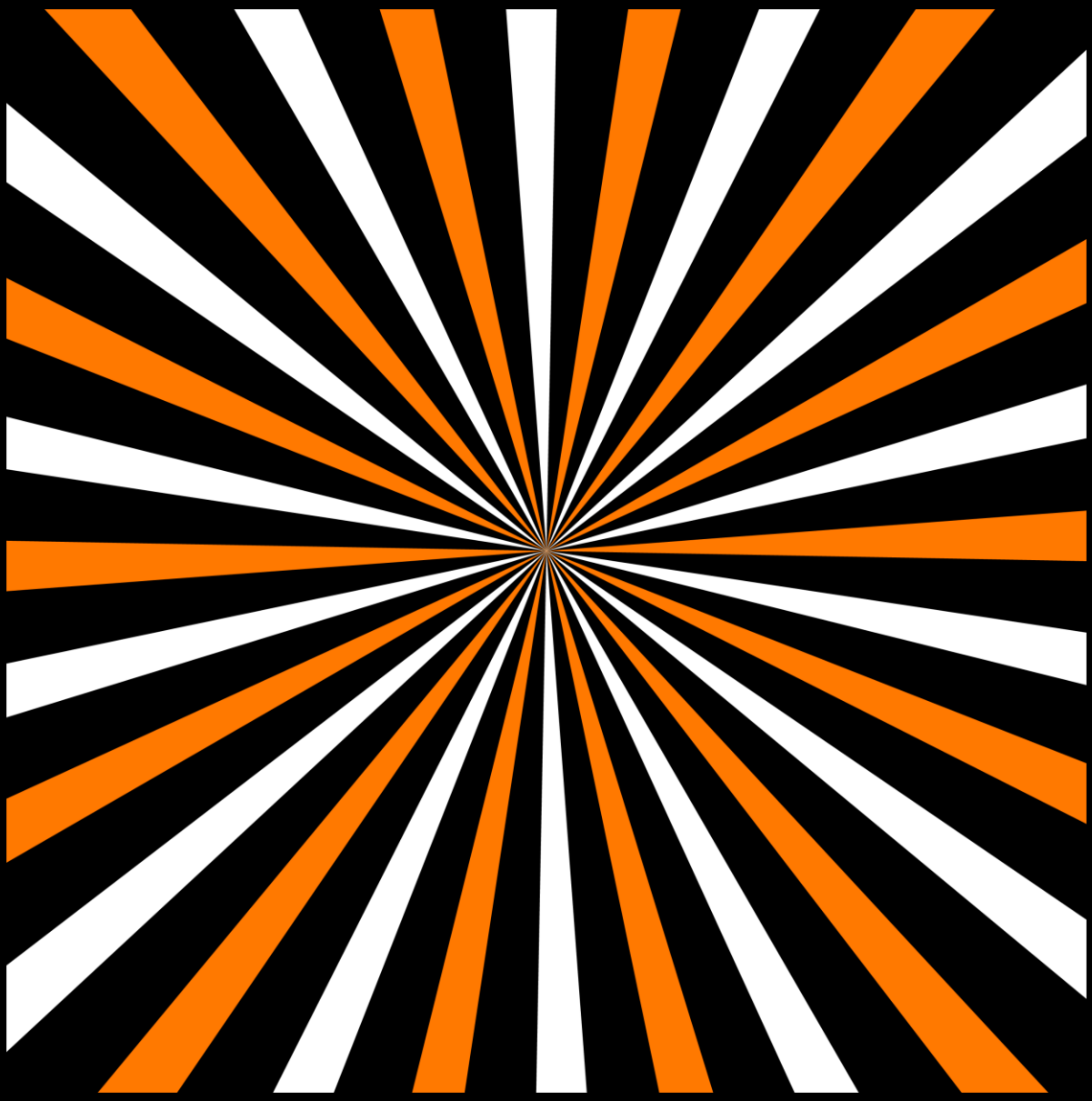


Orange OpenTech 2024

Further, faster, together

26-28 November 2024
Orange Gardens, Châtillon

When Artificial Intelligence is revolutionizing the customer experience, our ways of working, and networks, it's all for the better.
When cybersecurity taps into networks in the age of AI to predict threats faster and secure our digital lives.
When the home is enhanced with new connected services that simplify daily life.
When companies explore the best technologies to boost their creativity and efficiency.
When networks adapt to any situation and evolve into open, automated service platforms.
When these same networks are becoming the new playground for developers to create the applications we all expect.
When the customer relationship is instant and personalized.
When nearly 700 researchers work daily to serve customers and continuously create more value.
When the worlds of Tech and Telco come together to go further.
When innovation becomes continuous, iterative and faster to deploy.
When experts, companies, startups and partners imagine together a shared and responsible future.
When innovation opens up to the greatest number.

Orange OpenTech 2024.

Orange is here.

Foreword

Orange invites you to enjoy a unique experience, designed as a live platform to explore the latest technological innovations and to interact with our experts, researchers, and partners: Orange OpenTech 2024.

From November 26 to 28, Orange welcomes key Tech and Telco companies to Orange Gardens, its innovation eco-campus in Châtillon, near Paris, sharing a common vision: innovating together to shape the future.

This year, our motto "Further, Faster, Together" embodies our commitment to go even further with Open Innovation.
Over three days, partners, industry and academic experts, startups, and developers will gather around a shared vision: ongoing, scalable, and open innovation.
With more than 45 innovation and research demonstrations, workshops, keynotes, and inspiring round tables, Orange OpenTech 2024 promises total immersion in the future of networks in the era of artificial intelligence.

We are at a critical point in this regard, where AI – widely adopted at an unprecedented rate – is transforming how we work, design our networks, and interact with our customers. We are moving towards a world where AI will be everywhere. Infrastructure and networks, Orange's core business, are central to this transformation. Integration of the latest technologies in these networks – like generative AI, open RAN, APIs, and the latest Cloud solutions – is a major issue for Orange, promising optimization, network automation, and the development of new services.

Orange OpenTech is also an opportunity to show how Orange connects innovation and research to the needs of its customers, leveraging its expertise to develop responsible solutions that create value. Technological advances also raise ethical, societal, and environmental concerns that we will address together, turning these challenges into opportunities for innovation and differentiation. With Orange OpenTech, Orange is there to always provide more to its ecosystem: more innovations, more opportunities, more connections, more inspirations – in a nutshell: more value.

Welcome to Orange OpenTech 2024.

Summary

Self-Automated Home

Predictive Cybersecurity

APIs Playground

Adaptative Networks

Future of Interactions

Augmented Enterprise

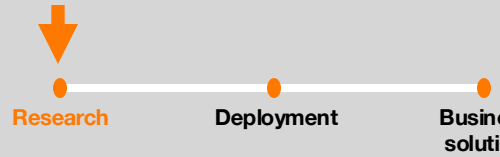
Orange Intellectual Property 65

Summary

Legend

Number of patents linked to the demo if relevant

Maturity scale : level of development of the demo



C02 Reference of the booth on the exhibition

C : Demonstration
S : Startup

Keynotes and Panels

Tuesday 26th November

11h00 - 12h15
The Era of AI everywhere: Innovating together to unlock business Ecosystems

14h00 - 14h45
Network and AI: Accelerating the symbiosis

15h30 - 16h15
Reinventing business: Democratizing Generative AI for every business

16h45 - 17h30
Empowering Digital Inclusion Through Multilingual AI Innovations

Wednesday 27th November

10h00 - 11h15
In a hyper-standardised European Telco sector, can innovation become a driver of differentiation and growth?

13h30 - 14h15
The Telco & Cyber alliance: A trusted digital future for Europeans

15h00 - 15h45
Diversity: Let's transform the system

16h30 - 17h15
Is AI inclusive ?

Thursday 28th November

10h00 - 10h45
From Telco to Techco: Transforming Networks through APIs

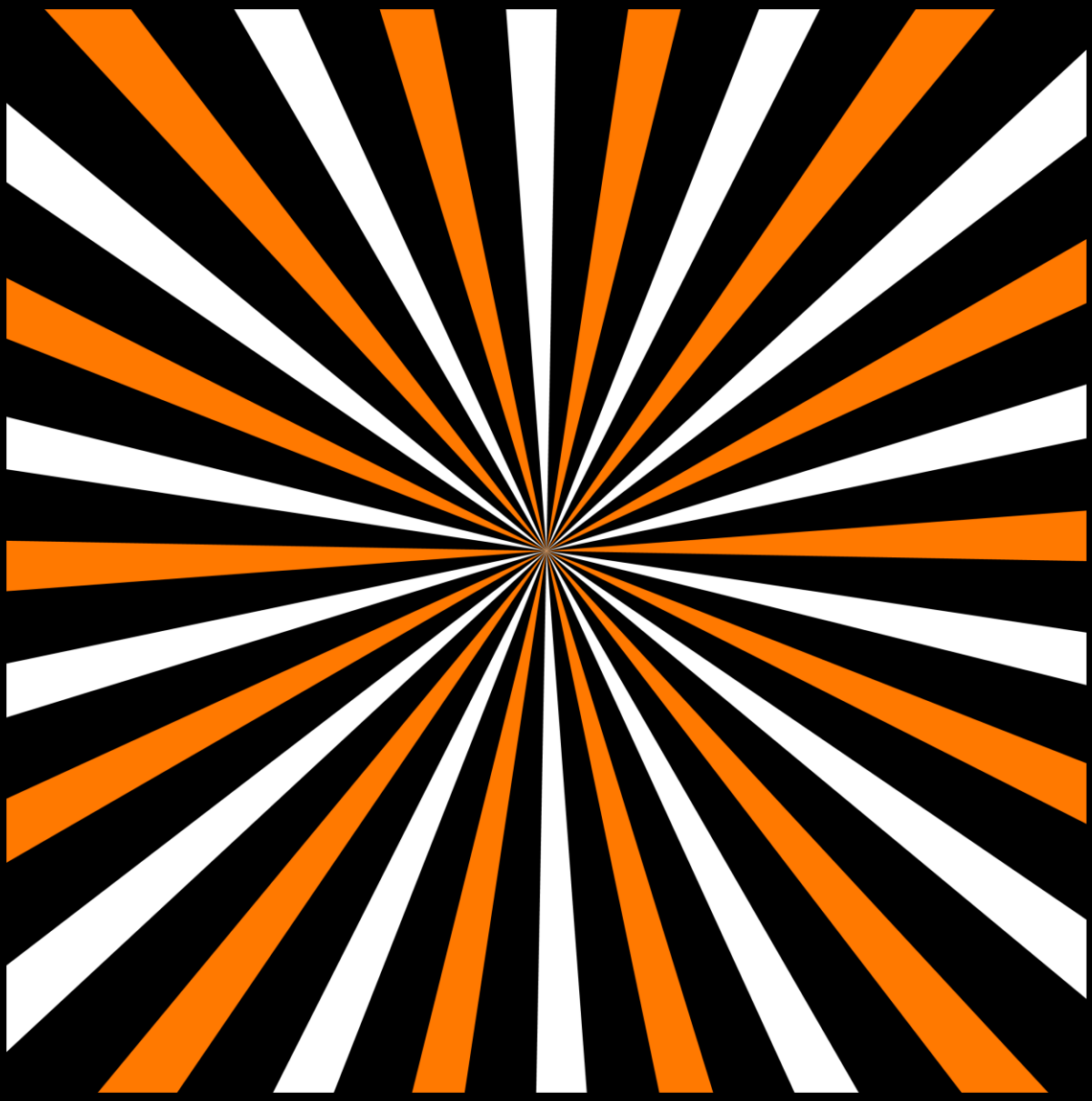
11h30 - 12h15
How will mobile messaging and AI combine to transform customer service?

14h00 - 15h00

Supporting business acceleration and innovation in the MEA region through partnerships

- Creating maximum impact with Mini-apps. Crossing views about Max it, now and then.
- Leveraging Data IA in the MEA Zone: CWR@Digital and SmartCapex for Better Network Investments and Monetization

15h30 - 16h30
Network APIs Hackathon final pitch and Awards Ceremony



Demonstrations

@Orange #OpenTech

More than 45 demonstrations dedicated to research and innovation. An open platform to meet the key players in the Tech and Telco ecosystem, gathered around a shared ambition: to push innovations that meet the challenges of today and tomorrow, by harnessing the full power of AI and the latest technologies to create value, in an open and responsible way.

Self-Automated Home

Resolve cascading failures in homes, thanks to an active LAN network supervision solution combining AI and digital twins, download applications directly to the Livebox to access personalized services, and even control Orange TV through advanced voice recognition… The Self-Automated Home space allows you to discover an entirely new experience of connected services in the home. Innovations that use Wi-Fi7 to improve functionality stability and where the box becomes a real platform for services that are increasingly personalized and automated.

@Orange #OpenTech

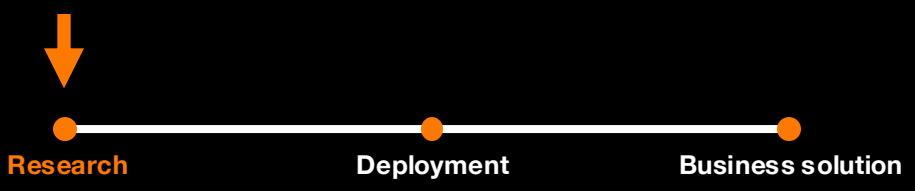
Collaborative LAN Resilience

Ensure the continuity of a multi-actor network and resolve outages using AI and digital twins

C01

A collaborative cascading failure resolution system at home.

A home might contain various connected services and objects, each with their own ecosystem: shutters, open window sensors, intrusion alarms, smoke alarms... Yet these connected objects are often interdependent. A single outage might lead to cascading failures. And without an overview of the home network, a service provider is currently unable to resolve this type of incident alone. In close collaboration with the Grenoble Computer Laboratory, Orange has established a LAN ("Local Area Network") active supervision solution. The system combines AI and digital twins within a representation of the home network. Each supplier is represented by a virtual agent, able to communicate with other agents identified within the local network. Connections between equipment and services are automatically determined, enabling collaborative failure resolution. For service providers, it is an opportunity to ensure their ecosystem is operating correctly. For Orange, it helps ensure quality of service and improves the user experience.



Self-Automated Home

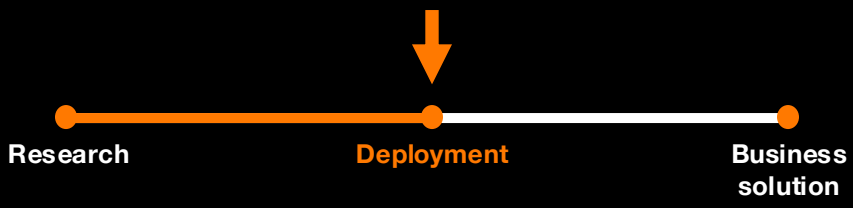
À la carte Home

Manage services through home gateway

C02

The demonstration showcases Livebox personalization by downloading new services and applications.

Downloading an app has become extremely common practice for smartphone users. With this demonstration, Orange proves that it is possible to do the same with a Livebox compatible with prpl, an operating system that paves the way to new connected services. In this case, the demonstration is based on downloading an application dedicated to filtering inappropriate content from the “A la carte Home” store. In the near future, It could also be an application for optimising energy consumption in the home. The “A la carte Home” platform provides everything needed to publish, install and subscribe to these applications, and thus help personalize the customer experience. This innovation will allow a new monetized services offer to be proposed, capitalizing on the existing fleet of internet routers. On an operational level, “A la carte Home” simplifies the deployment of new services with Group subsidiaries, thanks to a pooled platform approach. Beyond content filtering, it sets the stage for other tailored applications and uses, cyber and home security, optimizing network coverage in the home, network outage troubleshooting, energy consumption of connected homes, managing time spent online, etc.



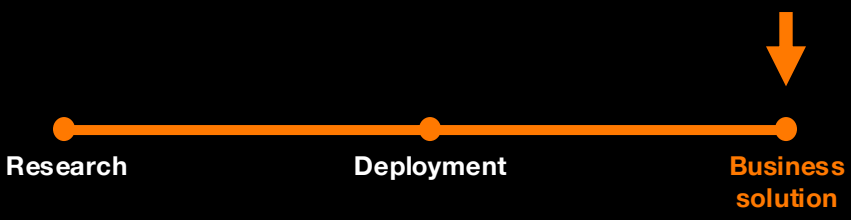
Self-Automated Home

Livebox run by prpl

Download a wide range of new applications for the Home

Wi-Fi7 is installed on the latest Livebox in Romania to offer even more connected services.

The Livebox can now be enriched with new services via a simple software update, without having to change it. And that changes everything. How? Thanks to the “prpl” (pronounced "purple") operating system found at the heart of the latest Livebox models. This operating system allows services to interoperate within the home's local area network and makes the routers much easier to upgrade, more stable and secure. In 2025, Orange Romania will be able to deploy Wifi7 for its customers equipped with a Livebox 7 Essential. The adoption of Wifi7 software is just one example of what is now possible with prpl: access to smart, connected services through a simple box update, just like with a smartphone. What's more, this innovation reflects Orange's commitment to the environment: not only is the box eco-designed, but it also has a longer lifespan.

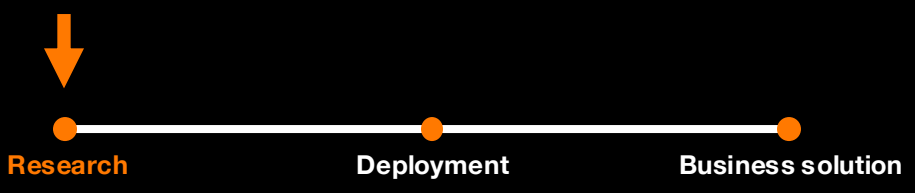


Orange TV GenAI Voice Interaction

Imagine it, watch it: effortless TV content discovery and interaction

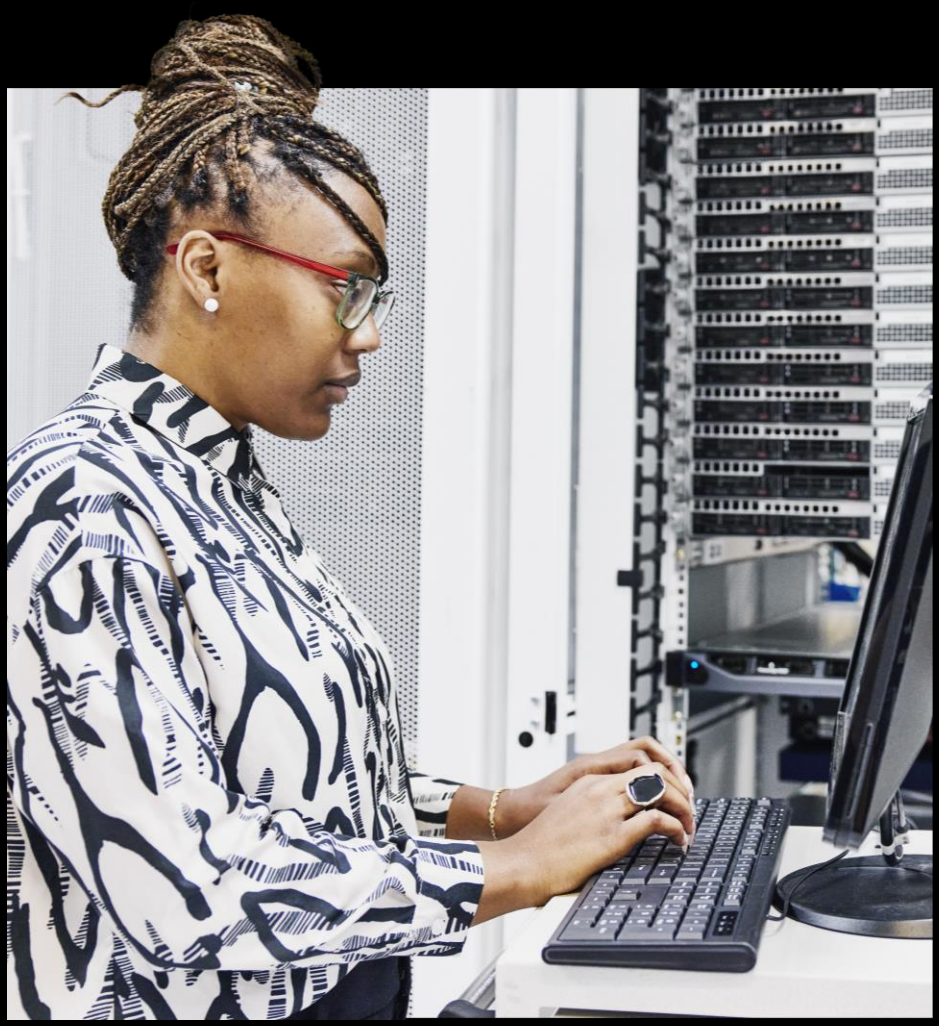
How AI voice interaction can enhance access to digital entertainment.

Discover a new way to access digital entertainment through the Orange TV service. Using your AI-powered voice control remote feature, you will be able to discover even more exciting and relevant content. A simple quote (“I am Groot”), describing an iconic scene, or even mentioning a “character with a red cape” will give access to a personalized selection of films. And by saying an artist's name, it will be possible to discover his entire output and related suggestions, through the various channels and content platforms available on the TV. This updated voice interaction feature offers a new way to experience movies and series, as well as documentaries, plays, concerts, shows, video games, records and digital books. This level of interactivity and engagement has strong commercial potential with smart TV manufacturers as well as content and streaming platforms.



Predictive Cybersecurity

Detect and analyze millions of events per second to identify cyberattacks in real time, challenge a cyber intelligence tool that detects sensitive information leaks on the internet and the dark web, or even teach your customers to improve home network security... Welcome to the Predictive Cybersecurity space. Supported by technologies based on AI and machine learning, discover Orange's latest innovations for a more secure digital environment.



@Orange #OpenTech

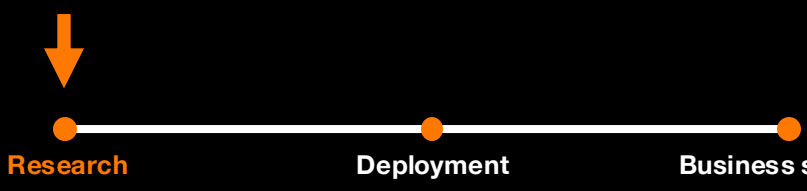
LeakTrails

Seek and qualify credential leaks for actionable insights

LeakTrails helps organisations strengthen their security by quickly identifying sensitive information leaks.

In the first half of 2023, compromised credentials were the primary means of fraudulent access for hackers, accounting for over 50% of the origins of attacks*. “LeakTrails” is a cyber intelligence project that detects credential leaks across the Internet, Dark web and instant messaging apps. By analyzing this data automatically, the platform aids in preventing identity theft, account takeovers, and further misuse of compromised credentials. “LeakTrails” offers unique features, including monitoring tools that track leak origins, industry trends, and geographic attack patterns. It alerts domain owners of potential breaches, enabling them to secure their systems efficiently through preventive measures.

*Source: https://news.sophos.com/en-us/2023/08/23/active-adversary-for-tech-leaders/



ThreatNet

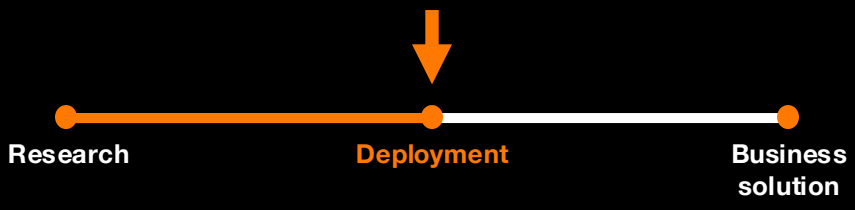
Catch the cyber-wave in real-time on networks

Combining network streams with a thorough understanding of cyber threats in an ultra-effective and customizable detection platform.

"ThreatNet" is an internal Orange group cybersecurity platform used to analyze huge quantities of data. Combined with the Orange Cyberdefense threat knowledge base, it allows real-time identification and ultra-effective categorization of cyberattacks on company networks. The innovation is three-fold:

- "ThreatNet" can process a significant stream of data in real-time, namely several million events every second;
- This data analysis capacity, combined with a dynamic cyber threat knowledge base, enables reciprocal and continuous updates. This combination really makes the solution stand out from the rest of the market;
- Finally, with this advanced solution, the customer can personalize their detection scenarios and alert notification channels depending on their needs.

Developed to protect the Orange group's infrastructure and assets, the "ThreatNet" platform enables faster attack detection, to block them even before they can take hold. In the future, the solution could enhance Orange's cybersecurity solutions.

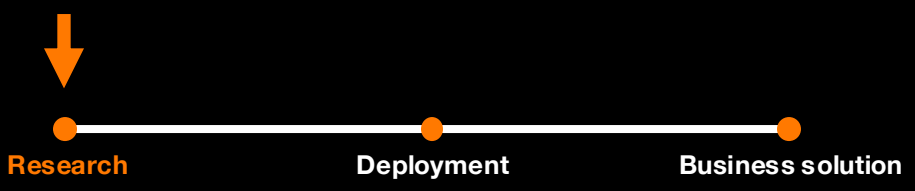


Cloud Ransomware Protection

Secure cloud applications by using a multidimensional approach

“Cloud Ransomware Protection” uses artificial intelligence and machine learning to identify and counter ransomware attacks in real time.

“Cloud Ransomware Protection” is an innovative cybersecurity solution, designed to effectively counteract various types of ransomware in Linux-based cloud platforms. Such kind of applications are increasingly being targeted by this type of malware, which blocks access to IT resources and demands a ransom. To detect these attacks before it's too late, “Cloud Ransomware Protection” uses a multidimensional and adaptable approach. Based on machine learning, the service simultaneously analyzes data from the network, OS processes and disk I/O. The solution can then identify and block ransomware activity in real time. By consulting and cooperating with Orange Poland Cybersecurity, used AI model is continuously trained on the latest ransomware to identify future versions faster and stay one step ahead of attackers. This solution will help companies avoid the financial losses and costly remediation associated with business disruptions.

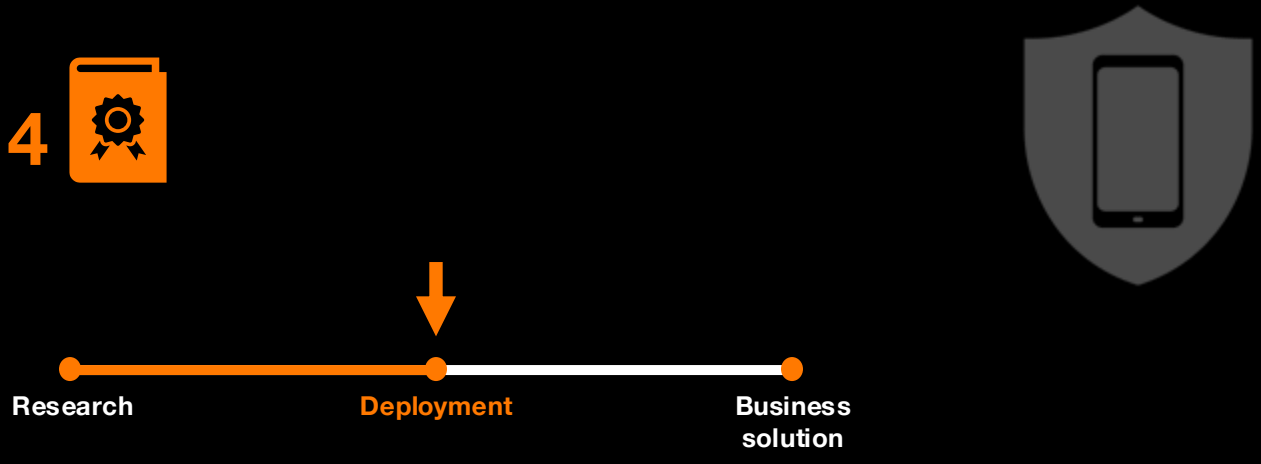


My Security Partner HomeLAN

Self-diagnose the security of my local network

My Security Partner HomeLAN is a smart chatbot that thwarts cyberattacks and malware.

Orange customers can fall victim to malware every day. The Abuse unit is tasked with alerting these customers. It is consolidating its tools by adding a highly smart agent. Developed on the basis of generative AI combined with the APIs of current Livebox models, “My Security Partner HomeLAN” analyzes the home network and helps secure a specific device. Step-by-step, its self-diagnosis assists individuals, detects and eliminates the source of the cyberattack. The solution also provides basic advice on how to change the administrator password, launch the computer’s antivirus software and so on. With this standalone agent, users benefit from continuity of service and rapid incident resolution, without costly technician call-outs. The saved time allows the Abuse unit teams to focus on more complex cases. “My Security Partner HomeLAN” will be tested soon at Orange France.



Filigran

An Orange data lake solution to develop our cyberdefense ecosystem

Gathering and processing information on threats to reinforce security and improve cyberattack detection and response.

Collecting, organizing, analyzing and sharing information on cyberthreats has become a necessity to detect and counter them more effectively. Visualizing relations between entities, trend analysis and diagram production, as well as collaboration within security teams is an asset. Startup Filigran, with its “Open CTI” (Open Cyber Threat Intelligence) solution, offers an open source platform dedicated to cyber threat intelligence management. This software is used by Orange Cyberdefense (OCD) teams, who also use it on a global scale, thus constituting the Orange Data Lake, a knowledge base that is constantly enriched and updated. Thanks to this in-depth knowledge of threats and the ability to detect, analyze and counter them, OCD teams and their customers benefit from a major operational efficiency asset.

APIs Playground

Networks are a new playground for developers and enterprises to adopt API (Application Programming Interface) consumption and develop unique applications and services. Manage your subscriptions via WhatsApp with a chatbot in the MEA region, adjust drone paths to avoid densely populated areas thanks to a population flow analysis API, access the advanced features of the Livebox ecosystem to adjust quality of service… Lots of specific and promising examples to discover in the APIs Playground. A space that lays the groundwork of a more streamlined and personalized network experience.

@Orange #OpenTech

A dedicated interactive API

space for discovery and inspiration

By opening up its network functionalities based on CAMARA open source standards, Orange is boosting innovation, interoperability and creating new sources of value. The APIs Playground space illustrates this network platformization strategy using APIs, and offers several complementary options to tackle this field:

- Demonstrations of current and future specific use cases, implementing various Network APIs;
- An APIs Bar to meet our experts and a unique opportunity to have in-depth discussions to understand network APIs based on real-world examples;
- A Fireside Chats space to get inspiration with mini-conferences on key themes: channel distribution strategy, standardization (Linux Foundation CAMARA, MEF), best practices with AI and feedback on integration of our network APIs.

Customer examples, partner and customer testimonials, latest news from Orange countries...

A comprehensive initiative to learn about Network APIs, their impact, the channel distribution strategy used by Orange as well as the importance of applying standards. Other products and services thanks to Network APIs already deployed or being tested will also be showcased. A proposal that reflects the variety of current and future possibilities available to developers.

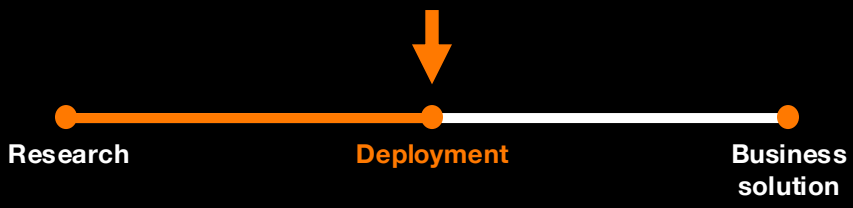
@Orange #OpenTech

Home QoD API

Real time application performance and on the fly user experience improvement

Imagine a home network where the user can adjust the quality of service depending on their needs.

Orange is developing a solution that simplifies access to the most advanced network features of the Livebox ecosystem. This allows the quality of service of a home network terminal to be adjusted on demand, via an API. A feature aimed directly at **Orange** customers and could also be promoted with third parties' application and service providers. This use case has been developed together with Domos, creator of Quality of Outcome that brings added value by performing network measurements and render them available in a simplified way to end users. The demonstration shows a video conferencing software within a local network used by numerous services and devices. Attendees can check the real time performance of the application and optimize the quality of service of this application for an improved experience. This innovation opportunity relies on the prplOS (open source software framework), Domos Quality of Outcome framework and Camara open source initiative, which define standards toward faster and more accessible innovation.

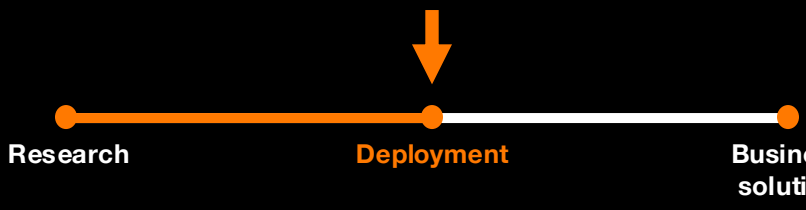


Network API-Driven Incident Response

Secure reliable protection with seamless video and precise tracking under any network conditions

Harnessing the power of network APIs for the safety of people and property.

Orange, together with Nokia, have co-developed an enterprise solution combining two Network APIs to reinforce the surveillance and safety of both people and property. This solution is made available thanks to Nokia's Network as Code API platform.
The first integration is of Quality on Demand API, in collaboration with the US company Radisys, specializing in mobile technologies. In the event of a fire or any other similar event, automatic network adjustment will prioritize the quality of the site's internal video surveillance stream. Once the alert state has ended, the network will return to its normal status. The second one, co-developed with Innova Solutions, a technology solutions provider, will warn people located in the vicinity through notifications, to help with their evacuation. This second API can also help locate people, which can be especially useful if there is no or unreliable GPS network.
Adapted to the needs of businesses specializing in property security (surveillance of offices, warehouses, and sensitive sites), the solution might also interest companies looking to improve the security of their real estate assets and employees.

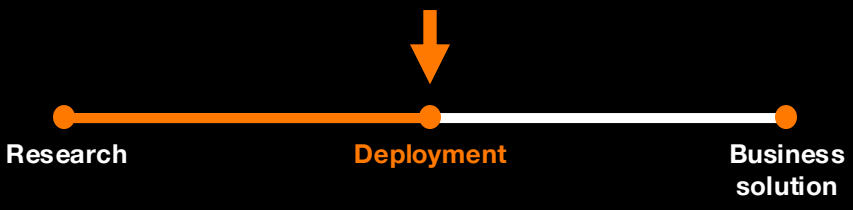


Flux Vision and Population density API

Enhance smart mobility in urban areas in real time using population density prediction

A comprehensive and predictive vision of population flows to improve safety, optimize transportation, crowd management or last-mile delivery.

The demonstration presents advanced logistics use of network data aggregated by Flux Vision; the solution developed by **Orange** to analyze population movement. The addition of Population Density API, designed by the CAMARA open source community, and available soon on **Orange** Developer, provides a layer of predictive and dynamic information on population density. Also, its standardized format simplifies the integration process, allowing developers to seamlessly integrate it into third-party applications for transparent functionality.
For example, drone operators can adjust flight paths in real time, avoiding densely populated areas and ensuring safer flights.
In terms of usage, this technology might also interest companies in the advertising, tourism, public transport and security sectors. The public could be made aware in real-time about crowd movements and busy areas during large sporting or cultural events. In the future, this API could, beyond the anonymized data from the Orange network, be compatible with other data from European operators.



C11

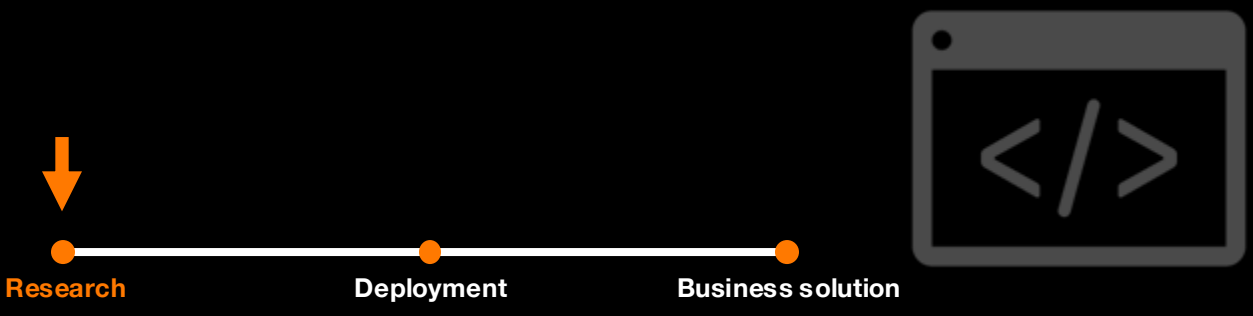
APIs Playground

Orange Direct Carrier billing

Optimize the customer experience to provide a preferred interaction channel for countries

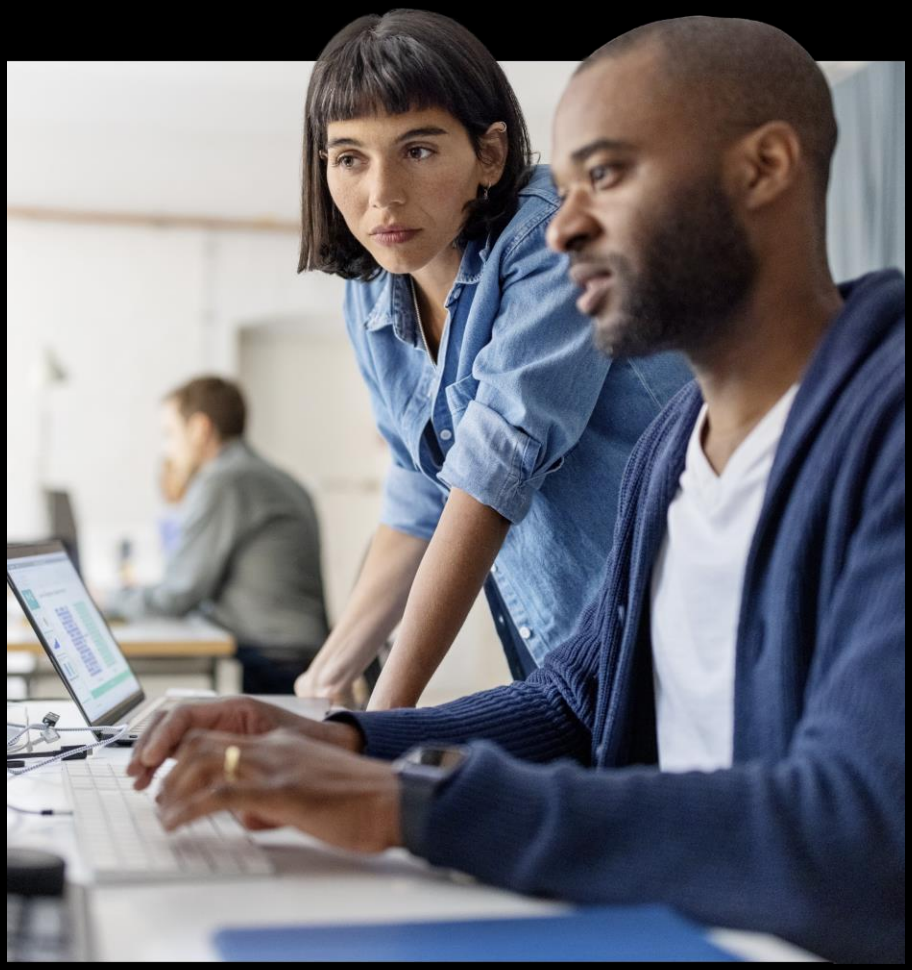
“Orange Direct Carrier billing” now available on WhatsApp.

“Orange Direct Carrier billing” is a service designed for **Orange** mass market customers in Europe and MEA. It facilitates the purchase of digital content using the **Orange** bill as a payment method. “Orange Direct Carrier billing” is currently used by more than 600 third-party services– VOD content, gaming, multimedia subscriptions, etc. – in 24 different countries: Côte d’Ivoire, Burkina Faso, Guinea, Morocco, Jordan, France, Belgium, Spain... This fast-growing market represents gross annual revenue of €720 million. To offer a richer, safer and more interactive customer experience, it will soon be possible to access the service through a WhatsApp chatbot. This new channel provides an enhanced and conversational customer experience within an extremely popular app, especially in MEA. Without leaving the WhatsApp application, customers can securely access their account, view and manage subscriptions, check their balance and purchase history. By enhancing the bot with an additional layer of AI, **Orange's** MEA and European subsidiaries will be able to suggest content, promotions and fully personalized satisfaction surveys.



Adaptative Networks

Automate the deployment of 5G network functions, facilitate connectivity on demand, detect a failure before it happens on fixed and mobile networks with AI: here is an overview of the Adaptative Networks space. This is where the network becomes a services platform on demand, and in real time, for companies and operators. A field where digital twins and AI join forces to improve identification of the causes of incidents, where network troubleshooting is entirely automated. GenAI, OpenRAN, Cloud native solutions, 5GSA, Fiber… The best of Orange's technologies and networks and our partners are waiting for you.



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Orange Goes Green with TelcoCloud

C13

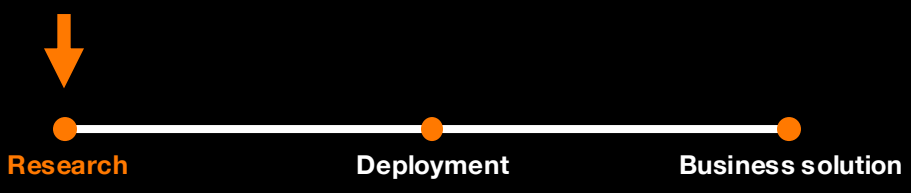
Reduce significantly carbon emissions with infrastructure virtualization

Concrete recommendations to ensure that the TelcoCloud becomes a major lever for decarbonization.

The TelcoCloud involves replacing current equipment based on proprietary technologies with standardized IT servers to host virtualized network functions. This development will impact the entire Orange network in the long term. It is a transformation that could significantly contribute to 2040 carbon neutrality objectives, by adopting the right practices:

- Adoption of an open source model;
- Optimizing applications;
- Sharing infrastructure, for network needs, services and information systems;
- Sharing and automating infrastructure operations.

By leveraging these principles, network virtualisation will significantly reduce the overall carbon emissions of Orange's active network.



Adaptative Networks

Open RAN Reality

Experience and explore the performance and energy efficiency of tomorrow's access network

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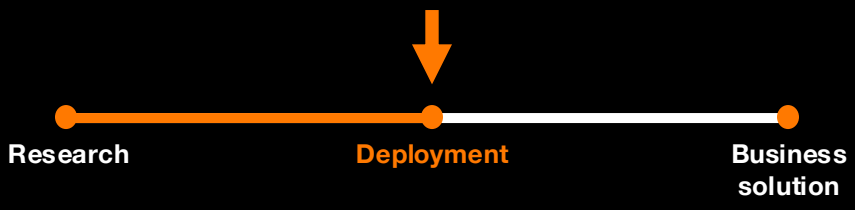
An overview of the more flexible and automated mobile networks of the future for controlled energy consumption.

By separating the software part from the hardware part at mobile sites, Open RAN encourages a more flexible business model. This approach is expanding the ecosystem of suppliers and allows to achieve greater flexibility in the management, deployment and maintenance of the network. Following an initial test phase in Romania, the Open RAN project is now sufficiently mature for deployment in rural zones and well on the way to covering high-density areas from 2026. Fully dedicated equipment could be replaced by more generic IT servers. Boosted with state-of-the-art processors, they are now able to deliver robust performance levels with a smaller number of units. The objective is to provide the same quality of service as the traditional (RAN) approach, with optimized energy consumption and running costs as benefits.



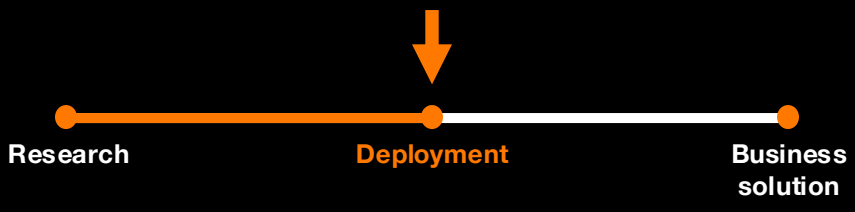
Orange Virtual Network Attachment

Benefit from the immediate and automated connection of my services

C15

Orange Virtual Network Attachment provides a unique network attachment solution that is efficient, flexible and secure for on-demand connectivity services.

Orange is consolidating the quality of its virtualized networks with key account customers and local operators. To dynamically respond to their changing needs – connectivity, security, voice and 5G – Orange has developed a network attachment solution that is an industry first: “Orange Virtual Network Attachement”. It supplements a pioneering Kubernetes-based offer which powers 50 data centers managed worldwide by the Orange group. With a strict brief in terms of flexibility, performance and security, this solution contributes to the operational transformation of “SDN POP” platforms (SDN: Software Defined Network). Technical service migration operations, between these “points of presence” (POP), can be completed easily and in real-time, with no impact on the customer. Open and working along the open source community, “Orange Virtual Network Attachement” is a pilot project with mobile network and network connectivity service operators.



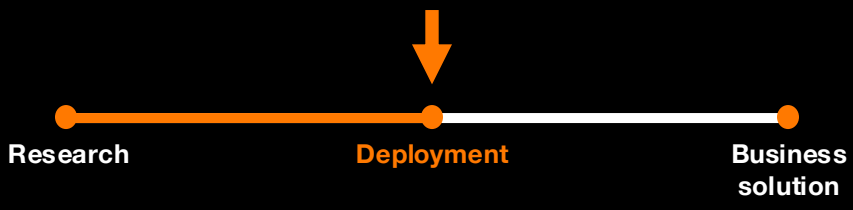
Adaptative Networks

5GCore Intent Manager

Offer API services to Telco As A Platform for simple network functions deployment

An API to boost the automated deployment of 5G network functions.

The deployment of 5G SA services and networks within a software managed Cloud presents several operational challenges. Whether in terms of data volume, complexity or dynamics, increased automation is required at each stage of the whole life cycle, from activation to deployment and maintenance of network services. For this purpose, Orange has developed « RIM » (« Resource Intent Management »), an API dedicated to intent resource management. Thanks to this solution, queries can be translated into executable actions, to enable the instant deployment of network features. This intent-based automated management helps considerably improve operational efficacy and security, whilst significantly reducing errors. The proposed « RIM » solution could be integrated within the « NIF Tooling Zone » project and is foremost aimed at operational teams and operators in charge of the 5G network. This project actively contributes to the Group's transformation pledge for automatic, large-scale deployment of 5G SA services.

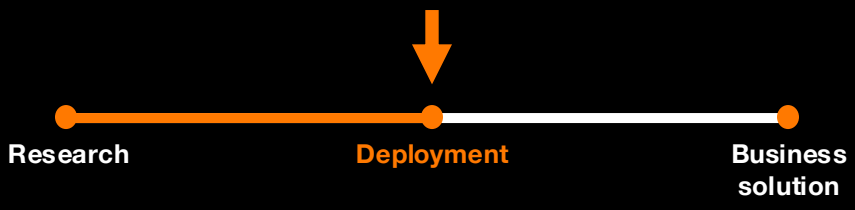


Orange Network Integration Factory

Automate a network and infrastructure function in GitOps mode and ensure security

Discover the benefits of automated and unified cloud network management throughout its life cycle.

The objective of the “Network Integration Factory (NIF) Tooling Zone” solution is to simplify and improve the deployment of Cloud native network functions. It uses the “GitOps” approach which encourages replication of a cloud environment.
The demonstration highlights the main benefits obtained thanks to automation, at the level of the network itself, software and infrastructure. By integrating an open source ecosystem, the solution is scalable and can adopt upcoming technology developments more easily. On an operational level, unified management of third-party supplier networks saves time and reduces costs. This results in improved quality of service for the end customer. Finally, the solution also sets the stage for new offers. In the future, business customers could connect directly via their information system to activate the deployment of network functionalities on demand using APIs.

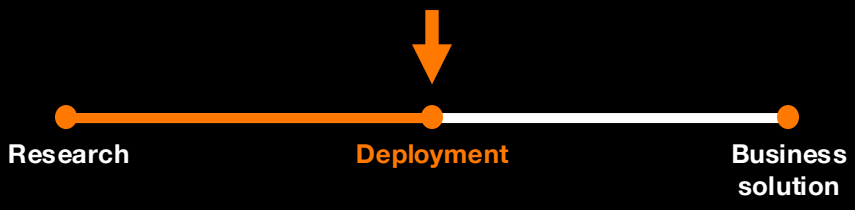


Big Data Native Private Cloud

Revolutionize Data management with Stack Data based on Kubernetes

A Cloud native architecture to meet the big data needs of medium and large companies.

The rise of Cloud, AI and data management technologies is encouraging companies to seek innovative solutions.
Their operational and economic growth is held back by poorly adapted infrastructure: limited scaling up, high running costs and increasingly complex data management... That is why Orange helps medium and large companies to shift to “PaaS” (“Platform as a Service”) for a modern infrastructure, combining performance, flexibility and lower costs. The solution relies on a private native cloud PaaS, which helps easily create and manage complex applications via containers. It also includes two powerful services dedicated to storing, managing and accessing a huge quantity of data. The result? Simplified data management, improved application performance, genuine scalability and controlled costs. The solution is part of a fast-growing market. It helps respond to the needs of medium and large businesses with significant amounts of data to process on a daily basis. Thanks to the solution’s AI functionalities, they can benefit from optimized operational management and reporting.

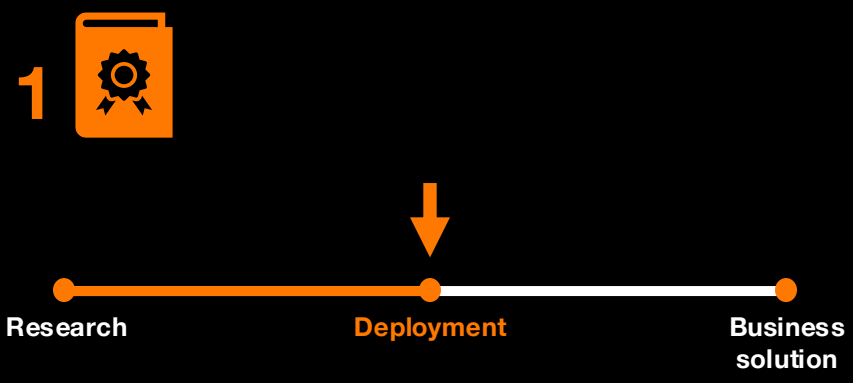


Fiber RootCause AI Ready

Improve the reliability of optical networks and accelerate failure resolution

An innovative AI solution to automate fiber network troubleshooting at national level and reduce technician call-out times.

Orange's technical services handle 50 incidents per day on average, across the entire national optical fiber transmission network. A complex task and a time-consuming process, which until now relied on manually identifying and pinpointing failures. In order to automate the diagnostic phase, the dashboard in the demonstration features an in house developed generative AI system. It allows different alarms to be grouped together effectively and to locate their source. The failure is therefore automatically identified and located, whether caused by hardware – a faulty transponder or amplifier - or purely software-based. This smart dashboard is currently being tested with Orange France and Orange Poland. It guarantees reduced call-out times, helps maintain operational efficiency and improves optical network resilience.

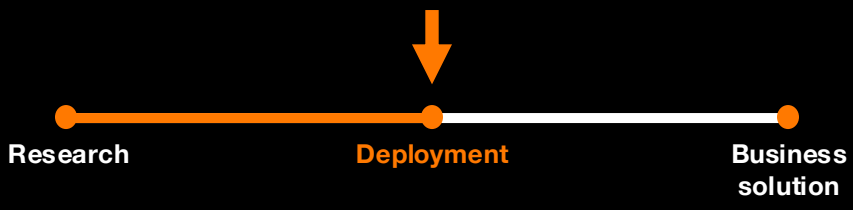


Orange Evolution Platform Journey

Support diverse business models and streamline the integrator experience

By developing its tailored range of network services, Orange facilitates business connectivity in France and worldwide.

Orange is transforming the network services business with an innovative platform. It was designed so that a growing number of businesses can benefit from tailored services. Introduced during OpenTech 2023, attendees are invited this year to discover the latest features of the platform, interacting as an integrator or end customer. The presented innovation is two-fold: completely modular, the solution offers tailored services, adapted to specific needs. Also, regardless of the user profile – an integrator, end customer or Orange employee – they keep control over service management. Based on Cloud native architecture, the solution has already been deployed toward Group business clients in France and worldwide. Thanks to Orange's network infrastructure, it Root Cause offers a global coverage.
In addition to meeting an increasingly wide range of needs, the platform was designed to reduce its carbon footprint and encourage accessibility.

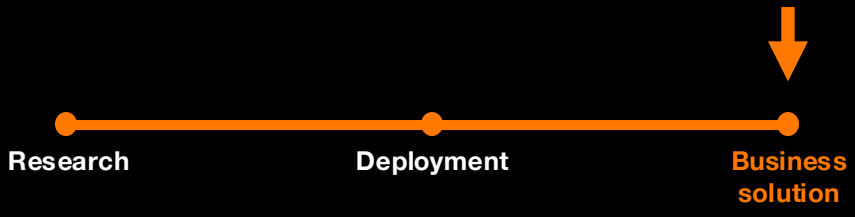


Orange Click

Drive my International Network thanks to APIs and Software Defined Network

This solution is aimed at third-party operators. It speeds up the deployment of an ultra-flexible connectivity solution, in France and worldwide.

The demo presents a one-stop shop transforming the customer experience when purchasing, deploying and consuming a connectivity service worldwide. Using an entirely digital sales journey, third-party operators – on behalf of business end users – can determine the feasibility and pricing of their project in real-time, 24/7. Deployment is then ensured, in France and worldwide, via an extensive global network composed by thousands of private sites. The combination of operated activities in 29 countries, with an automated purchase process makes Orange a unique provider, able to deliver end-to-end aggregated services. These services can be provided in real time thanks to two major breakthroughs. On one hand, aggregation of partner networks, Orange Wholesale and COLT. And on the other hand, by working together with MEF (Metro Ethernet Forum) to define an API standard that streamlines collaboration between partners. In addition to the operational benefits, this new flexibility can instantly modify the customer's bandwidth, in order to meet ultra-precise needs, situations and events.



Huawei Showroom

Innovation powered Network

HUAWEI

C22

Explore the Huawei showroom to discover 5 innovative and inclusive Network solutions including the MEA region.

1. Network Enabling Prosperous Business

5G Labs collaborations in MEA

Cooperating with Orange to incubate future new services such as RedCap and Cloud gaming, and exploring together Sylva solution that bring values to MEA region (5G labs in Senegal, Tunisia, Ivory Coast).

2. Gigaverse MBB Network

Simplified green network and MEA rural solution

Innovating in green and simplified sites to enhance experience, capacity and coverage, such as 0 bit 0 watt, green antennas, and rural solutions in MEA region.

3. Premium FBB Network

FTTR and XGSPON for business growth

Demonstrating FTTR and XGSPON technology evolution with the case in Senegal, Ivory Coast and Congo to support Orange more for more strategy and provide premium home broadband experience.

4. Cloud + AI + X

HCS empowers MEA mobile money and B2B

Building Network + Cloud + AI + X Model and taking MEA Mobile Money and B2B as key services to support the evolution from Telco to Techco.

5. AI for Network

MEA CEO dashboard and GNOC Valuable scenarios

MEA CEO dashboard: Unified intelligent digital platform for smart experience & precise marketing.

GNOC Valuable scenarios: GNOC Africa bring value to customer such as carbon decrease and revenue protection through Zero Touch.

Adaptative Networks

GenGraph RCA

Harness digital twin AI and GenAI to revolutionize operations

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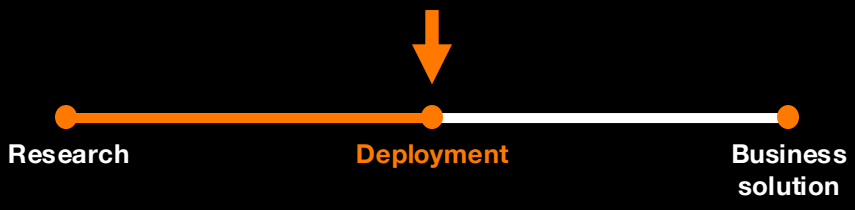
Efficient use of digital twins with Graph technology and generative AI to optimize proactive analysis of network incidents.

As a trusted Telco player, Orange must ensure continuous and efficient maintenance for the entire network. Analyzing thousands of alarms to understand their source is a complex task today. With this demonstration, discover how a digital twin solution using generative AI and graph techniques can improve the “root cause analysis” (RCA) of incidents in mobile networks. This demonstration illustrates how our system, triggered by critical events, proactively displays:

- Failing nodes and their impacted connections;
- A summary of essential KPIs;
- Relevant alarm sequences;
- Incident history on affected nodes, based on our end-to-end topology

This innovative approach aims to improve monitoring, maintenance, and root cause analysis (RCA), this enhancing network reliability in an unprecedented manner.

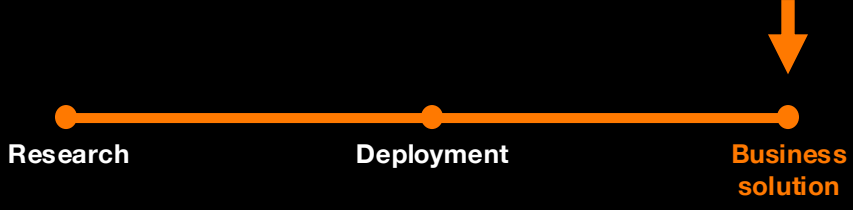


Internet Everywhere

Deliver flexible internet access with Fix and Mobile networks and backup

First-class, reliable and secure business connectivity, to meet the growing needs of small and medium-sized businesses.

Setting up custom professional network infrastructure in Slovakia is a complex and time-consuming process. That's why Orange Slovakia developed a tailored offer for small and medium-sized businesses. Since the end of 2023, these companies have been able to take advantage of a local fixed 5G infrastructure (or FWA for « Fixed Wireless Access »). Six plans are available, offering a range of premium benefits: fast access up to 600Mbps, an automatic fixed IP backup connection in the event of an outage, and protection against “DDoS” attacks designed to saturate the network. This approach has already won over more than 750 companies. As 5G coverage expands across the country, Orange should be able to connect even more professionals, including the self-employed and micro-businesses.

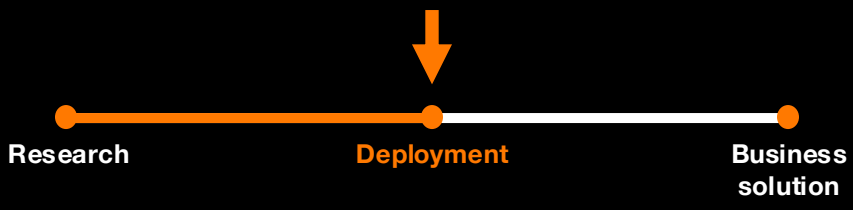


GenAI Slice

Secure access to GenAI tool with 5G slicing and edge computing for performance and reliability

Orange offers secure end-to-end mobile connectivity to its business customers, with guaranteed speed for the use of AI services.

Businesses are increasingly using generative AI to process sensitive data on a daily basis. And they need effective and confidential connectivity to enable their employees to use these types of services on their smartphones. Offering end-to-end confidentiality from the device where the documents are stored through to the company's AI application is a major challenge. In order to specifically tackle this challenge, Orange will allow its business customers to benefit from 5G SA connectivity from 2025. By combining network slicing and the installation of a 5G termination deployed on the company's premises through edge computing, Orange will be able to provide a professional and confidential workspace on employee smartphones. Isolated from end-to-end, the service will benefit from a minimum guaranteed speed. To illustrate this innovation, the demonstration relies on the mobile use of Dinootoo, the Gen AI interface developed by Orange. This 5G expertise that demonstrates the Group's expertise in connectivity supporting AI. From 2025, the solution will be available for Orange France and Orange Belgium B2B customers, then subsequently in all countries where the Group operates.

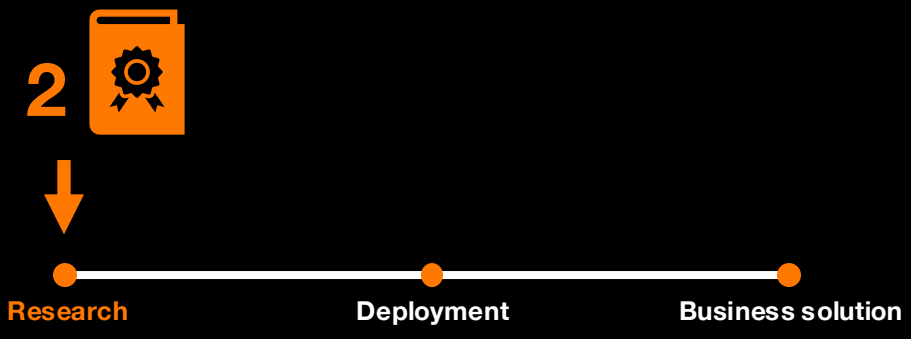


Cloud-Native Telco Observability

Monitor 5G core with its protocols to optimize the performance with AI

5G SA network supervision helps anticipate signal degradation and provides maximum quality of service to operators and business customers.

This two-part demonstration features a powerful 5G SA network supervision tool deployed in a Telco Cloud environment.
This platform is able to anticipate deterioration of quality of service. It helps optimize network performance and resource consumption, by training artificial intelligence models dedicated to predicting anomalies and leveraging collected data. One part of the demonstration presents the platform's dashboard, highlighting anomalies and data related to energy consumption. The second part showcases automated deployment of the solution. Integrated in the most compliant fashion to the network requirements of Orange subsidiaries, third-party operators and business customers, it saves the cumbersome and costly deployment of an external monitoring solution. Orange is one of the very first European operators to propose this solution. As an API service, the solution could be sold to helm the emergence of innovative services and tackle new use cases.



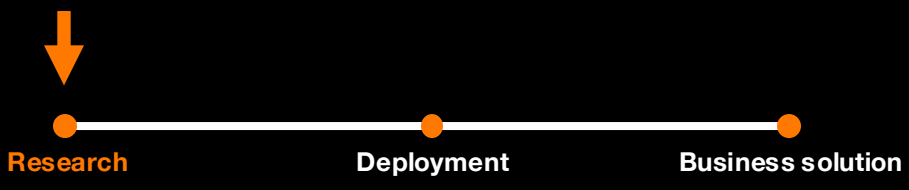
5G GenAI Assistant

Simplify the management of cloud-native network

The new generation of generative AI to simplify 5G network management.

The integration of generative AI can help telecommunications operators when managing network services and infrastructure. Orange has developed an AI-powered smart assistant, who is helping teams to easily and effectively manage the 5G network life cycle.

The demonstration presents a graphic interface which includes a large language model (LLM) and several smart agents. This interface helps convert text queries into specific actions. For example: “Create a cluster for me to host the network service”. The tool will then deploy the requested cluster.
Via the same interface, it will also be possible to deploy the 5G service hosted by the cluster. The tool also offers a monitoring interface, which helps ensuring actions have been successfully carried out. This streamlined approach allows to hand the controls of network management over a larger portion of telco professionals. There are many potential benefits: simplified network management, greater efficiency and reduced operational costs.



Startup Challenge : Enabling non-terrestrial and hybrid networks

Get onboard the “New Space” with Orange

Open Innovation to foster innovative solutions for non-terrestrial and hybrid networks.

Non-terrestrial and hybrid networks are essential for Orange. They both respond to the need of capitalizing on existing infrastructure, by developing new capacities for our networks.

And they are key to improving the customer experience, by offering extensive and ‘seamless’ network coverage for B2C and B2B clients. Convinced that Open Innovation creates a dynamic that encourages innovation, Orange organised a challenge to identify startups with whom to co-innovate in the “New Space”, an ecosystem created to identify new levers for growth. Network optimization, global roaming, IoT connectivity, space infrastructure management... Several key areas for collaboration have been identified in the field of satellite communications. For Orange, this is an opportunity to experiment with new solutions for the Group's satellite services, which will enhance its offer. As for the startups, they will benefit from a platform for testing and marketing their innovations, enabling them to develop more rapidly. Startups challenge winners will be present at Orange OpenTech 2024.

Kerys Software

A secure virtualization solution dedicated to AI applications

Sharing resources dedicated to artificial intelligence within a secure environment.

AI requires powerful servers and GPUs (“Graphics Processing Units”) dedicated to data processing. The technological challenge for telecoms operators is twofold. On the one hand, AI must facilitate the lifecycle of network services, from activation to maintenance. On the other hand, B2B customers need to exploit these resources for their own internal or external needs, in a highly secure environment. By virtualizing the administrator workstations dedicated to managing IA servers in a secure way, Kerys Software meets precisely these essential needs. The benefits are manifold: secure mutualization of IA service management, a reduction in the number of dedicated workstations, optimized performance and cost control. Orange OpenTech is an opportunity to present Kerys Software. This Startup provides the answer to a major operational challenge in the deployment of AI within companies: the mutualization of operational and CVM (“Customer Value Management”) resources.

FlexAI

Bringing diversity to the world of Artificial Intelligence processors

How to optimize the efficiency of Artificial Intelligence cloud infrastructures and reduce the associated costs for our customers

Flex AI simplifies and reduces the work to set up and maintain GPU servers. The solution features an innovative platform that simplifies and optimizes the management of AI computing infrastructures (GPUs). With this solution, we can make GPUs 100% effective, by reducing the times allocated to the initial setup time and regular maintenance. The tool can also allow billing based solely on real calculation time, offering a significant financial advantage, given the high investment costs for this type of equipment. This software solution, compatible with various GPU models, also facilitates the choice of the most appropriate hardware available on the market. These combined features promote optimal cost management for this equipment, which is now essential for anyone wishing to enter the field of artificial intelligence. This solution could eventually be integrated into Orange networks and its business customers.

Future of Interactions

Connect directly to a chatbot via a simple QR code thanks to RCS, turn your smartphone into a contactless payment device, explore the potential of a new smart assistant that helps you find information... This is what awaits you in the Future of Interactions space. Many innovations supported by technologies like generative AI and the cloud, which promise to revolutionize the customer journey, streamline interactions and the sharing of knowledge within companies, and pave the way to new prospects in many industries.

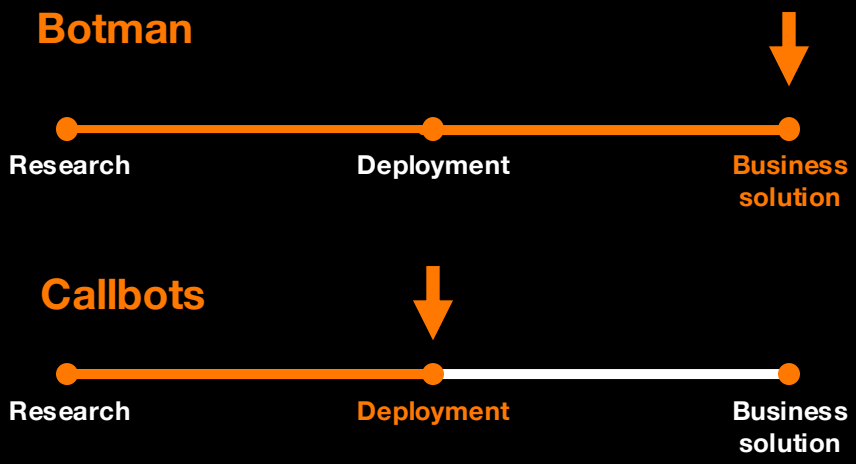
@Orange #OpenTech

Orange Bot Collection

Elevate the online experience and customer engagement with Chatbot and Voicebot

Botman and Callbots are intelligent development platforms that contribute to the next generation of customer journeys.

Launched in France in 2017, “Botman” shifted up a gear in 2024 with deployment in MEA countries. This bot orchestrator was developed by Orange and recommended by the internal Fédération IT. It simplifies the implementation of intelligent bots. This powerful solution serves as an intermediary between WhatsApp, Facebook Messenger, web and mobile app portals and bot engines – Rasa and Smartly – as well as Customer Service platform suppliers – Ringcentral and Liveperson. Artificial intelligence is also used. Chat optimization using OpenAI’s LLMs, combined with the expertise of Orange’s AI Virtual Agents and the Data Factory, improves customer relations. A goal also shared by the second solution in this demonstration. The “Callbots” project allows the bot to be used as a voice chatbot on a customer hotline, using the same bot engines as “Botman”. This voice bot can be entirely configured by API. These chatbots can reply naturally to the customer’s spoken questions. As an example in Africa, Callbots are currently meeting the needs of the company OCP Africa. Callbots can also be created to answer farmers’ questions: crop techniques, water management, regulations, etc.

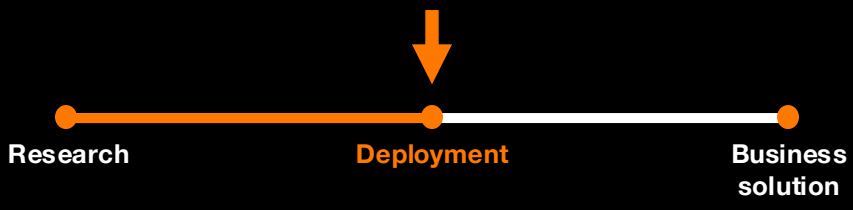


Orange RCS Touch

Instantly get in contact with a brand

Thanks to RCS technology, discover an enhanced customer-brand relationship using a simple QR code or web link.

In partnership with **Google**, **Orange** demonstrates the major shift in business messaging. This demonstration, carried out with partners Greenbureau and Floa, illustrates instant networking between a prospect and the chatbot of a banking service via QR code or a simple click. This type of “P2A” (person to application) interaction benefits from operator network compatibility with RCS (Rich Communication Services) technology, thanks to Orange experts. This messaging standard adopted by Google improves chats between groups of people, but also instant transfers of multimedia files. This degree of interaction, combined with the diverse contact methods – web page, poster, shop window, dedicated terminal, website, application – make it a powerful means of customization, targeting and retention. These different contexts will be tested during the demonstration. RCS is a fast-growing market, with 25 million Android smartphones in France. A trend that should continue with the protocol’s adoption on iPhones.

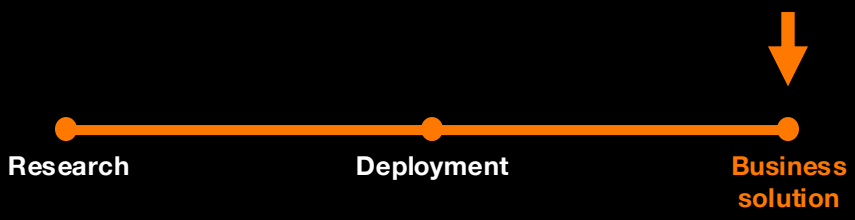


Tap to Pay Ready

Accept customer mobile payment instantly

With Tap to Pay, turn your smartphone into a convenient, cost-effective and secure contactless payment device.

In the era of contactless mobile payment, queuing in store is a waste of time that spoils the shopping experience. “Tap to Pay” is an effective response to streamline the payment process. Customers can choose their product directly via the sales assistant’s smartphone, equipped with the “Tap to Pay” application, and also pay on the same terminal. They can do so either with their payment card or their mobile phone’s a digital wallet. Customers can then pick up their product, with digital proof of purchase, without needing to go through the checkout part. The app is particularly suitable on Crosscall devices, a manufacturer of shock-resistant smartphones and tablets adapted to all sales environments. Available on Android and iOS, “Tap to Pay” offers a unique and complementary payment method which allows retailers to simplify their operations and not necessarily invest in a dedicated payment terminal.

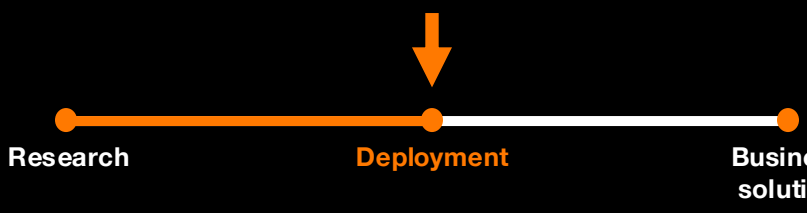


Teleportshopping

Promote inclusive, frugal purchasing and payment solutions while maintaining stable fixed costs

TeleportShopping is a phygital solution to maintain human interaction with consumers.

The e-tail growth has impacted traffic to physical stores, but also the important relationship between customers and sales assistants. Through two connected “windows” supplied by our partner La Vitre, “TeleportShopping” puts sales assistants in touch with customers, as close as possible to where they live: markets, fairs, exhibitions, airports, stadiums, cultural events and venues... The sales assistant can show the real product or a 3D model, providing an augmented sales experience. This maintains the core relationship between sales assistant and their customer, even though it is taking place remotely. The instant purchase is made possible by the integration of the “Contodéo Scambio” payment solution, which was showcased during the Orange OpenTech 2023 event. This new QR code payment system is smooth, simple and secure. The product can be collected shortly afterwards from a store nearby, using proof of payment. This new innovative shopping experience is made possible thanks to Orange’s high-speed networks.



Customer Value Management

Deliver a scalable data analytics with data Lakehouse

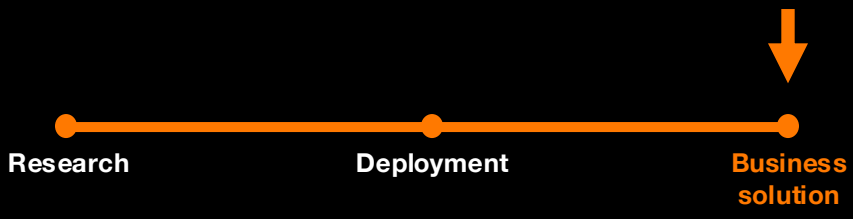
A powerful data processing solution to support the modernization of existing Cloud architectures.

In order to improve customer satisfaction, telecom operators need Cloud architectures with cutting-edge artificial intelligence, data storage, management and analytics capabilities.

The demonstration shows an open source solution designed to integrate seamlessly into existing Cloud structures, optimizing flexibility, customization, compliance and cost-effectiveness.
It is based on 4 key features:

- Unified data management, to provide a global view of operational and customer data;
- Real-time, predictive data analytics to support corporate decision-making;
- AI models, which will be used to anticipate churn, optimize network quality and improve the customer experience;
- Customer Value Management that enables personalized engagement strategies.

Targeted at Orange's various subsidiaries and operator partners, the solution has strong revenue potential. Implementing AI-driven services will reduce operating costs while improving customer satisfaction.

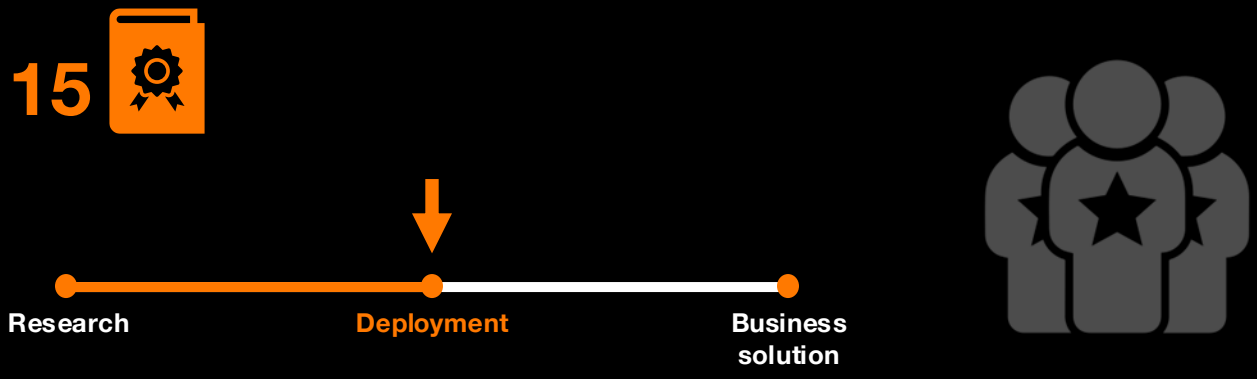


LiveWubble

Improve employee productivity and quality at work with proactive AI

A proactive AI system that detects, enhances and simplifies real-time access to essential employee documents, in any application.

“LiveWubble” is a patented application, designed to help employees access information proactively. This smart assistant is installed on a computer. It detects and analyzes what is displayed on the screen in real-time to suggest different actions, accessing installed softwares on the computer. It also automates tasks and provides additional information. Introduced during Orange OpenTech 2023, “LiveWubble” has since won over OpenBee, a company specialising in document management. This year's demonstration is based on a practical case study carried out in partnership with this company: the assistant detects invoice numbers shown on the screen and can instantly access all the associated documents. The user no longer needs to trawl through numerous tools and services to access the information. A real time-saver that can also be used in other ways: training employees, promoting educational resources in a school environment, cybersecurity, etc. “LiveWubble” complies with requirements in terms of data security and GDPR, and guarantees local data processing on each employee computer.

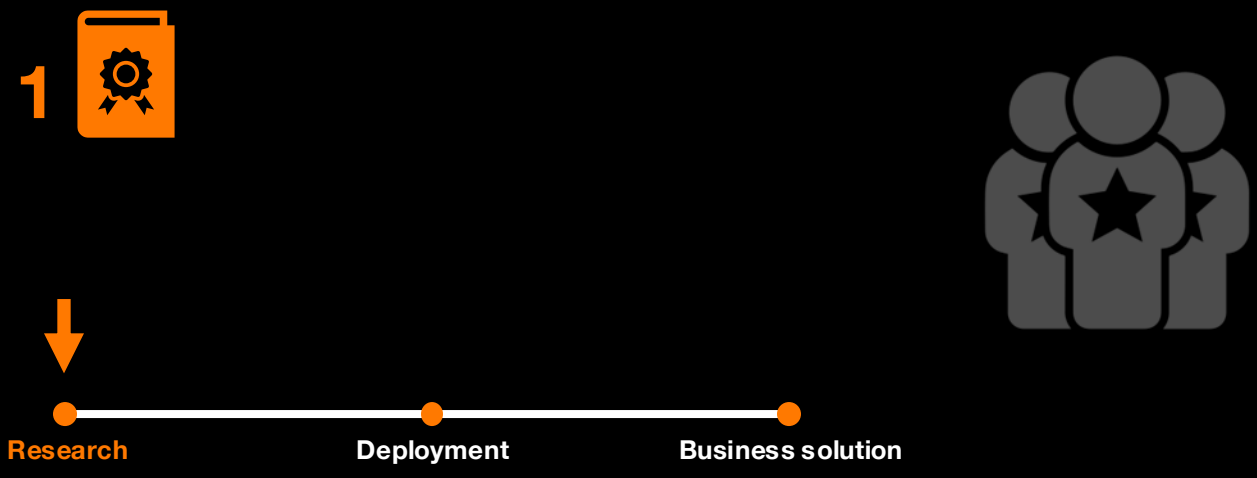


Telcograph

Unleash the organization's collective intelligence

Telcograph is a platform designed to facilitate the sharing of knowledge and collaboration within the Orange group.

Generative AI tools are evolving rapidly, playing a bigger role in our daily lives. “Telcograph” was designed for businesses to harness the sharing of knowledge. Based on a knowledge graph, “Telcograph” facilitates the use of data and centralizes the Orange group’s expertise. Using an intuitive interface, it is possible to share, edit and export content, but also make requests in natural language thanks to the integrated generative AI system based on Graph RAG (“Retrieval-Augmented Generation”) technology. It has never been easier to access the skills, the applications and the knowledge across a whole company. Designed by Orange teams for internal use, “Telcograph” has significant market potential as the solution is aiming to foster collective intelligence within organizations, by optimizing collaboration, operational efficacy and decision-making.



C34

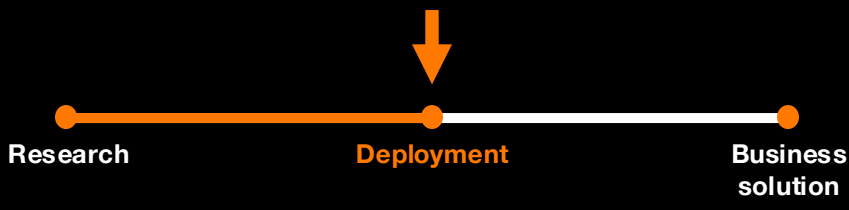
Future of Interactions

Orange flex GenAI Bot

Explore how answers customer's questions uncover behind the scenes

A virtual assistant trained by generative AI to deliver the most efficient and responsive customer service possible.

The main goal of this smart chatbot is to become the first point of entry for Orange Flex customer service in Poland. Being able to deal with the most common questions, this assistant aims at covering 15% of the overall flow of requests by 2025. Based on Gemini, Google's generative AI model, the bot is integrated into the 24/7 chat of the "Orange Flex" application. The AI is trained to efficiently handle an increasing number and variety of queries. This solution optimizes customer satisfaction by providing answers instantly, without having to wait in line. It also helps to reduce operating costs and can be used at multiple stages of the customer journey, from account creation to online assistance with using services and products. And if the virtual assistant is unable to respond, the customer is referred to an advisor. It is the first solution of its kind on the Polish market and could well be replicated by other Group subsidiaries.

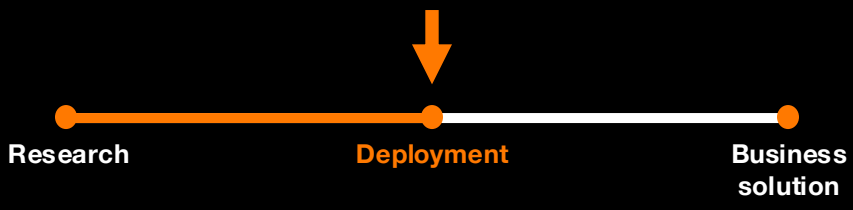


Orange Basic Assistant IAGen

Enhance customer satisfaction with IAGen to support colleagues during sales conversations

A search tool boosted by generative AI, helping customer advisors in their tasks.

Support advisors are essential for maintaining service quality and customer satisfaction. To assist them in their efforts, Orange is one of the first telecommunication operators to invest its AI expertise in the field of customer relations. The present solution is a first step toward an ambitious project. It is based on LLMs to improve the quality of provided information to the customer, helping the resolution process. The benefits? Improved service quality and greater autonomy for advisers; customer calls are much more effective, with a positive impact on customer and employee satisfaction. Further advanced functionalities are planned.
For instance, the advisor will have the ability to access the summary of previous conversations and obtain personalized suggestions in real time. The AI solution developed by Orange teams is being closely monitored by the Compliance, Ethics and Security Committee. After a test phase, it will shortly be deployed across all Orange customer services in France.



Starline Project

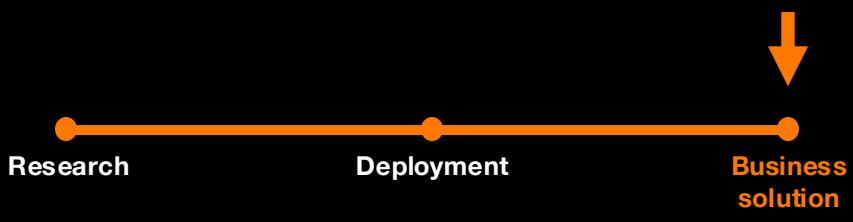
Discover a New Communication Technology

Project Starline is a communication technology that combines advances in hardware and software to enable friends, families and coworkers to feel together, even when they're cities (or countries) apart.

Using advancements in computer vision, artificial intelligence, spatial audio, and real-time compression, Project Starline presents an entirely new way to connect.

The effect is the next best thing to having a face-to-face conversation.

Learn more at starline.google



C37

Future of Interactions

Africatik

High tech for high learning

An educational digital platform that facilitates access to education for everyone in Africa and elsewhere.

Launched in 2019, Africatik is an educational digital platform. The solution offers various applications providing educational content, from reading to math learning, introduction to science, art and music. Children and parents alike have access to high-quality and playful learning content from their smartphone, tablet or computer. There is a particular focus on accessibility: the user interface and experience was designed to be fun and accessible, with 25 languages supported. Available across 14 countries in Africa, as part of the Orange Foundation's Digital Schools and Digital Centers Programs, its aim is to widen access to knowledge. Africatik was also supported by Orange Fab via the Women Start program in 2023. This helped the solution being part of Orange's consumer offer in the Democratic Republic of the Congo in July 2024. A service that will also be proposed to business customers. By the end of 2024, Africatik will be available in Orange's "Max It" app in Senegal and the DRC, before being deployed in other MEA region countries in 2025, notably Côte d'Ivoire, Mali and Morocco.

Ringover

Reinventing the customer relationship

A SaaS solution to manage customers and prospects relations more effectively.

Ringover offers unified multi-channel communications, sales prospecting and CRM solutions that are ready to use for small businesses. Via simple interfaces, independent workers and SMEs can oversee and control communications with their customers in real time, through tools and performance indicators. Ringover also offers APIs for connection to existing CRM solutions. This Startup has developed an Artificial Intelligence solution, enabling companies to boost the performance of their teams and save time, through automated calls transcribing and summarizing. Orange Ventures, convinced of Ringover's potential, invested in the Startup in 2023 during a fundraising round to enable it to benefit from the Orange Group's technological expertise and knowledge of the B2B market. A joint Orange - Ringover offer is currently being studied to strengthen the professional relationship between small and medium-sized businesses and their customers.

Augmented Enterprise

Test the new multi-LLM smart assistant for companies, discover an AI-powered digital twin that assists maintenance technicians at work, track forklifts in real-time on an industrial site thanks to 5G SA… The Augmented Enterprise space immerses you in the heart of Augmented Enterprise. Come and explore how the integration of networks and technologies like AI, augmented reality or spatial computing can reinforce the security, efficacy and productivity of companies and industrial production lines.

@Orange #OpenTech

A journey designed to explore the augmented enterprise

Through its tech expertise, Orange enables traditional, industrial and logistics businesses to boost their productivity, efficiency and operational maintenance. To explore these emerging solutions, Orange OpenTech invites you to follow the dedicated Augmented Enterprise pathway. Discover our latest technical and software breakthroughs, based on 4 key technological pillars:

- **The augmented operator: how augmented reality, generative AI and digital twins increase productivity, precision and access to business knowledge tenfold;**
- **Optimising on-site logistics: how 5G technology and IoT are being harnessed to meet today's logistics needs;**
- **Performance management assistance: how AI can facilitate access to business knowledge and accelerate documentation tasks;**
- **Optimising maintenance operations: how AI, IoT and digital twins can be used to support predictive maintenance and optimise production chains.**

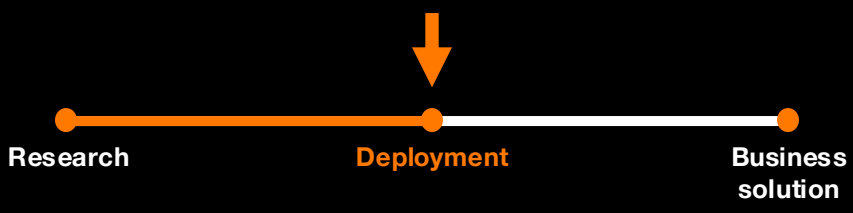
@Orange #OpenTech

Networks AR Visualization and Guidance

Assist a technician during an intervention on the network infrastructure

Augmented reality to assist technicians during maintenance work in the field.

Orange has developed an application that combines augmented reality and digital mapping of the entire telecom network. With a smartphone in hand, the demonstration puts you in the role of a maintenance technician: the surrounding infrastructure is superimposed over your field of vision. This network digital twin reveals the location of cables, rooms and network cabinets and the instructions to follow: the section to repair, the cable to install or remove. In a subsequent version, the application will be able to display cable speeds, availability and ends. This solution brings tangible benefits in terms of maintenance and efficiency. For the end customer, it ensures shorter call-out times.
The project has been part of several innovative internal initiatives: digitalization of mapping data, development of an augmented reality engine in Unity, as well as a precise location component. Beyond Orange teams, this solution might interest civil engineering companies or other network operators (gas, electricity, water, etc.).

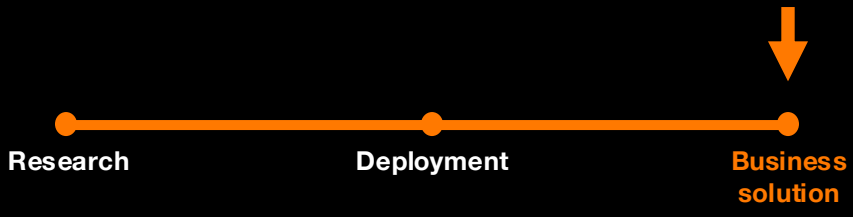


Live Intelligence

Optimize team operational efficiency with Generative AI

With Live Intelligence, Orange is launching a generative AI solution to improve the performance of all sizes of companies.

Based on a solution developed and tested for over a year with Orange employees, the new version of “Live Intelligence” is proposed to businesses as SaaS. This handy system includes the latest advances in generative AI: OpenAI, Mistral, Google, Anthropic etc. The demonstration is an exclusive opportunity to explore these new functionalities. “Live Intelligence” helps develop knowledge and improve performance in a large number of tasks. By uploading documents on the platform, everyone can benefit from instant and completely confidential data processing. “Live Intelligence” allows you to get a text summary, a translation or important information in no time at all... Finding precise information within a personal document database becomes fast and intuitive. “Live Intelligence” also offers excellent advice to organize a presentation, speech, email or interview. Even computer code is part of its language. Feel free to ask it any questions you might have!



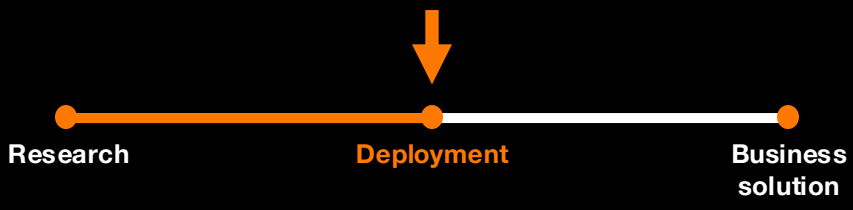
C40

5G SA indoor localization

Track connected devices in Industrial environments like warehouses or production facilities

5G technology to boost productivity at industrial and logistics sites.

Automated forklifts are essential in industrial and logistics facilities such as warehouses, factories and sorting centers. Optimizing the performance of these forklifts improves site productivity. This demonstration showcases an industrial application of 5G SA. The solution, co-developed by Orange, Ericsson and Nokia, is a major innovation. It enables real-time monitoring of 30 to 50 automated forklifts, each equipped with 5G IoT gear. This precise monitoring can quickly locate lost or out-of-service forklifts. The data collected also helps to calculate the time needed to complete tasks between point A and point B, in order to optimize routes. 5G makes this overview possible, with precise tracking in real time. Deployed at Continental Automotive's plants in Romania, the solution has also attracted the interest of a port operator. It will be able to be integrated, in the form of APIs, within logistics and industrial environments.



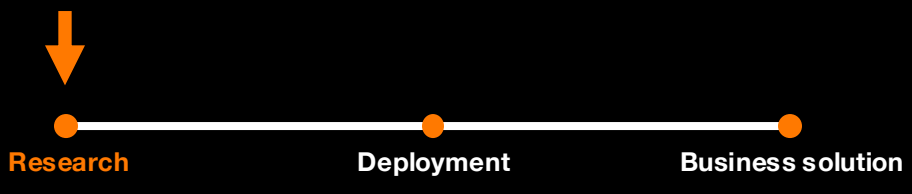
Augmented Enterprise

AI for smart maintenance

Reduce production breakdown and team's mental load

Artificial intelligence for maintenance in industry to reduce breakdown times/rates and the impact of servicing.

In industry, maintenance must be transparent to optimize production line performance. A machine breakdown reduces productivity and incurs extra costs. Relying on an advanced mix of technologies developed by Orange researchers and IT/OT experts – cutting-edge predictive and generative maintenance, digital twins, spatial computing – the solution delivers a more effective maintenance. By using machine tool operating data, operational teams will be warned of component wear. This automated management will allow the optimization of the whole production line, implementing adapted solutions before a breakdown will occur: scheduling spare parts orders, shutting down the machine for maintenance and adjusting production plannings. The solution will have a knowledge base shared by several industrial sites to strengthen predictive maintenance management. Natural language queries will help instantly identify a part reference and its availability. Maintenance operators will receive remote support and information. Through this demonstration, Orange shows its ability to reduce breakdown rates and downtimes, whilst empowering operational teams on site, in order to improve production performance.



5G Edge Industrial Detection and Alert

Optimize production, data collection, network virtualization, generate with AI algorithm

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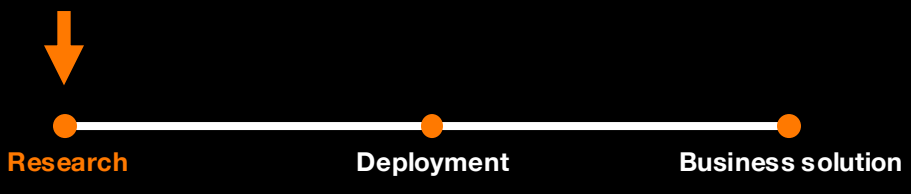
This solution improves the efficiency of industrial production lines by combining 5G, AI and virtual networks.

Industrial production machines are increasingly complex and automated. The operator supervising them must be constantly vigilant and regularly on the move. The demonstration presents a hybrid system, combining private 5G connectivity and artificial intelligence to make production line supervision easier. In partnership with Ekinops for on-site equipment and DeepHawk for the AI model, the solution will be deployed in early 2025 at the Prolann factory, which produces machines aviation parts. The site operator will be informed in real-time of the status of different machine tools and will be able to take action in the right place at the right time. As the service is local, no sensitive data leaves the site, which ensures total security for industrial clients. This approach improves efficiency and reduces production costs. Thanks to its combined expertise in networks, AI and 5G, Orange demonstrates its ability to quickly deploy new services for the industrial, agricultural and logistics industries.

An innovation that could be deployed at fixed sites and on moving vehicles, like a public bus or farming machinery.



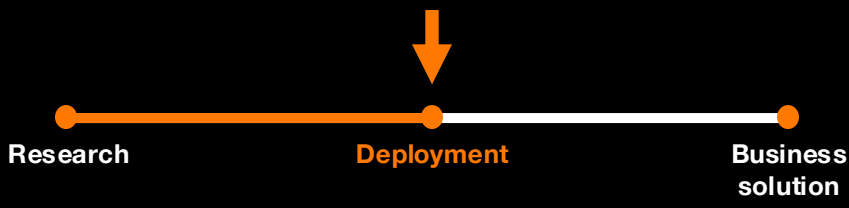
Drone Data Vision

Optimize my unmanned Aviation missions with Telecom Data

Intelligent mobile data processing brings together the telecom and aviation sectors to deliver a useful and innovative solution.

Drone operators can take advantage of mobile connectivity to optimise the navigation and safety of their activities. This is where the "Drone Data Vision" project comes in. Led by Orange Poland in collaboration with Farada Group (a drone manufacturer) and Dimetor (which uses mobile data to facilitate aerial navigation), the project has a dual objective: to model airspace in near-real time and to provide anonymised data on the population density of overflown areas. This could help strengthening the safety of drone flights. With this project, Orange is positioning itself in a market valued at €1.7 billion*, covering a wide range of use cases: surveillance of industrial and critical sites, maintaining security at large gatherings, rescue and humanitarian aid missions, etc. This innovative concept aims to offer a secure system that respects the sensitive data of mobile network operators.

*Source: Bonafide, Research & Marketing, 2023: "France Drone Market Overview, 2028".



BrainBox AI

How AI can help controlling the energy consumption of buildings

A genAI solution dedicated to intelligent management of company buildings.

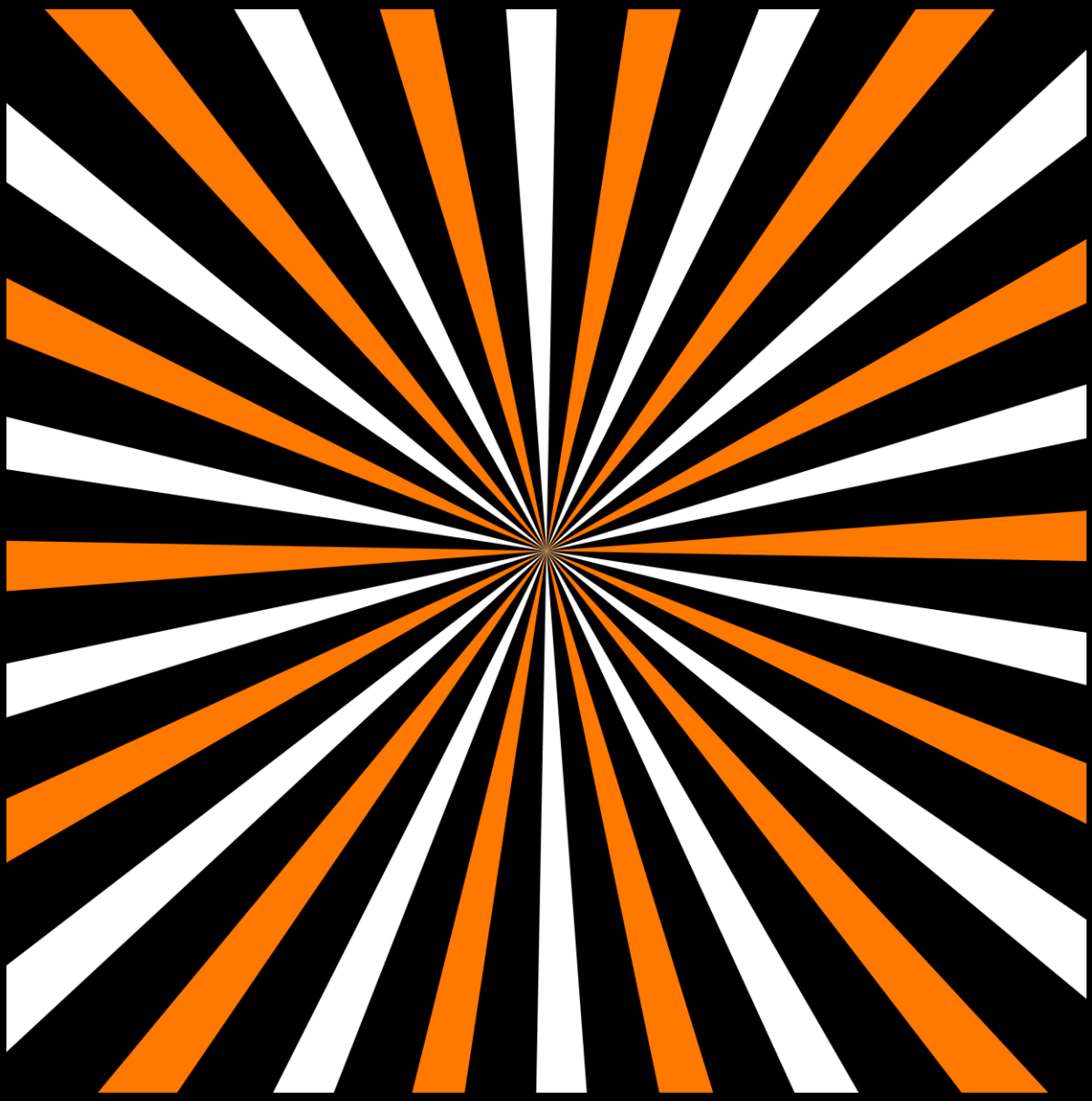
Based in Montreal, BrainBox AI is a “scale up” specializing in optimizing the energy consumption of buildings, including offices, hotels and retail premises... In order to reduce their carbon footprint, the BrainBox AI solution is able to connect directly to building management systems (BMS). It collects, analyzes and makes recommendations based on the location’s exploitation data and situation, taking parameters into account such as occupancy and exposure, as well as weather conditions. Thanks to its artificial intelligence technology centered on heating, ventilation and air conditioning, building management can be optimized, which helps reduce energy costs and carbon emissions. In 2024 BrainBox AI launched an AI assistant for building managers. Currently deployed in several Orange offices in France, the solution could be added to the Group Smart Eco-Energy offer dedicated to key accounts.

Orange Intellectual Property

Drive Intellectual Property as an innovation leading force

Patents, copyrights, outstanding codes, open source licenses... Orange's Intellectual Property creates value and revenue for its innovation.

Intellectual property demonstrates the dynamics of the innovation featured by Orange. With over 10,000 patents in its portfolio and one new patent filed every day, Orange leads the race of IP in Europe. Licensing, transferring technologies, partnering… Orange makes the best of its technologies available to more than 2,000 manufacturers worldwide. This activity, co located with the Research team, supports Orange Innovation and by mirroring the orientations of the strategic plan "Lead the Future". As a matter of facts, Intellectual Property management is also an international business by itself and generates high value income. In this Orange OpenTech edition, you will also discover that intellectual capital also means copyrights, which apply to the company's software developments. The strong development of software in our networks and the importance now of digital applications empower new "authors" in our digital ecosystems, much more than what we could expect or imagine!



Talks

@Orange #OpenTech

Onboard the next evolution in networks with quantum computing, measure and reduce the environmental impact of AI, make your smart home even smarter thanks to LLMs, grow with an open innovation mindset to develop relevant tools... For the whole duration of Orange OpenTech, you are given free access, every hour, to 30-minute Talk sessions. You are invited to decipher (through "Decoding sessions") or explore ("Deep Dive sessions") a theme of your choice and discover new use cases, through 14 Talks led by experts and researchers.

Talks - Decoding sessions

Designing frugal AI: can we limit its environmental impact?

What is frugal AI? How do you measure the environmental impact of AI? What can we do to reduce it and meet the challenges of responsible AI? These are just some of the questions this Talk session addresses.

The Sylva project: a pillar of the cloud native transformation

The softwarization of networks is a challenge for telecoms operators. To meet this challenge, Telcos have joined forces around the Sylva project. Led by the Linux Foundation, Sylva provides the components that enable operators to build the pillars of a flexible, high-performance native cloud architecture. Find out the ins and outs of an initiative that's shaping the future of networks.

Tock: an open source Chat Bot to support Cloud transformation

Find out how Orange is contributing to the development of an open source solution, initially dedicated to customer relations, to meet its operational needs. Developed by the SNCF, 'Tock' ('The Open Conversation Kit') was selected by Orange through TOSIT, an association of major French companies gathered around open source solutions. The aim is to use 'Tock' to enhance the collaborative working and autonomy of Orange France's IT teams. This Talk session invites you to find out more about the virtues of Open Innovation.

Orange and the open source community: a win-win relationship

Discover Orange's commitment to open source solutions. This Talk session is an opportunity to discuss various use cases with partners and customers, particularly in the field of maintenance and customer support. This approach enables Orange to contribute to Open Innovation, with open source solutions guaranteeing a level of service equivalent to commercial software.

Why TikTok doesn't lag?

Video streaming platforms such as Netflix and TikTok need to offer a 24/7 fluid and secure experience to attract and retain subscribers. They depend on the quality and reliability of the networks...
During this session, you will learn more about the challenges that OTTs ("Over-the-top" services) and ISPs face in delivering video content to end users...

Can generative AI make your home even smarter?

As generative AI makes its way into our homes, the very concept of the smart home is being redefined. How can LLMs ("Large Language Models") transform homes into intelligent environments, capable of adapting and reacting to the needs of their inhabitants? That's what this Talk session is all about.

Enabling non terrestrial and hybrid networks

Who are the winners of the "Enabling non terrestrial and hybrid networks" challenge?
To strengthen its ecosystem, cultivate open innovation and stay one step ahead, Orange invited 3 startups to present their vision of non-terrestrial and hybrid networks during Orange OpenTech. This essential issue, for content distribution, network coverage in rural areas, reliability or roaming for transport... will enable us to identify THE solution we should adopt within New Space, an incubator dedicated to identifying essential levers of innovation.

The Unified Design System revealed

A unique digital platform to strengthen brand consistency.
Come and discover a project designed to strengthen UI/UX design, code and brand consistency. With "Unified Design System", 6,000 developers and UI designers across the Orange group will be able to work from a single platform. The pooling of components, including graphics and code, compliant with brand guidelines, will accelerate the development of Orange's B2B and B2C applications. The benefits, discussed during this Talk session, are greater operational efficiency and a more cohesive use of the brand, in line with our accessibility commitment. For the end customer, this project translates into an optimal user experience for all Orange ecosystem services.

Talks – Deep Dive sessions

Open RAN: tested and ready to deploy ?

Open RAN (“Radio Access Network”) promises more open, flexible, innovative and high-performance radio access networks. After a series of tests, carried out in rural areas of Romania, our experts invite you to take a look at the key questions surrounding this technology: What technology choices underpin Open RAN? How is this approach a major evolution in mobile network and better energy consumption management? How long before we're ready for full-scale deployment? You won't want to miss this discussion that will answer all your questions on the subject.

Deep Clustering Network: How Can AI Anticipate Network Anomalies?

Based on a module that integrates advanced mathematical concepts and machine learning methods, the Deep Clustering Network (DCN) is a powerful tool that helps to predict network anomalies. This artificial neural network-based model is trained to recognize patterns specifically for 4G/5G networks and uses them to distinguish between normal and abnormal behavior from both the user’s and network’s perspectives. Here, Orange teams reveal how they're using AI to build a more reliable and secure world.

How can we rethink the Tech with carbon neutrality in mind?

Orange has committed to achieving Net Zero Carbon emissions by 2040. To support this goal, the Group needs to rethink its role as a leading player in telecommunications and digital convergence. What methodology should we adopt to achieve this digital sobriety? With what business model? This forward-looking reflection on "FairTech" and its challenges is a gateway to a new world that we need to build and explore together.

Datacenter optimization: an economic and ecological necessity

Did you know that, on average, data centers use only 20% of their computing capacity? This leads to economic losses, as well as an impact on the environment. Learn more about an advanced resource redistribution system to optimize network infrastructure operation.

Quantum computing: what lies ahead for telecoms?

Quantum computing is generally seen as the next technological breakthrough. However, it is still difficult to evaluate its impact on telecommunications. The research teams at Orange are studying three quantum aspects in particular: post-quantum cryptography, quantum communications and quantum calculation. This Talk session tackles the latter aspect. What is the potential contribution of quantum technologies to decision-making algorithms, at all levels of a telecommunications group like Orange? What impact on network and infrastructure operations, inter-operator roaming, cybersecurity, marketing etc. ?

Satellites: is a neutral network in space possible?

Satellites are already a serious and cost-effective alternative for extending the coverage and resilience of terrestrial networks. The standardization of non-terrestrial networks ensures the transport of interoperable 5G services. Integrating them with terrestrial networks offers numerous opportunities, both for customers and for operators. Could virtualization and mutualization technologies, already used in terrestrial networks, be adapted? Find out more about the challenges of making space resources available and sharing them.

Glossary

5G SA: 5G Stand Alone (5G SA) is a 5G network architecture that is not dependent on 4G. It includes a 5G node to manage services, base stations with dedicated equipment, a transport network linking these stations to the node, and virtualization tools for flexible resource management. When connectivity relies on 4G network infrastructure, we refer to it as 5G NSA (non stand alone).

API: Application Programming Interface. An API is a set of rules and protocols enabling different applications to communicate and facilitating the integration of new functionalities.

CAMARA: open source community supported by the Linux Foundation. Its main objective is to define, develop and test APIs allowing simplified and unified access to telecoms networks.

Cloud native: refers to an application development and deployment approach that fully benefits from cloud environments. Cloud native applications are designed to be scalable, resilient and easy to deploy.

CVM: Customer Value Management. An approach that places value creation for the customer at the heart of innovative solution development.

Data Lake: data lakes use distributed storage systems, optimized data formats and processing frameworks to manage large quantities of unstructured data.

DDoS: Distributed Denial of Service. A DDoS attack is a cyberattack where several computers send a large number of requests to a server to overload it and make a website or service inaccessible.

Edge computing: an architecture where data storage and processing are local, as close as possible to the company, delivering speed, reliability and security.

Fair Tech: this approach promotes ethical, sustainable, accessible and transparent technological development.

FTTR: Fiber To The Room is a network technology that extends optical fiber from a central access point to each individual room in a house or building.

FWA: Fixed Wireless Access – A high speed fixed access service for homes, offices, warehouses… This service uses 4G or 5G networks.

GenAI: generative AI is a sub-category of artificial intelligence that uses algorithms to create new content, such as text, images, music or videos. It often relies on deep learning models, such as generative neural networks.

GitOps: a framework that enables automated deployment of network services. It relies on the Git distributed version control system, which tracks modifications made to files.

GNOC: Global Network Operational Center.

GPU: Graphics Processing Unit. GPUs are now used for data processing in AI systems.

Graph RAG: Retrieval-Augmented Generation – A modeling approach to use personalized data with a large language model (see “LLM”).

GSMA: the GSM Association is an international organization of mobile operators, phone manufacturers, service providers and other players from the mobile ecosystem.

IoT: Internet of Things. Refers to a network of smart devices that can collect and exchange data. These objects might include household appliances, sensors, vehicles... IoT can improve efficacy, surveillance and automation in various fields, such as networks, industry, healthcare, farming and smart cities.

IT / OT: Information Technology / Operational Technology. Information technology (IT) focuses on IT system and data management. Operational technology (OT) is dedicated to monitoring and controlling physical and industrial equipment.

Kubernetes: an open source system that facilitates the deployment and orchestration of application containers in cloud servers.

LAN: Local Area Network.

LLM: Large Language Model. An LLM is a natural language processing model able to understand and generate text coherently.

MEA: Middle East Africa – Region including countries in the Middle East and Africa.

MEF: Metro Ethernet Forum. Founded in 2001, the MEF is a non-profit international organization dedicated to promoting and standardizing Ethernet services in metropolitan networks.

P2A: Person to Application refers to an interaction between a user and an application.

prpl: the prpl Foundation is an open source initiative aiming to reinforce the interoperability and security of network services.

Glossary

prplOS: a lightweight and secure open source operating system for residential gateways (or routers). It notably allows modularity and personalization.

PaaS: Platform as a service. A cloud computing model that supplies a complete platform for the development, deployment and management of applications.

POP: Point of Presence – a POP is a physical point of access within a telecommunications network. They can include equipment like routers, switches and servers.

QoD: Quality on Demand allows users to obtain improved connection quality for critical applications: smart devices, video streaming, virtual reality, gaming sessions...

QoS: Quality of Service. Defines a network's capacity to deliver the expected performance (e.g. on criteria like speed or latency), including within a congested network.

RAN: RAN (Radio Access Network) refers to the part of a telecommunications network that allows a wireless connection between user devices and the central network. It includes base stations and the equipment needed to manage radio communications.

Ransomware: malware aiming to block use of a web service or resource until a ransom is paid.

RCA: Root Cause Analysis. A systematic method used to identify the underlying causes of a problem or incident.

RCS: Rich Communication Services. Instant and enriched communication standard created by the GSMA.

SaaS: Software as a Service. A software distribution model where applications are hosted in the cloud and accessible via the internet, without the need for local installation.

SDN: Software Defined Networking. An approach that separates network control and management from the physical infrastructure, allowing centralized and programmable management.

Spatial Computing: a computer environment combining the physical and digital worlds, with an interface offering spatial interaction.

Telco: a Telecommunications Company.

Telco Cloud: a cloud computing infrastructure that enables telecom operators to virtualize and deploy communication services flexibly and efficiently.

TOSIT: “The Open Source I Trust” gathers major French companies, supporting the emergence of open source and/or free software codes and solutions, particularly in the field of cybersecurity.

Unity: development engine dedicated to creating video games, 3D environments and virtual or augmented reality assets.

XGS-PON: the « 10 Gigabit-capable Symmetric Passive Optical Network » is a fiber technology which delivers extremely fast internet connections.

Useful links

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