calculations made by the blockchain technology imply high energy costs, which is obviously not the aim here: does the rule not apply to EMP? I do wonder if cryptocurrency, which is well-adapted to transactions of large amounts, is mature enough to serve social and inclusive projects. And also, if the target populations will have access to the media (an internet connection and a computer to use the tokens, at home, in internet cafés, via smartphones) and points of sale that accept cryptocurrencies.

Raouf Gnouma. It is an efficient approach in countries where the financial situation is complicated, and a very good means of motivating people to recycle waste.
For developing countries that don’t have the means to organise collections and that are overwhelmed by plastic waste, it is a very good initiative. But I think that investments need also to be made to solve the problem at source, i.e. to reduce the amount of waste produced, build awareness of sorting, encourage recycling, or even transformation (such as cleaning plastic bags so as to re-use them as tablecloths, for example).

Floaters and algorithms, with The Ocean Cleanup project



The Ocean Cleanup is also taking on the "continent of plastic", with the goal of reducing the amount of plastic floating in the Pacific Ocean by 50% every five years. Designed by Boyan Slat, a Dutch engineer and entrepreneur, a nacelle made up of a 600-metre-long floater at the surface of the water and a 3-metre-deep "skirt" attached below was launched off the coast of San Francisco in October 2018. Its mission? To collect the maximum waste… and data in order to feed algorithms that make it possible to specify the best deployment areas for this system. In effect, the floaters roam the ocean gyres (water swirls) autonomously and real-time telemetry facilitates monitoring of the state, performances, and trajectory of each system. Furthermore, the floaters rely entirely on the ocean's natural forces and require no external energy source to capture the plastic. All of the electronic components used, such as lamps and LED lighting, run on solar energy.

Alexandre Liccardi. It is an interesting innovation as the use of algorithms makes it possible to position the floaters in an intelligent manner, i.e. in the right place, and to anticipate their trajectory. But what about its impact on fauna and flora?
Several experiments on the insertion of floaters for environmental restoration have already been carried out on benthic marine populations – situated near to coasts. These resulted in the creation of new habitats, which are not always beneficial to the ecosystem. It is thus a question of carrying out an impact assessment upstream, which is needed in order to measure the environmental costs and the actual benefits of the project. Moreover, it could be of interest to consider another use for these

floaters, that of taking part in scientific data collection, such as measuring currents. Currents having *a priori* altered power rates, in particular because of global warming, tracking them could be used in meteorology for example.

Raouf Gnouma. This innovation makes it possible to treat large areas and in this it is very positive, but I do wonder whether there is a risk that it will hinder other boats' navigation, therefore maritime traffic. Furthermore, it should be ensured that it does not exploit natural resources to make its tools – the floaters, the skirts, the electronic components – and that it doesn't generate new waste that is difficult to recycle.

HORS ECO

https://hellofuture.orange.com/en/on-the-blockchain-there-are-flaws-too/

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Data | Article

On the blockchain, there are flaws too

Monday 23rd of September 2019 - Updated on Thursday 16th of June 2022

Although often presented as being tamper-proof, the blockchain, in such that it is a decentralised technology connected to the internet, is subjected to risks of piracy and theft. An overview of these risks with Maxime Hagenbourger, Chief Technology Officer of Blockchain Partner, leading French consultancy on blockchain technology.

It is crucial that before being implemented these applications are checked and audited several times so as to guarantee that they will not have unexpected behaviour or contain any flaws.

What are the blockchain's security risks?

M.H. It must first be stressed that concerning the exchange protocol itself, the blockchain is extremely secure. Especially on Bitcoin and on Ethereum, because the mining system means that it is very difficult to go back on data that has been written into the blockchain. Indeed, it is necessary to use a very high computing power to do this, and the cost of this is high. So, there is no risk concerning the security of data anchored or saved in the blockchain, they are unalterable. What's more, as miners are paid to validate transactions and thus make the blockchain work correctly, they are the guardians of its integrity. This being said, there are risks; the main ones are on two levels: at the application level and at the user level.

What are the application risks?

M.H. They are linked to the automatic execution of smart contracts. Once rolled out on the blockchain, according to the principal of inalterability of the code, they can no longer be modified. It is therefore crucial that before being implemented, these applications are checked and audited several times by independent experts or by organising "bug bounty" campaigns (programmes asking developers from across

the world to bug test before the implementation of applications), so as to guarantee that they will not have unexpected behaviour or contain any flaws.

What's it all about?

M.H. In May 2016, investment fund The DAO (Decentralized Autonomous Organisation), whose rules were governed by smart contracts, raised 150 million dollars from Ethereum users, who could vote on projects to award them financing or not. One month later, a hacker exploited a "reentrancy" flaw in one of the smart contracts that the organisation was using. The hacker siphoned off 3 million Ethers (50 million dollars) outside of the organisation to inject them into another smart contract over which they had control. Contradicting the main rules of blockchains, the organisation's developers decided to correct the consequences of the piracy by creating a "fork" (duplication with creation of a new chain) of the blockchain.
This major catastrophic event brought to the attention of the entire community the need to secure the computer code of smart contracts.

What are the risks linked to users?

M.H. These risks are linked to cryptocurrency leaks or theft. Some users create portfolios on non-secure exchange platforms from where their private keys can be retrieved. The pirates then take over ownership of the accounts and issue cryptocurrencies in an uncontrolled and unauthorised manner. To avoid these risks, it is thus necessary to store the tokens on secure sites and to generate private keys from computers that are not connected to the internet, and from standard libraries.

Are there other kinds of risk?

M.H. There is another application risk that falls within piracy: the 51% attack. It is a hack of the blockchain by a member who takes over 51% of the mining hashrate and creates a parallel chain. This chain having a higher computing power than the original chain, the owners of the remaining 49% join it. In this way the pirate can perform transactions in order to credit himself with tokens on both chains, this is called "double spending". However, on Bitcoin and Ethereum, it is nearly impossible to carry out this type of attack as it requires high computing power and is therefore very costly to implement. The less miners the pirate has, the less computing power there is, and the higher the risk is of a 51% attacked being able to take place.

What are the upcoming evolutions in terms of blockchain security?

M.H. On the one hand, with experience, the members of developer communities will develop smart contracts that resist flaws better and better. And on the other hand, when businesses recognise all the benefits of deploying public blockchains, they may no longer wish to risk losing millions as in the case of The DAO; they will then make the rules and practices more flexible, in particular that of the inalterability of the data.

https://hellofuture.orange.com/en/how-do-you-tame-artificial-intelligence/

1. Hello Future
2. Artificial intelligence
3. How do you tame artificial intelligence?

Artificial intelligence | Article

How do you tame artificial intelligence?

Monday 23rd of September 2019 - Updated on Thursday 17th of September 2020

With the help of chatbots and connected speakers, artificial intelligence (AI) has become an essential part of customer relations. But while consumers are getting acquainted with these new assistants, the major players in the industry continue to dedicate themselves to further technological developments and to promoting their acceptance.

What is at stake for businesses when it comes to AI is not only acquiring customers but maintaining customer relations.

Europeans might still be a little slow on the uptake, but elsewhere adoption is skyrocketing. This is the case in Korea, where the penetration rate is already 12% of the population, while in France it is just 4%. Large Korean businesses have been using AI since 2017 to give their customers access to their favourite services. From telecommunications operators (e.g. KT and SK Telecom) and equipment manufacturers (e.g. Samsung and LG) to so-called over-the-top service providers such as the Naver search engine or the Kakao social network, every business has a strategy for creating its ecosystem of products and services. The assistants take various forms, such as the small domestic robot from Innoplaylab or the Naver Wave speaker, which looks like an upturned cup and is therefore more convenient to take in the car or use in the office.

Understanding consumers to serve them better

France, however, is not unwilling to accept assistants. There is a good appetite among customers but they still need support. Vincent Petillo, head of the Mousquetaires accelerator and Innovation Partnerships, reveals that for the Intermarché voice command service: “We realised after the first few months of testing that some customers did not instinctively use an action or a verb when they were speaking. They simply gave the name of a product. We have developed the assistant so that a search can be launched just by giving the name of a product, without specifying “I want” or “I’m looking for””.

Should you use a third party service or develop your own solution?

It is possible to build a chatbot without understanding semantics or natural language. Facebook made that very easy with the launch of its own solution. It provides automatic response software add-ons for a standard customer message (“Hello”, “Goodbye”, etc.) and no development is required. The SNCF chatbot, OUIbot, was initially linked to Facebook Messenger. Today, the assistant is also available on the SNCF website, which saves them from sharing customer data and gives them more autonomy.

This is important because what is at stake for businesses when it comes to AI is not only acquiring customers but also maintaining customer relations.

We are all AI programmers

Making AI an open-source technology is an underlying trend. It reassures consumers about the balance of power when it comes to this technology. But the aim is also to demystify it by making it available to everyone. Want to find a person from a photo? This is now an achievable feat for anyone, simply by programming software with a few lines of Python language. The algorithms are open-source and social networks are an almost unlimited database. With AI, it is not even necessary to know how to program. For example, the Microsoft application Sketch2Code transforms a simple drawing into HTML code.

Knowing how to speak to the general public

Mass education is a means of democratising AI. Google has a certain talent where this is concerned. Its web application Quick Draw shows in a playful way how a network of neurons learns to recognise drawings. The user is invited to add their contributions to “the world’s largest doodling data set, shared publicly to help with machine learning research”. States also have a role to play. Finland, for example, has set itself the target of training 1% of its population in artificial intelligence. Education is a way of reassuring the public and allaying the unfounded fears that are sometimes fuelled by the media, such as the fear of losing one’s job or the fear of surveillance. But aside from these concerns, assistants arouse curiosity and amusement. The next step is to make them indispensable.

https://hellofuture.orange.com/en/proofs-of-identity-when-ai-confuses-matters/

1. Hello Future
2. Artificial intelligence
3. Proofs of identity: when AI confuses matters

Artificial intelligence | Article

Proofs of identity: when AI confuses matters

Monday 21st of October 2019

In generating highly realistic human faces and voices via GANs (Generative Adversarial Networks), artificial intelligence is creating doubt about previously irrefutable proofs of identity such as photos, videos, and sound recordings. This challenging of the notions of identity and veracity does have consequences on our societies.

“At the scale of a society, it is the whole capacity to establish the truth value of proofs in the document that has the potential to shake all authorities.”

An angelic face, a clear and honest gaze, a hint of a smile: Katie Jones deceived everyone on LinkedIn until June 2019. The young lady, connected with several people linked to the White house, has never set foot in the Center for Strategic and International Studies in Washington nor the University of Michigan.

Katie Jones doesn’t exist. Her profile picture was generated by an artificial intelligence technique: GANs (Generative Adversarial Networks). Experts questioned by Associated Press point out that her LinkedIn account is “typical of espionage efforts” on the professional network.

Most importantly, it challenges what we thought of as a given on previously irrefutable proofs of identity such as photos, videos, and sound recordings of human beings.

Since their introduction in 2014 by Ian Goodfellow, an American researcher specialised in machine learning, GANs have established themselves as an innovative programming approach to the development of generative models (i.e. that are capable of producing data themselves) and are making progress every day in the imitation of that which, until now, enabled the sure identification of a human being through the unique characteristics of their picture or their voice.

These algorithms inspired a software engineer named Philip Want to create the thispersondoesnotexist.com website. With over 4 million visitors since it was published in February 2019, this “generator of people that do not exist” exposes the true-to-life portraits of women, men, and children, who do not lack the mascara, slight stubble, or reflection in the pupil that are characteristic of an authentic HD photo.

The forger and the police officer

To get his generator to work, Philip Wang used a code written by NVidia, called StyleGAN. Like all GANs, this algorithm gets two artificial neural networks to compete: the generator, to which we can assign the role of the forger, and the discriminator, which plays the role of the police officer.

The networks mutually train each other, one to create an image that it wishes to pass as an original, the other to track down copies that it doesn’t think are “realistic” enough when taking into account the stock of “true data” to which it has access.

As this unsupervised training takes places, GANs prove capable of producing excellent data, be they designs (for the automotive, fashion, furniture, gaming, etc. sectors), music, or even pharmaceutical molecules.

Welcome to deepfaking

However, all AI initiatives are not so virtuous. In the world of artificial intelligence, the most exciting perspectives stand side by side with the risks of the most sinister usages, as reflected in “deepfakes”, these highly realistic fakes that make it possible for example to substitute one face for another on a video. With each innovation, AI opens the door to dazzling progress in many industries… all the while reducing the gap between “true identity” and “fake identity”. The recent creation of MelNet, a voice synthesizer capable of reproducing anybody’s voice (starting with that of Bill Gates), by Facebook’s AI division, makes it possible to generate speeches that have never been pronounced by the person to which they are attributed. This makes it possible to put a declaration of war in the mouth of a head of state, with the trickery not easily uncovered on the other side of the screen.

Challenging the notion of identity

As did the invention of photography in its time, “the progress of AI fundamentally challenges the capacity to prove one’s identity, that is to establish tangible proof of one’s existence”, explains Olivier Ertzscheid, a researcher in information and communication sciences, author of “Qu’est-ce que l’identité numérique?” (What is digital identity?) (OpenEdition Press, 2013). “At the scale of a society, it is the whole capacity to establish the truth value of proofs in the document that has the potential to shake all authorities”, he continues. Although “these technologies are only problematic because of the use that we put them to in certain societies, Olivier Ertzscheid adds, they tackle head-on the question of veracity, that is the ability to agree in a common way on facts that are incontestable. If each of a society’s individuals feels that everything can be contested, we quickly fall into a systematic regime of opposition, the breeding ground of fanaticism and hatred”. Establishing regulations and training citizens thus appear as desirable shields against the problematic effects of the new faces of AI, as soon as they start to blur the notion of identity and cross the porous border that separates “public” from “private”.

https://hellofuture.orange.com/en/the-iot-customised-software-solution/

1. Hello Future
2. Internet of things
3. The IoT customised software solution

Internet of things | Article

The IoT customised software solution

Wednesday 30th of October 2019 - Updated on Thursday 17th of September 2020

As professional use of the Internet of Things (IoT) is developing rapidly, business needs are becoming more diverse. To respond to this, the publisher IoThink Solutions is offering a software platform so that its customised solutions can be easily developed and deployed.

“Come with your use case, we are here to take up the challenge” – Julien Dalmasso, CEO of IoThink Solutions

Designing an IoT platform, customising it and being able to add it to your range of services is now possible for the first time ever on the Internet of Things market. IoThink Solutions, established in 2016, has just launched Kheiron Studio, a software suite for developing and designing IoT solutions. “This means that integrators, service operators and machine manufacturers will be able to offer IoT solutions very quickly, at minimum development costs and with complete autonomy for designing their business applications”, explains Julien Dalmasso, CEO of IoThink Solutions.

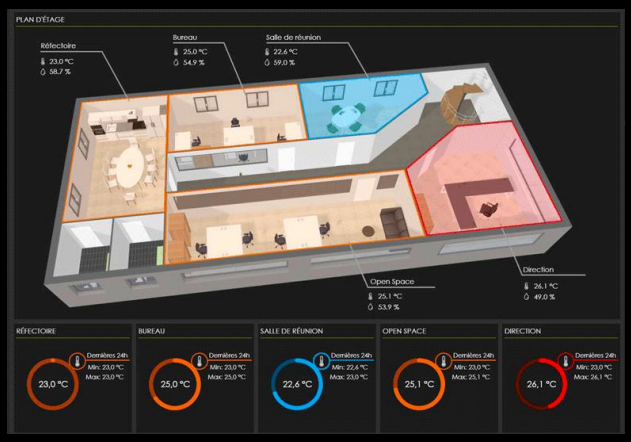
With this user-friendly solution, many IoT use cases are already covered: from home automation and industrial installations to the management of buildings and equipment in smart cities, including remote reading of energy meters, smoke

detection, air quality, waste treatment, parking, sewage treatment plants, vehicles, industrial machinery, etc.

How does an “IoT studio” work?

In addition to an intuitive graphical user interface, Kheiron Studio is a fully customisable solution that can accommodate many needs with its object libraries and standard use cases. The suite includes an extensive list of market sensors identified by IoThink Solutions, which has developed interfaces and decoders so that they can be used directly in Plug & Play mode.

The software includes a database of use cases that is regularly updated – such as the remote reading of meters, which is one of the most frequently used functions. Once the equipment and connectivity have been selected (LoRa®, LTE-M, 5G, etc.), all that remains to be done is to set up the network of objects, which remains scalable. In addition to the 500 use cases already recorded in the library, the user can create their own proprietary libraries. The models created in this way will then be used on the monitoring apps of the Kheiron Suite (for both web and mobile phone use).



A multitude of opportunities

While IoThink Solutions is not the only publisher in the niche market of customisable IoT and machine-to-machine (M2M) platforms, it is one of the first to provide software to integrate them and sell them alongside another activity. Blue Whale Company, a sensor manufacturer looking to offer new services, is doing just that. The manufacturer immediately branded the platform it designed using Kheiron Studio with its own logo, domain and graphic charter. Its objective? To sell this IoT solution to its customers as a new service, on a subscription basis. A real operation referred to as OEM (original equipment manufacturer): Blue Whale sensors are sold with their IoT platform, under the same brand.

And the future?

With its seamless integration with Orange's IoT Live Objects platform, device and data management, the IoT Kheiron Suite means that the many customers and partners of Orange Business Services can take full advantage of a complete, customised and scalable IoT solution.

With the IoT Kheiron Studio suite, the Group will be able to develop business applications at a lower development cost, using the suite's use case libraries, and respond to calls for tenders from SMEs in several sectors and several countries.

IoThink Solutions will be present at the IoT Solutions World Congress in Barcelona from 29 October on the Orange stand. There is no doubt that each demonstration of the software will be different depending on the activity of the visitors concerned and the use cases relevant to them.

https://hellofuture.orange.com/en/how-to-stay-well-informed-when-algorithms-are-deciding-for-us/

1. Hello Future
2. Artificial intelligence
3. How to stay well-informed when algorithms are deciding for us?

Artificial intelligence | Article

How to stay well-informed when algorithms are deciding for us?

Monday 9th of December 2019 - Updated on Wednesday 15th of June 2022

Recommendation algorithms calibrate some information we receive so that it pleases us personally. How can we make sure we can still find out about opinions on current events that are different from our own? What is the responsibility of broadcast platforms in this area and how are they working on these questions?

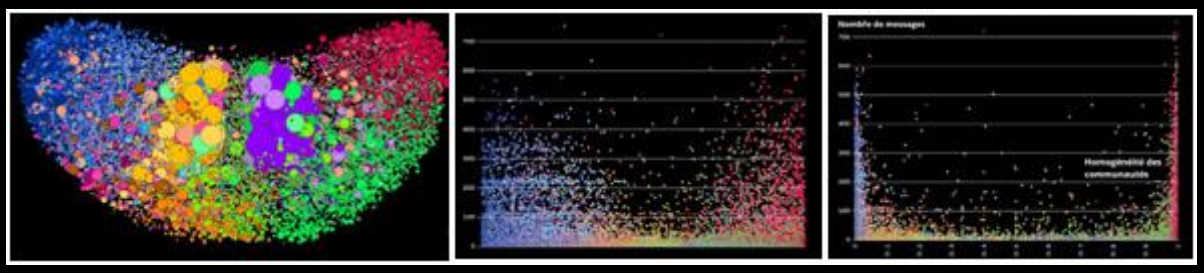
“Over 58 million people voted for Trump. I don’t know one.”

“Over 58 million people voted for Trump. I don’t know one”. On November 8th 2016, the Republican candidate’s victory came as a surprise to journalist Matthew Hughes, as it did to the majority of political analysts. Since a notable book by internet activist Eli Pariser in 2011 (“The Filter Bubble”), the phenomenon at the origin of Matthew Hughes’s disbelief is known as the “filter bubble”.

In effect, the content that we see online via search engines, in the newsfeeds of social networks, or on video or music on-demand services, is selected by algorithms. They base their choices on our tastes and ideas or on those of our “friends”. For Eli Pariser, this **selection bias** encloses us in a bubble as it conceals the plurality of opinions and thus the reality of the world. Worse till: it teams up with confirmation bias, as the act of reading only arguments that are similar to our own strengthens our opinions – at the risk of damaging our open-mindedness.

Maths and marketing

In 2018, an MIT study made it possible, in three diagrams, to materialise these filter bubbles and to chart the phenomenon of polarisation of opinion.



On the first diagram, circle size represents the importance of political communities: unsurprisingly, middle ground opinions bring together the largest number of internet users. However, on the second diagram, we see that extremist opinions share a lot more content than the centre, which is rather quiet. As for the third diagram, it shows the homogeneity of the communities: the further we go from the centre, the more the communities are made up of individuals who think exactly the same thing. These “echo chambers” fostered by algorithms are a breeding ground for the spread of “fake news” – which, according to the MIT, are shared 70% more than information from traditional media.

The way in which these filter bubbles work is straightforward maths and marketing: the Newsfeed Ranking Algorithm rolled out by Facebook in 2011, for example, sorts visible information by attributing a score to content, thanks to 100,000 parameters aimed at measuring popularity within the network of close friends and relevance to the user’s profile. In the United States, the social network classifies its users into 98 political categories so as to provide advertisers with finely-tuned targeting. Over one million advertising scenarios can then be generated based on the data of interaction between consumers and the brand. On the search engine side, users are profiled thanks to the cookies they leave as they surf the web. Thus, two users performing the same search will not get quite the same results because, depending on their profile information, the links are ordered differently.

Filters are not the prerogative of algorithms

What are the consequences of this algorithmic processing on access to information, plurality of opinions and their confrontation within society? Eli Pariser’s critics believe the impact of these “filter bubbles” is exaggerated, in particular because the internet is not yet people’s main source of information. According to a study carried out by some economists from Brown and Stanford universities, Americans still name television as the first source of information.

The study doesn’t find greater polarisation of opinions over several years (1996-2012). Furthermore, social networks can have a positive impact on democracy, as illustrated by the Arab Spring. Another example: in 2017, a led to 2.6 million people marching through the streets of Washington for respect for women.

More importantly, filters are not the prerogative of algorithms, far from it in fact: above all, the question is that of the formation of opinion in a social setting. Since the 1950s to 1970s, psychologists have described homophily (the fact of conforming to the opinions of our social circle, even without knowledge of their truthfulness) and, conversely, the tendency to avoid any cognitive dissonance (internal stress that is the result of the confrontation of contradictory ideas). Sociologist Dominique Cardon describes this idea: “The bubble, it’s we that create it. Via a typical social reproduction mechanism. The true filter is the choice of our friends, more so than Facebook’s algorithm”.

A democratic issue

To overcome this bias, we must leave our intellectual “comfort zone” and surround ourselves with friends of varying opinions – but also read and comment on their content on social networks. On search engines, deleting cookies regularly or simply using private browsing mode will provide radically different results to whoever wishes to be informed in a more neutral manner. And then what? To stay well-informed on the internet, the knowledge of the workings of algorithms becomes a democratic issue, which goes through educating citizens. A task that the media were the first to tackle by creating “fact-checking” units to fight against “fake news”.

Facebook has entered into partnerships with these news watchdogs in many countries and is exploring other avenues, such as the suggestion of alternative related content and of counterinformation below shared opinion pieces, or still systems for flagging disinformation content and tools for detecting “spam farms” and excluding the accounts involved. On 25th October 2019, in the United States the social network launched Facebook News, a service restricted to news “of quality” and that promises to burst filter bubbles thanks to a selection of articles from a range of political parties. Twitter, for its part, is considering adding messages into user’s feeds from members they don’t know and with whom they do not agree, so as to correct the filter bubble effect. As for Google, it has set up a label signalling verified articles in its search engine and news. In addition to this, Facebook and a media coalition have launched the , whose aim is to combat fake news.

Is this the end of filters and fake news?

Universities and NGOs are also innovating in favour of plurality of information. For example, a browser extension informs the user when they land on a fake news site. Social media aggregator Gobo enables users to “take control” by providing them with filters that they can configure. The MIT Center for Civic Media, MIT Media Lab and Comparative Media Studies at MIT are making the prototype available to all. Will the combined efforts of the different stakeholders suffice to turn filter bubbles and fake news into a thing of the past? Eli Pariser, an optimist, draws a parallel with eating habits. In an interview with Le Monde in 2018, he declared: “For a very long time, fast-food restaurants developed at incredible speed. But at some point, consumers realised that eating burgers every day created health problems, and they looked for other options. Today we see a whole range of fast-food outlets that offer healthier food.”

https://hellofuture.orange.com/en/big-data-algorithms-and-ai-the-tools-of-tomorrows-insurance/

1. Hello Future
2. Artificial intelligence
3. Big Data, algorithms and AI, the tools of tomorrow's insurance?

Artificial intelligence | Article

Big Data, algorithms and AI, the tools of tomorrow's insurance?

Monday 16th of December 2019 - Updated on Wednesday 16th of September 2020

AI and Big Data are transforming the insurance sector. What opportunities are offered by the use of these technologies and what ethical issues do they raise?

The issue, is to find a happy medium between pooling and more responsibility-inducing pricing.

Insurers have always used data and mathematical models to analyse and manage risk. As highlighted by Florence Picard, President of the École Polytechnique d'Assurances (EPA) and manager of the French Institute of Actuaries' Big Data working group, "data constitute the raw material of actuaries". Thanks to Big Data, AI and algorithms, insurance companies now have access to a much larger quantity of data, from various sources, and more importantly the means to process these data.

Finer risk assessment

The use of these digital technologies provides insurers with many benefits. Firstly, AI makes it possible to optimise internal processes and to improve customer experience, in particular in the event of a claim. Thanks to AI, certain procedures can be automated enabling a more rapid response. One can for example imagine implementation of a computer vision algorithm capable of analysing photos sent by the insured party, or a chatbot available 24/7. In this area, parametric insurance opens up promising opportunities. This solution, which is based on blockchain and smart contracts, enables automatic compensation that is triggered when an event occurs (generally, when a meteorological index, measured by a satellite or a weather station, exceeds a certain threshold). It does not require the intervention of an expert to estimate damages, which reduces cost and speeds up compensation. Originally deployed, notably by regional development banks, to protect African farmers against climatic hazards, parametric insurance is now starting to expand into other

sectors that are sensitive to the weather (such as agribusiness, transport, energy, etc.) and is opening up to private individuals. For example, Fizzy insurance, offered by Axa from 2017 to 2019, enabled them to automatically obtain reimbursement of a delayed or cancelled flight. With Axa Climate, its entity specialised in climate risk management, the French insurance group is well-positioned in this promising market, the world over – starting with Africa – however, InsurTechs are also positioning themselves. In West Africa, we can mention Malian startup Oko, winner of the Orange Social Venture Prize in Africa and the Middle East in 2018, which provides small-scale farmers from emerging countries with an affordable and automated insurance solution.

But the great promise of insurance algorithms is better knowledge of the customer and finer risk assessment based on the combination of "traditional" data, from risk-declaration forms filled-out by customers for example, with new data on individuals' behaviour or their environment.

The ethical issues

The use of these data nevertheless raises questions. In its "Report on the ethical implications of algorithms and of artificial intelligence" (Rapport sur les enjeux éthiques des algorithmes et de l'intelligence artificielle), the French data protection authority (CNIL) states that the personalisation of content and services resulting from the omnipresence of algorithms could potentially jeopardise collective logics. Several stakeholders fear in particular that this dynamic could call into question the principle of risk pooling, one of the pillars of insurance. In its report, the CNIL also underlines that "algorithms and artificial intelligence can create biases, discriminations, and even forms of exclusion". Individuals that are judged to be "at risk" could see the cost of their premiums increase according to their state of health (or behaviour that is deemed risky, such as alcohol consumption, lack of physical activity, or poor diet), or even be rejected from insurance.

These questions arise in particular for the inclusion of health data in the scope of complementary health insurance. Quoted in the CCNE (French National Ethical Consultative Committee for Life Sciences and Health) and CERNA (French Committee for the Ethics of Research in Information Sciences and Technologies) "Digital & Healthcare" report, France Assos Santé notes for example that "If insurers know what health conditions their policyholders have, the categorial solidarity of supplementary insurance might be adjusted to take account of the level of risk of the condition in question. This is what is called customer stratification on the basis of risk."

For Florence Picard, it is nevertheless in the insurer's interest to maintain the pillar that is pooling. "The more this pooling is based on a large segmentation, the more the risk is manageable, as the difference between the tariff established or the provisions calculated is low. The more they refine the categories, the higher the risk of error."

Yet, insurers are already offering certain contracts based on behavioural data to customers who so wish. For example, “Pay how you drive” consists in adapting the insurance premium to the driving style, a personalisation of car insurance that is made possible by the installation of a box in the vehicle or a mobile application on the driver’s smartphone. Could this kind of insurance be extended to other types of insurance? It’s unlikely, according to Florence Picard, to whom the idea of individual pricing doesn’t make sense. “The right price does not exist. Premiums are used to pay for accidents that happen to only a few. For all those who are not faced with an accident, the premiums will always be too high; for the others, they’re not high enough. It’s the actual principle of insurance. The issue, she continues, is to always find a happy medium between pooling and more responsibility-inducing pricing.”

The regulatory dimension

What about the regulatory framework? First of all, the law forbids the use of certain data, such as gender or “race”. Insurances and complementary healthcare insurances can thus not take these data into account in establishing their pricing. In addition, the General Data Protection Regulation (GDPR), which follows the main principles of the French data protection act (loi Informatique et Libertés de 1978), reinforces the protection of personal data and aims to give citizens more control over their data. It expands the notion of health data, the use of which is forbidden except in certain precise cases as defined by article 9. Article 22 also establishes the right to not be subject to entirely automated decisions, that could be the result of profiling, which significantly affect the person involved (such as the application of higher tariffs).

However, the law does not take into account all of the issues raised by algorithms according to the CNIL, which is in favour of the extension of the loyalty principle of algorithms to take into account their collective effects. This principle is based in particular on the idea that an algorithm’s criteria must not go into head-on opposition with certain large collective interests – such as pooling – nor have the effect of reproducing or reinforcing discriminations.

Insurance players themselves are making commitments. For example, the French Institute of Actuaries’ Big Data working group managed by Florence Picard has launched a reflection on the evolution of the actuaries’ code of ethics in the age of Big Data. They are creating a working group on ethics and a professional standard for the use of data.

The aim is to find the right balance between exploiting an increasing amount of data, which is necessary to develop the uses of AI, and certain high principles (privacy, non-discrimination, etc.) aimed at protecting citizens.

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OS and connected objects: ever-changing ecosystems

Monday 16th of December 2019 - Updated on Wednesday 15th of June 2022

Connected objects are playing an ever-increasing role in our daily lives, and are developing as fast as the number of new uses found for them. This universe encompasses a wide range of products, technologies and players. From virtual reality headsets to connected headphones and smart TVs, the range of objects is vast and is evolving at high speed. What are the consequences? Ecosystems are emerging to optimise and enrich the user experience.

Anticipate, in a changing ecosystem, in order to provide services that are relevant and consistent with consumers' uses of connected objects.

Despite being in full swing, the market for connected objects is still young. It is not as easy to read and understand as more mature markets such as that of the smartphone. Uses and objects appear quickly and can disappear just as quickly.

Three major market segments

The figures and forecasts are more certain: in 2020, two billion connected objects will be sold globally, representing an overall revenue of €250 billion. The annual growth of the European market is expected to reach a level of between 5% and 10%. Three main universes stand out in a constellation that has exploded into several dozen types of objects: Wearables, which includes smart watches; Home Entertainment, which includes games consoles; and finally the Smart Home segment. This includes the smart speakers product line, which is booming with an annual growth rate of 100%.

In this environment, the mission of an operator like Orange is to anticipate market movements in order to offer products that are relevant and consistent with customer usage. This is far from simple, given the versatility of trends: two years ago, virtual reality headsets were at the top of everyone's wish lists, but consumer appetite for them waned in 2018 and 2019, and manufacturers have withdrawn from this market.

Ecosystems are consolidating

This forecasting work is not done alone. Orange operates in ecosystems which involve several areas of expertise and multiple players. Many of them were on the starting line when connected objects began to emerge, but in recent years have regrouped in a significant consolidation movement. Reference ecosystems, derived from Operating Systems (OSs) and their designers, are emerging. This involves Apple in particular, the hitherto undisputed world leader in smart watches with its watchOS – to the point that Apple is now the world's leading watchmaker, including companies that make traditional watches. For its part, Samsung has installed its Tizen OS (operating system) not only on smart watches but also on smart TVs, - a market shared with LG's WebOS and Google's Android TV. With Wear OS, Google also nurtures strong ambitions for the smart watches market; it occupies 13% of the market today but hopes to increase this share in the future through partnerships with traditional manufacturers and following the recent $2B takeover of Fitbit.

Orange: an integrated and active partner

Orange plays a major role at the heart of these ecosystems. As a leading partner of object manufacturers, OS designers, service developers, etc., the Group shares its know-how on several key issues. "In particular, we act as a distributor", begins Fabien Dallot, Director of Connected Objects Portfolio within the Customer Equipment and Partnerships division. "Based on our network of shops and our expertise, we select and bring the best connected objects to our customers, from all the different OSs. As these are likely to enhance the strength of our networks and make the best use of them in terms of user experience, these products are packaged with our connectivity offers, such as a games console bundle that comes with an Orange Fibre package, by Orange Spain. Furthermore, we form partnerships with OS designers to integrate a layer of Orange services into the objects, as we did with Samsung in Spain to natively embed Orange TV into their smart TVs in a customised way".

Joint innovation

Orange engages into co-innovation partnerships with the main ecosystems of the connected objects market. The example of 4G smart watches clearly illustrates the potential for co-innovation. While smart watches were previously connected to Bluetooth and required users to have their smartphone to make calls, Orange has developed SIM card integration devices (eSIM enablers) in order to break free of this barrier. Watches now have embedded 4G connectivity and users can benefit from new features, including the ability to make calls without their phone. This enriched eSIM experience is already available on smart watches using watchOS (Apple) and Tizen (Samsung).

Orange is recognised as a leading operator in the world of connected objects and positions itself as a reference partner in its core business, connectivity. This position will double in strength in the future when 5G becomes available, which will inevitably be associated with smart watches, smart TVS, virtual reality headsets, etc., as well as emerging categories of objects, such as Pico Projectors.

The future is therefore written in 5G but under the banner of responsibility. Orange is focussing its cooperation and research efforts on developing eco-efficient objects that are adapted to the needs of vulnerable population groups – dependent elderly people, people with disabilities, etc.