

Orange Open Tech Days

28 to 30 November 2023



Orange Tech is **Open_**

Open_ to the world we belong to

Our brand DNA is all about connecting, sharing and caring

Open_ to the way we live today

Our networks are the trusted backbone of rapidly increasing digital usage

Open_ to pioneering what will matter next

New frontiers are ahead of us, unlocking the possibility of a brighter future

Open_ to unlimited opportunities

Our advanced technologies power New retail connectivity, Cybersecurity, Telco as a platform services and Customer experience

Open_ to teaming up bigger

We leverage partnerships across the ever-growing tech ecosystem to rally the best expertise

Open_ to constantly raising standards

Technology is the spearhead of progress, driving our capabilities continuously upward

Open_ to new experiences

Time to enjoy unprecedented tech moments imagined by Orange talents all over the world

Conferences

Three highlights of the Orange Open Tech Days to experience live and in replay on Hello Future

01

Live Opening session

The inaugural Live Opening of Orange Open Tech Days, Orange's technology and connectivity exhibition, will be attended by Orange CTIO Bruno Zerbib, CEO Orange Business Alette Mousnier-Lompré, and physicist Etienne Klein.



28 November 2023
11 am - 12:15 pm

02

AdTech and personal data

The conference on Utiq, the new «game changer» in online advertising created by Orange, Deutsche Telecom, Telefónica and Vodafone, will be hosted by Orange CTIO Bruno Zerbib, Utiq CEO Marc Bresseel, and Managing Director of Utiq France Sophie Poncin.



28 November 2023
3:30 pm - 4:30 pm

03

Success of the multi-service approach in MEA

From connectivity to cybersecurity, financial inclusion, health, and education... digital transformation poses many challenges in the Middle East and Africa (MEA) region. Orange CTIO Bruno Zerbib and Deputy CEO and COO Orange MEA Brelotte Ba, will talk about these unique markets and customer expectations, and how Orange is implementing a multi-service approach to respond to them.



30 November 2023
11:30 am - 12:15 pm



Open Tech Days - Hello Future Orange

Program

Demonstrations

New retail connectivity

Livebox Fiber	07
Fiber 50 Gbps	08
Volumetric video	09
Radio data propagation	10
Sport All IP	11
A network digital twin	12

Customer experience

Orange Max it	14
Customer opportunities identification	15
Find	16
Instant Infobot	17
AI customer value management	18
Proactivity at work	19
Live Skillmatch	20
LiveUnit	21
Store of the future	22
Live Sport	23

Live Seat	24
AI impact media	25
AI energies scoring	26
AI powered dynamic segmentation	27
Cyber threat protection	28
Orange Masta Go	29
Mayele	30
Scambio Fiducia	31
Generative AI chatbot	32
AI and carbon footprint	33

Telco as a platform

Network monetization via API	35
Neutral Private Network	36
5G SA automation	37
Industrial digital twin	38
From space to field	39
Codifying shops in real time	40
Cloud native B2B	41
IoT Smart Data	42

Semantical anomaly sensing	43
Explainable AI for energy	44
Edge enabled 5G+	45
Network negotiation with AI	46
5G Smart Mobilities	47
Private cloud network	48
Low latency made easy	49
Industrial operational excellence	50
First disaggregated switch	51
CyberDog	52
Private 5G Hybrid	53
Cross Cloud optimization	54
Power of Declarative Operations	55
uCPE Connect	56
Frontline workers management	57

Cybersecurity

Hookalert Trust System	59
Secure manufacturing platform	60
Orange Money distributor fraud detection	61
Orange Money fraud detection	62
Container security	63
My security partner	64
Securisation of the Edge computing	65
Cybersecurity for Home and office	66
Intelligent security guard	67
LLM generative AI video	68

Intellectual property and licensing

Orange Expertise

Mini-conferences

New retail connectivity

The European IA Act	73
Understand the future of LAN	74
GNPy : new optical network design	75
157 Terabit/s: a new transmission record on Orange's networks	76
Open Radio Access Network (RAN) sharing	77
Satellite network for direct service to mobile and IoT	78
Smarter Networks: artificial intelligence at the service of networks	79
Time series: from theory to telco use cases	80
Paris 2024, a springboard for innovation	81

Customer experience

Social impact assessment of Orange programs	83
Challenges of women's entrepreneurship in Africa	84
Present and future of mobility transactions	85
Innovation Waves	86
Orange Poland's refurbishment process	87

Telco as a platform

Towards a boom in Livebox innovation	89
Pikeo 5G	90
Value and architecture of neutral networks	91

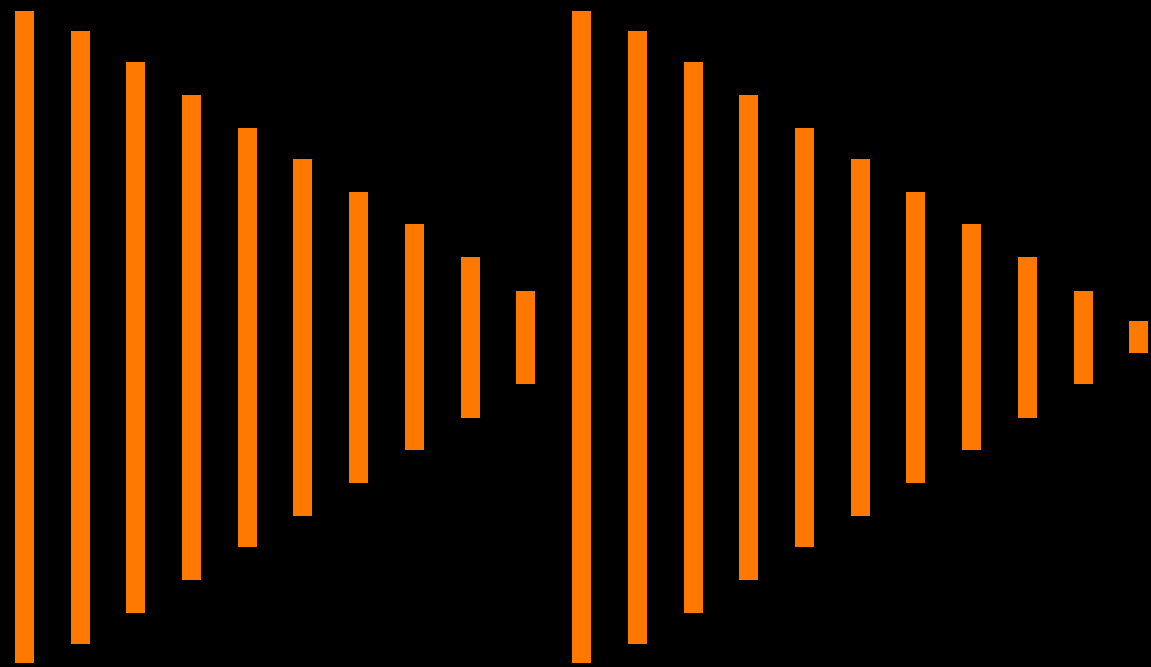
Cybersecurity

Graph Machine Learning, the new AI frontier ?	92
Cryptography in a quantum world	94
Academic Security Operations Centers	95

Demonstrations

Demonstrations

New retail connectivity



Livebox Fiber

Reinforce Orange countries efficiency

Discover the new generation of Orange set-top boxes, designed to get the most out of fiber optic connections



C14

Shining a spotlight on two convergent products: the Livebox 7, which has been on sale in France since October 2023, and the Funbox 10, which was launched in Poland in November 2023. Both started out from the same technological platform, which could now be deployed in several of the Group's countries in Europe. This mutualized approach illustrates Orange's capacity to mobilize the collective intelligence of its teams and subsidiaries, in order to optimize resources and operational efficiency. In terms of innovation, the Livebox 7 and the Funbox 10 are compatible with the new WGS-PON fiber optic technology, and are equipped with Wi-Fi 6E Tri-band. This allows them to handle the most heavy-duty needs of businesses and private users: households or SMEs with lots of users, video content creators, online gamers, businesspeople sharing large files, etc. Created using an eco-design approach, this new generation of set-top boxes retains 40% of Livebox 6 components – an approach which for the first time has received Footprint Progress® certification from the independent agency Bureau Veritas.

Fiber 50 Gbps

Visit the future of passive optical network

Shining a spotlight on new optical access systems, designed to support the evolution of ultra-high speed networks over the long term

The third generation of optical fiber access systems has arrived: named 50G-PON, it will support the evolution of Orange's ultra-high speed connections for residential and SME customers, and will enable the collection of mobile traffic at the base of our antennae. This technology, which offers an improved customer experience, will also contribute to extending the lifespan of the fiber optic network: deployed with the goal of lasting for over 20 years, this network should, in effect, be capable of supporting successive generations of customer and network equipment. In particular, 50G-PON will need to cohabit with the current G-PON and the future XGS-PON. The demonstration presents equipment prototypes on the customer side (set-top box) and for operators (chassis, cards, optical modules). It provides an insight into the state of maturity of these new solutions, and the technical challenges pertaining to their deployment.



C10



European projects MARSAL, 5G-COMPLETE, OCTAPUS, and a partnership with Huawei

Volumetric video

Automatically process from capture to rendering using neural networks

Using the power of our networks to transport the viewer to the heart of the action, where they can experience photo-realistic 3D rendering



C36

Even today, efforts to develop a 3D universe dedicated to immersive services continue to run into a major obstacle: cost. This demonstration explains how this obstacle can be overcome thanks to AI, the power of the cloud and 5G technology. These technologies enable the automatic production of photo-realistic 3D models pulled from video footage. Using advanced algorithms for spatial and temporal compression, data can be transported via 5G networks with a significant reduction in flow volumes. An alternative approach involves using a geometric model to reconstruct content, which is then distributed via a public Cloud.

The result is a truly mind-blowing experience for the viewer: shortly after they've viewed a scene, they can choose to recreate and re-live it from every angle via 3D immersion, using their smartphone, tablet or virtual reality headset. These innovations illustrate the new UI/UX possibilities offered by superfast connections in the world of sport, culture or entertainment. With these new formats, Orange is transforming the way in which events are viewed, and shaping the spectator experience of the future.

Radio data propagation

Learn crowdsourcing to enhance coverage

A model based on the latest advances in Deep Learning, with real-time application of data pulled from the network



C35

The networks of the future will need to be higher-performing in terms of coverage and speeds, requiring the implementation of increasingly precise antennae deployment tools. Stardust heralds the future of these tools: it is a model for calculating the coverage of mobile stations, based on the latest advances in Deep Learning. Compared to current models, it works in “crowdsourcing” mode, which means that it applies network use data reported in real time. It has the unique feature of being both adaptive – adjusting itself precisely to the characteristics of the environment – and scalable: it can be improved continuously, easily and rapidly.

The demonstration provides an insight into Stardust’s capabilities, via a web application with which the user can position a data-emitting antenna anywhere on a map, then adjust its settings as desired and observe (in 3D) its coverage performance level being calculated in real time.

With this new-generation model, the operator can more effectively improve network coverage at a lower cost.

Sport All IP

Be the connected stadium of the future now

For the first time in the history of the Olympics, a single operator will integrate all telecoms services used during the competition



C19

During the Paris 2024 Olympics and Paralympics, Orange will be tasked with setting up and operating all-IP and on-demand network technologies in the ultra-demanding conditions of live sporting events. Its responsibilities will notably include internet connectivity, local LAN/WiFi networks and associated cybersecurity for the 120 Olympic locations and more than 800 scheduled events, as well as interconnections between systems and the live broadcasting of images. This challenge will mobilize all of Orange's technological prowess in terms of network infrastructures, ultra-low latency, cybersecurity and 5G. The challenge will also be environmental, with Orange's carbon impact objective set at 10,000 metric tons of CO2 equivalent. To achieve this, the Group will capitalize on its existing networks and the pooling of equipment, controlling supply chains and modes of transport. Beyond the network and platforms, Orange is laying the foundations for a new standard for connecting sports grounds. Unified, real-time, secure and sustainable: the stadium of the future is now!

A network digital twin

Optimize optical transport resiliency

A virtual model for supervising the network and managing disruptions

Digital twins have already demonstrated their potential in several industrial sectors; the research work presented in this demo explores their application to optical networks, using a digital twin synchronized with the real-world infrastructure. Network supervision and disruption management operations are carried out using the virtual model. The integration of simulation and optimization tools enables us to test and evaluate the impact of events on the optical network (congestion, equipment deployment, etc.) and to anticipate the corrective actions to be implemented. These various contributions reinforce operators' ability to take proactive steps to protect their network, and consequently help boost the quality of service provided to customers.



C28

Demonstrations

Customer experience



Orange Max it

Enjoy the all in one

**A comprehensive range
of services within a single
SuperApp**

In November 2023, a SuperApp landed in Orange countries in the Middle East/Africa zone. “Max It” is a new all-in-one platform that brings together a multitude of solutions: communications, finances, content, entertainment, marketplace, etc. Its services are designed by Orange or by trusted partners, such as games developers or content providers. The range of functionalities and services on offer is adapted to the specific needs of each country. On 24 November, Max It will be launched in 6 other countries – Côte d’Ivoire, Cameroon, Senegal, Mali, Burkina Faso, and Botswana – before being rolled out to 11 more MEA countries.



Customer opportunities identification

Automatically analyze conversations

Audio analysis to boost efficiency for call center advisors

In customer service call centers, new technologies can be employed in order to simplify workflows for advisors and their managers, and ultimately to improve customer satisfaction. The demo presents an innovative tool which analyses audio conversations between customers and call center advisors, in order to identify high-stakes interactions from among the thousands of calls received each day. Instead of random listen-ins, the tool then guides managers and agents toward these important cases so they can implement actions for improvement. The solution can function regardless of the language being spoken; using this tool, call center managers can study and optimize how requests and queries are processed, and provide a more targeted approach to advisor training needs.



C29

Find

Get information to improve team efficiency

The Find application makes life easier for call center advisors, saving time for them and their customers

The ability to quickly find information from among various data sources (Orange web portal, internal databases, etc.) in order to respond to customer inquiries is a daily challenge for call center operators. The goal of Find is to accelerate the search process by offering these operators a relevant and concise AI-generated response. This machine-learning solution (based on analysis of operator usages) obtains leading-edge results while also minimizing the solution's cost of ownership. This technology can be used across all types of roles that need to carry out searches within knowledge bases, and can also be integrated into a bot in order to process FAQ-style customer queries.



Instant Infobot

Get the best immediate response with Generative AI

Orange France trials a new chatbot for customer assistance

For the past several years, a conversational robot has been deployed across Orange's websites in France. This chat bot guides customers through their purchasing, assistance and payment/management processes. However, current chat bot technology does not have all the answers, and shows limitations notably in terms of information searches.

In order to surpass these limitations, Orange is exploring the use of generative AI and large language models. On its orange.fr website, the Group is currently trialing the Google AI engine: a new-generation chat bot that seeks to orient customers directly toward the most relevant answer to their query from within a vast FAQ database. So far, the solution is performing well and learning fast. It understands questions well, performs searches efficiently and shows excellent editorial qualities. Combined with essential human feedback and automatic conversation monitoring measures, it brings genuine added value to the customer journey, promising increased levels of consumer satisfaction and simplifying operations for Orange teams.



C31



Google

AI customer value management

Maximize customer lifecycle success

Discover a high-tech replicable decision engine for value base management, using DATA/ AI

Customer value management (CVM) is an essential process for an operator's overall performance. This demonstration presents the new CVM tools implemented by Orange Poland to assist the consumer marketing teams with their cross-selling, up-selling and retention missions. The approach is based on digitalization and process automation. Using self-learning AI/Data (Machine Learning, Analytics, AI) technologies, the tools exploit new data sources and create new capabilities, in omni-channel and cloud mode. For example, hyper-personalized messages controlled via an automated direct marketing repository make it possible to determine the best timing, and the best contact channel, for reaching a customer.



C32

Proactivity at work

Adapt and optimize digital tools to boost productivity

Imagine a personalized assistant that anticipates your needs, keeping a finger on the pulse of your working environment



A9

In our everyday working lives we rely on various applications in order to do our jobs – but are these applications truly responsive to our needs, or capable of anticipating them?

This demo illustrates how introducing pro-activity into applications can guide your working approach, thereby helping you to improve your well-being and efficiency. Our patented technology achieves this by locally capturing your digital context, making it possible to anticipate your needs.

Demonstrated using the business chatbot Djingo Salariés, this demo illustrates the benefits of personalized and pro-active workplace assistance:

- saves time when researching information and completing tasks;
- improves knowledges and understanding of the company;
- anticipates your needs and queries;
- provides personalized support when getting to grips with new tools.

Live Skillmatch

Build the profile to compare and match competencies

Spotlight on two innovative tools for improving skills management

In a constantly evolving business world, the ability to evaluate skills and understand roles is becoming a key challenge for both employees and HR teams. The innovation presented here involves using AI for talent management, via two tools that assist with upskilling and reskilling. The first is a locally executed software that enables the user to automatically create their CV using smart functionalities, such as skills detection based on an analysis of work documents. The second tool offers upskilling/reskilling services associated with the programs accessible on the Orange Learning training platform, and cross-referenced with job offers available within the Group. Designed to benefit Orange employees (providing a clearer picture of their professional development) and internal HR services (improving the support they provide), these solutions could be marketed on a wider basis to B2B clients.



LiveUnit

Enhance your professional interactions

Enabled by AI, new standards of user experience help professionals focus on what matters most

In an increasingly dense digital environment, employees find themselves juggling various applications, business processes, contacts and information sources. Responsiveness is paramount, and these multiple demands can result in a cognitive overload which the LiveUnit solution aims to alleviate. Harnessing the power of artificial intelligence, it helps employees with their workloads by suggesting the most essential tasks based on the context in question. For example, if a contact has issued a request in a tool such as Teams, and the employee has not yet been able to respond, the tool will suggest a quick response at the appropriate moment. Drawing inspiration from applications that have proven highly popular with the general public, the interface offers a simplified workplace experience. LiveUnit aims to curate a working environment that is serene, efficient and adapted to the needs of employees, both now and in the future.



Store of the future

Discover concepts for reinventing customer experience

Two innovations providing customers with a more personalized, accessible and convivial experience

The Orange boutiques of the future are reinventing the customer experience. Currently being tested in Poland, the new store management concept presented in this demonstration draws upon two innovations: a multi-lingual virtual assistant boosted by AI, and a video analysis tool for visualizing customer movements in 3D. Thanks to its advanced video analysis system, customer advisors know immediately when a visitor enters the store, which enables them to provide a faster and warmer welcome. Moreover, by gathering and analyzing (anonymous) data on customer behavior within the store, the solution offers valuable decision-making assistance in order to boost sales and customer satisfaction – for example, by providing guidance for a re-design of the store's layout. The MAX virtual assistant, meanwhile, is present in the form of an animated multi-lingual 3D robot. He provides information on current offers, promotions or accessories, and his interactions with customers can be handed over to the vendor, who has the opportunity to pursue and individualize the exchange as needed.



C17

Live Sport

Enable real time experiences with networks

How major sporting events provide a laboratory for the perfection of new services in telecoms, data and real-time media

For Paris 2024, Orange is forging ahead with innovation and deploying platforms to provide high-quality, immersive and interactive live experiences. Below are three projects by way of example:

Private 5G networks for increasingly immersive live images

Following along behind a cyclist zooming along a track, or maneuvering through the dancers and athletes during the opening ceremony: these kinds of breathtaking live images are made possible thanks to mobile mini-cameras connected to a private 5G network, guaranteeing maximum data transfer with minimal latency. And of course, all of these feeds are relayed in HD/4K quality for a TV experience that meets Olympic standards.

TeamConnect, the new-generation walkie-talkie operating on a mobile network

Orange is transforming, modernizing and improving the reliability of the walkie-talkie experience in order to provide instantaneous, multi-media and prioritized communications services, even when the network load is high. Thanks to the power and expansive coverage of Orange's 4G network, there are no geographical limits to the service.

ParaLive, IoT and real-time data for athletes

Orange is working with parasport athletes to help them monitor their physical status and mitigate any potential lack of body sensitivity and thermoregulation issue. By ingesting a connected capsule whose data can be processed in real time on the Live Objects platform, athletes benefit from precise monitoring of their body temperature, in order to prevent dehydration or stress.



C20



Intel, Cisco and BodyCap

Live Seat

Enhance workspace experience and operational efficiency

An application that brings together all the services needed for optimum management of the employee experience and company visitors

The application presented in this demonstration is designed to optimize office spaces from the standpoint of the user and visitor experience. Drawing upon advanced business data analysis technologies, Live Seat offers a comprehensive range of functionalities, simplifying workspaces from parking facilities to the booking of meeting rooms. The application also simplifies visitor management, including registration and issuing access passes, while also allowing users to control and update content displayed on the building's television screens. Integration with physical access interfaces guarantees enhanced security measures. With Live Seat, working environments become more productive and more efficient in their allocation and use of space, thereby improving employee satisfaction via streamlined and optimized everyday experiences.



C23

AI impact media

Monitor customers flow to launch powerful campaigns

In Côte d'Ivoire, an innovative solution is optimizing Orange's media planning operations

For brands, communications are essential in order to forge and maintain links with their customers, and to leave their mark on the consumer consciousness. They must also address the right target audience, at the right moment and in the right place – in order to address this challenge, and to maximize the efficiency of campaigns, Orange's teams in Côte d'Ivoire have perfected an AI-based solution dedicated to the optimization of advertising billboard displays. Fueled by several data sources, the solution models the flow of customer movements and establishes a ranking of spaces with the highest “opportunity to see”, i.e. the probability that a target consumer will see a brand message or communications item aimed at them. The locations are then validated following a site visit. This innovation aims to support and increase the Group's visibility, as well as that of other companies and public bodies (via Orange Business) eager to optimize their media planning operations.



C24

AI energies scoring

Granting light to the right customer through data

Based on AI and data, a new on-boarding process helps to direct customers toward offers best suited to their profile

Since its launch in 2018, the Orange Energie service has proven highly popular and appreciated by consumers in the Middle East/Africa region. In Côte d'Ivoire, the Group has established a new tool for improving the end-to-end reliability of the sales process for this service, which notably includes a solar energy kit to provide households with electricity. Via the use of predictive AI and cross-referencing of several data sources, sales reps benefit from decision-making assistance and prospecting to facilitate their everyday tasks, enabling them to direct customers toward the offers that are best suited to their specific profile.



C24

AI powered dynamic segmentation

Sell more and sell well

A simple and accessible approach to data segmentation, in order to deploy smart solutions within a company

The models that underpin AI systems are increasingly voluminous, and may include billions of parameters. Unless they boast considerable (and costly) processing power, companies are unlikely to be able to generate smart solutions using their own data. The demonstration shows how SegmentEYE™ segments data in order to address this issue: based on AI technology characterized by a high level of precision and scalability, SegmentEYE™ provides concise and high-performance models that do not involve massive consumption of energy or data.



C25

Cyber threat protection

Act against malicious actors on the dark web

A new-generation robot warns companies when sensitive info is being leaked by hackers

Using a fictional client, this demonstration is a chance to explore the “threat intelligence” program developed by Orange’s teams in Tunisia. Known as Oktoboot.io, the solution is aimed at companies seeking to protect themselves from cyberattacks, by enabling them to combat one of their main causes: the theft and publication of sensitive information (such as passwords) on the Dark Web, where pirates can exchange data in order to carry out attacks. Thanks to its innovative monitoring faculties, Oktoboot.io notifies clients automatically anytime their sensitive information starts to leak online. The goal is to enable companies to take protective measures (such as changing passwords) as quickly as possible.



C25

Orange Masta Go

Benefit a voice recognition for a better customer experience

In the DRC, AI enables customers to interact with Orange vocally and in the language of their choice



C26

«In the Democratic Republic of the Congo (DRC), Orange has perfected a new-generation voice robot. Based on artificial Intelligence technology coupled with voice recognition, Masta Go listens to customer requests, understanding and responding in their own language and delivering multiple services: account management, assistance, practical services, entertainment, etc. This vocal interface represents a powerful lever for digital inclusion in a country with a high diversity of linguistic and social backgrounds. Indeed, the DRC has one official language (French), four national languages (Lingala, Swahili, Kikongo and Tshiluba), and hundreds of regional languages. Almost a third of the population experiences difficulty with literacy. This complicates their interactions with digital portals and USSD menus, which are now essential components in various everyday services. Giving users the ability to interact vocally with Orange in the language of their choice constitutes a major lever in terms of differentiation, accessibility and improving the customer experience.»

Mayele

Meet customers to provide personalized services

During a marketing campaign, the message is important – but its success also depends on the context in which it is received

Mobile marketing campaigns are essential for an operator, and important in terms of fostering customer satisfaction and loyalty. However, in a mature and highly competitive market like that of the Democratic Republic of the Congo, it is often difficult to stand out and reach the target audience: around 40% of marketing messages go unread by their recipients. In order to tackle this challenge, the Orange teams are experimenting with a Real Time Contextual Marketing solution named Mayele: the tool performs real-time data analysis in order to identify the context in which the customer's needs are evolving, and to issue a marketing message adapted to their individual situation. The demonstration presents four use cases with different triggers (localization, web use, change of SIM card or mobile), as well as the targeted campaigns that they enable to be launched in real time.



C26

Scambio Fiducia

Facilitate money transfer between an association and members

How an innovative method can reduce fees and payment processing for vendors and associations

The fees associated with traditional payment cards are a significant burden for small vendors and associations. That's why Orange has created Scambio, an alternative payment solution based on Payment Initiation Services – a simpler approach designed to be more energy efficient and technologically frugal. With Scambio, the vendor or association sends their customer a wire transfer request via an app, which generates a standard QR code. The recipient then just needs to confirm the transfer using their normal banking app: no need for a bank card, or to enter an IBAN. The advantage for small businesses, sole traders and associations is a significant reduction in the commission fees they pay on card transactions, with the option of taking customer payments even without a payment terminal.



T1



Fintecture

Generative AI chatbot

Empower customer experience and provide instant support

A case study of customer support improved by artificial Intelligence



T5

The success of generative AI and Large Language Models (LLM) demonstrates the considerable value of these technologies. However, certain weaknesses remain that make these tools difficult to use in business: limited or outdated knowledge, inefficiency with certain simple tasks (counting the number of letters in a word, for example), absence of interactions with the real world, etc. This demo addresses these issues by explaining how to create practical tools that put AI and LLMs to use in customer assistance for a telecoms operator. Capitalizing on a project from the Dataiku collaborative platform, it transforms these technologies into agents capable of precisely interpreting requests issued by customers (“I forgot my password,” “My internet connection is down,” etc.), then searching for the most relevant tools and responses from within the information system. Thanks to this innovation, operators and companies in various sectors will be able to harness the full potential of generative AI and LLMs, in order to create tangible added value in customer support.

AI and carbon footprint

Measure and optimize a system

For responsible AI systems capable of estimating and improving their environmental impact



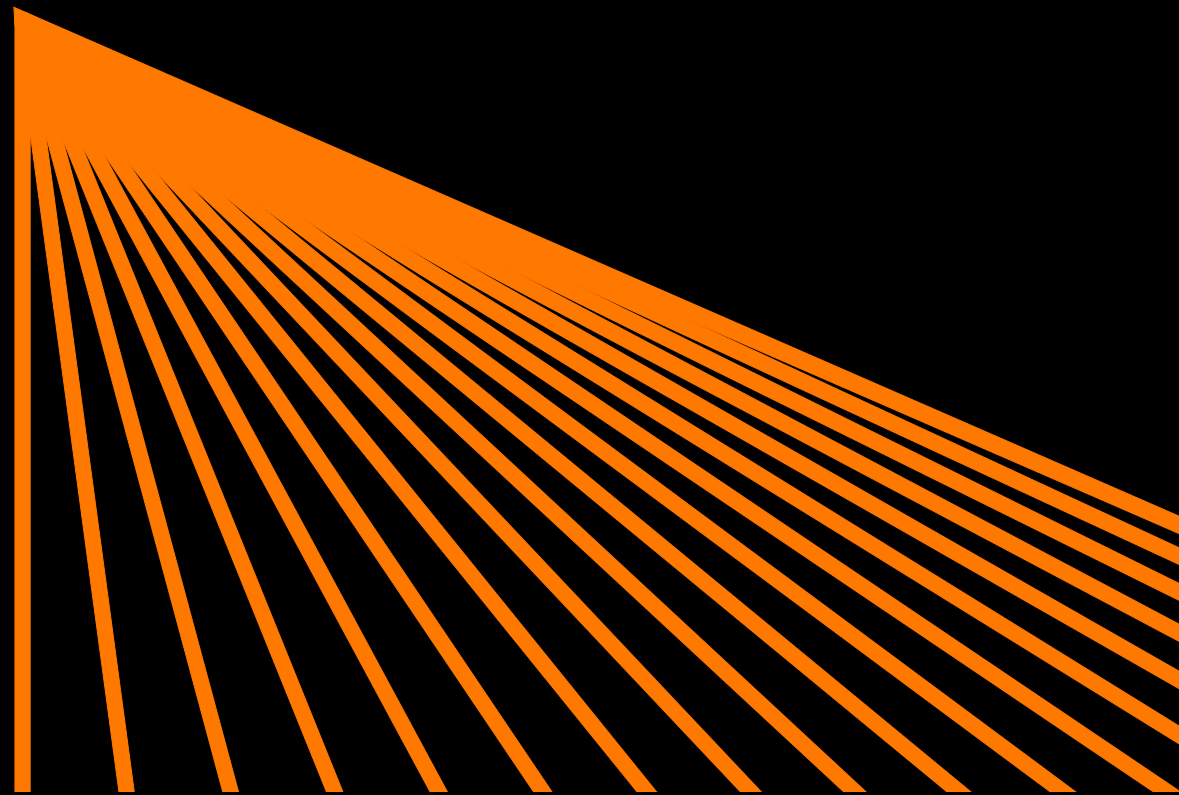
T11

Among the various concerns raised by the growing presence of AI systems in our everyday lives, their environmental impact figures increasingly in the debate. The European Commission has even defined social and environmental well-being as a key principle of trustworthy AI, and the regulatory framework seems likely to evolve toward obligatory environmental impact reporting. For both designers and purchasers of AI systems, it is becoming crucial to implement systems that can measure and optimize the carbon footprint.

This is the challenge addressed by this Orange research project, which has developed a pioneering measurement and optimization tool. The application evaluates the carbon footprint of AI based on the location of servers and the energy mix of the countries in question; it proposes methods to reduce the number of iterations needed to train models, and suggests solutions to improve the impact of the algorithms themselves. The demonstration illustrates a use case for the tool, based on a multi-object tracking service in a video feed, with measurements of the carbon footprint before and after optimization.

Demonstrations

Telco as a platform



Network monetization via API

Generate value

A tangible example of an API enabling developers to enhance their applications by harnessing Orange's 4G/5G network capacities

Given the onset of network softwarization, the secure and real-time sharing of 4G/5G network assets via APIs is already a reality. Orange is an active contributor to the Open Source CAMARA project working to define, develop and test these network APIs, which enable customers (developer communities, service providers, etc.) to access connectivity functionalities on demand. The demonstration explains how a service provider can use the Quality On Demand API to improve the quality of a 360° video when network conditions deteriorate. Thanks to the APIs exhibited via Microsoft's Azure Programmable Connectivity platform, the capturing and re-transmission of a live event on the Odience streaming platform benefits from reduced latency and guaranteed data flow rates. Using this approach, Orange can showcase and monetize its infrastructure capacities, while also giving developer communities and B2B/B2C stakeholders the means to enrich their applications by harnessing the full potential of 4G/5G network capabilities.



C12



Microsoft, Summit Tech

Neutral Private Network

Valorize infrastructure to share with other operators

A solution to accelerate the development of connectivity solutions, open to clients of different operators

This demonstration showcases a cost-saving solution that uses a neutral 5G private network in order to improve radio coverage in indoor areas and zones with poor coverage. The innovation involves the creation of a virtualized private network based on open-source software, and that is open to clients of various operators. “Public” operators oversee access and authentication for their clients, while the private network is made neutral by applying the concept of network federation. A federation gateway provides an interface for authentication and invoicing systems with each operator, in order to ensure a transparent connection to the neutral network for customers. This solutions establishes a practical win-win relationship between owners of private networks and operators, and notably aims to accelerate the development of open and disaggregated connectivity solutions.



C15

5G SA automation

Save time and reduce carbon footprint

Pikeo is the first step toward the networks of the future, harnessing the power of the Cloud, 5G and artificial intelligence

With Pikeo, our experimental 5G Stand Alone (SA) Network deployed in France and Spain, Orange is en route to the networks of the future: 100% software-based, automated and enriched by AI and data. This demonstration illustrates our ability to deploy, optimize and manage the maintenance of a comprehensive 5G SA network (Open RAN + core) on a Kubernetes IT infrastructure, in a fully automated way without physical human involvement. By simplifying and automating operations, this advance will benefit the countries in terms of enhancing the safety and security of deployments and maintenance programs. The economic, operational and energy costs involved will also be streamlined, thereby helping to reduce the carbon footprint. In addition to the automated deployment of a network function, the demo presents an application making adjustments to the network in real time, in order to optimize the breakdown of users across radio layers and consequently the quality of service provided.



C16



Nokia Networks, VIAVI Solutions, Dell, HPE, CASA, Mavenir

Industrial digital twin

Access and control a robot remotely in real-time

Access, control and diagnose an industrial robot remotely through Augmented Reality (AR)

As factories increasingly automate their processes, the need for efficient maintenance and safety measures becomes paramount. Orange Belgium will showcase a digital twin of a clean room robot, enhanced by augmented reality and 5G SA technology.

Equipped with augmented reality glasses, operators and experts can remotely monitor the robot's status, temperature, operational mode, and error or alert messages, allowing them to make a complete diagnosis remotely. This solution avoids complex maintenance tasks and the risk of contamination. Come and experience a new era of precision and efficiency without ever setting foot in the clean room.



C33



Staubli, Cylix, Mr. Watts

From space to field

Make technology accessible to small African farms

Facilitating the work of Tunisian olive growers through data collection and use

Agriculture is Africa's biggest economic sector, representing 30-60% of the continent's GDP. The vast majority of the sector is made up of small producers, and in the context of climate change their work can be digitally supported thanks to a major innovation: the analysis of satellite data using AI techniques. This demo was developed by Orange researchers in smart agriculture, in partnership with Tunisia's Sfax Digital Research Center (CRNS). It works via the collection and application of satellite data in order to facilitate the work of Tunisia's small olive farmers. Via a mobile app, users can check data (number of trees, plot size, etc.), access AI-generated diagnostics (notably in the event of an anomaly) and access expert agronomic advice. In addition to farmers, this innovation is likely to interest other stakeholders such as public bodies seeking to collect information on farming operations (land registry data, for example).



C34



Research contract with the Sfax Digital Research Center

Codifying shops in real time

Building connectivity now

A new approach for simplifying and securing IT management for companies operating a network of stores

Orange Business presents a new approach for connecting its customers' stores to their company's central IT network in just a few clicks. Usually, this kind of operation would involve a laborious process: each project requires meticulous manual configuration, implying the deployment of routers, switches, firewalls and various security protocols. These operations are costly in terms of time and resources, and may require several months to achieve a safe and stable connection. Orange is revolutionizing these operations using an innovative approach that's halfway between codification and DevOps. The configuration of network equipment and the implementation of security protocols is simplified and accelerated, allowing us to establish a robust connection in just a few minutes. The integration (or disconnection) of stores in the company's network is ready "in one click" and in near-real time, with a heightened level of precision and security.



Cloud native B2B

Design and use connectivity services on demand

The Evolution Platform offers Orange Business customers reliable and safe connectivity from a world-class operator, coupled with the modularity of cloud service usages



A8

The cloud is the new data center for companies – the internet is their new network, business premises are no longer the sole workplace, and the need for security is greater than ever. To support these transformational needs, Orange has launched the Evolution Platform program. The innovation presented here aims to explore new technologies which could feed into the Evolution Platform, and which offer greater fluidity for companies in terms of their connectivity experience. This innovation is built on 2 pillars:

- a visual customer journey, enabling them to consume connectivity services through a fluid and simplified experience;
- a solution for orchestrating and curating service packages, making it easier for clients to manage their own services and enabling uniform management of resources, from the Orange network to the cloud.

IoT Smart Data

Visualize and analyze the values collected from connected devices

Focus on intelligent data management for better decision-making

«Data is a major vector of optimization of certain processes and activities for companies, but delicate to manipulate for lack of internal expertise or simple tool to use. Discover how Orange Slovakia's IoT Smart Data platform offers businesses, whether small or large, an ergonomic, versatile, and powerful decision support tool. Between its user-friendly interface for quick handling, the ability to create personalized views to adapt the presentation of data, or the alarm function to anticipate critical events, the solution has several advantages. It offers various export options to facilitate data sharing. Its user management system facilitates access control and customization. Companies can improve the efficiency of their processes and optimize their operational costs. Explore the entire solution journey, from initial planning and design to seamless installation and setup of smart meters on selected use-cases: smart server room management, electricity consumption monitoring, and cold-chain monitoring.»



C22

Semantical anomaly sensing

Recommend remediation solutions using knowledge graphs

An AI-supported platform for networks operating independently

NORIA is a platform for detecting anomalies on network infrastructures using knowledge graphs. It aims to shape the future generation of supervision systems used by network incident managers and cybersecurity analysts, whose work is increasingly difficult given the complexity of situations, proliferation of events, diversity of platforms and systems monitored, etc. NORIA provides a structured and global vision of these issues via indicators produced by AI algorithms. Data harmonization is performed via a vast knowledge graph structured by the NORIA-O model, which represents the temporal, structural, procedural and dynamic aspects of networks. Aided by approaches based on deep learning, inference or interpretation of the graph, abnormal situations are clearly identified and flagged for examination by the operator.



Thesis supervision contract with EURECOM

Explainable AI for energy

Reduce cost and carbon footprint

Anticipating supply and demand in the energy market, in order to optimize purchasing and environmental impact



T6

Predictive Layer is a Swiss start-up that won the Orange AI and data challenge in 2022. It has developed a forecasting tool named Genius, which aims to use AI to predict evolutions in supply and demand within energy markets. The demonstration illustrates a real-world example in collaboration with Orange Innovation Networks, showing how we can optimize the use of batteries installed at different points around the network. The Genius calculation engine provides energy purchasers and infrastructure managers with key information on purchase prices, the right time to buy and what quantities to acquire. Genius enables large companies to reduce their energy expenditure and their carbon footprint. Another unique feature of Genius is that it is an example of explicable AI, i.e. it enables users to understand the reasoning behind its forecasts, which is essential in order to ensure successful appropriation of these technologies by companies.

Edge enabled 5G+

Enhance future mobility

With “Edge-Aware” services: mobile network management compatible with the requirements of connected or driverless vehicles

New forms of connectivity are shaping the mobility of the future; this demonstration highlights innovative Edge-Aware services used in managing mobile network traffic. The principle behind these services is to combine the power of 5G+, in terms of speed and latency, with that of edge Computing. This offers the possibility of processing data in proximity to users, paving the way for new-generation mobility services such as remote and automated control of vehicles. This innovation is built on smart mechanisms for transporting and synchronizing data that is geo-distributed over a very wide area. A selection algorithm will be tasked with connecting the vehicle, via the network, to the highest-performing edge from a latency point of view. In this way, the vehicles of the future will be integrated into intelligent infrastructures, resulting in more fluid and safer traffic levels.



T8



Nokia Bell Labs

Network negotiation with AI

Deploy autonomous slices based on order

What if companies could configure their network services using natural language queries?

This demonstration explores a platform providing smart assistance for companies, using innovative AI and network management mechanisms. New 5G network services are essential to the digital business transformation. However, when there is a lack of internal expertise it can be difficult for companies to make the most appropriate choices and decisions. Now, thanks to AI and management mechanisms based on intent analysis, companies will be able to express their needs using natural and non-technical language, with their queries being subsequently translated into network configuration instructions. For example, the platform brings together a number of user-friendly control channels for simplifying and optimizing customer services, management of the commercial offering and access to 5G network services such as “Network Slicing” – all while providing clients with greater visibility over the level of service guaranteed via this “Network Slice as a Service” (NSaaS) approach.



T9



Project Bpifrance Influence with Nokia

5G Smart Mobilities

Measure and control network and applications performance

Spotlight on the essential role of flexible software deployment in guaranteeing the quality of connected mobility services

The development of new 5G-based uses, and more particularly smart mobility applications such as connected cars, means that latency and network reliability are becoming more crucial concerns than ever. In this context, the flexible deployment of software tools across all types of terminals (both on-board and in the cloud) is essential in order to ensure an optimal experience. In effect, in order to guarantee optimal quality of service from end to end, we must be able to measure this quality. Orange and LatenceTech have designed an active sensor that measures network and application latency according to various protocols, as well as data flow rates using the implementation of a patented Orange protocol that breaks away from traditional measurement methods. This solution stands out notably for its ease of installation (automated deployment, container-based solution), its non-intrusive real-time measurements and its analytical tools.



T10



Latence Tech

Private cloud network

Benefit of 5G for video streaming

How the deployment of a 5G mobile private network revitalizes business performance and accelerates the digital transformation

For companies in various sectors (industry 4.0, logistics, events, etc.) having already partnered with a cloud provider, the implementation of a private mobile 5G network can galvanize performance levels and accelerate their digital transformation.

Such is the vocation of the 5G Mobile Private Network Cloud presented in this demo. This MPN offer is based on a software solution that can be deployed rapidly in a secure and automated fashion, using the customer's cloud infrastructure and via interconnection with dedicated local radio equipment. The impact of the stand-alone private network is illustrated via a use case in event planning – the MPN supports the real-time broadcast of HD video streams, remotely controlled with a high level of performance in terms of latency and quality thanks to the hybrid cloud and slicing.



C13



AWS, HPE, Casa Systems, LiveU

Low latency made easy

Operate the network service

Emerging L4S technology is paving the way for the large-scale distribution of low-latency network services

Emerging business applications such as the industrial metaverse, tele-operations and cloud robotics require secure, low-latency networks which do not exist yet. However, this gap could be filled by emerging L4S technology: this tech offers a low-latency network service that is low-cost and simple to operate. The demonstration showcases this technology's potential via two signature applications: videoconferencing and cloud gaming. Visitors can experiment with real situations involving network latency issues, and measure the impact L4S technology would have in terms of quality of experience. The solution stands apart for its high performance levels in terms of packet processing, packet-by-packet monitoring (sniffing), and protection against cyberattacks.



A1



Project ANR MOSAICO with Montimage, Loria and UTT

Industrial operational excellence

Configure tools in real time and improve traceability

Putting Orange Business expertise to work for industry players seeking to optimize and modernize their production lines

This demonstration showcases the potential of Orange Business enriched connectivity and Industry 4.0 solutions. The goal in this case was to address performance and operational traceability issues at an industrial site. The case study presents the solution implemented for a client in the aviation industry, combining a 5G network, Cloud and connected tools. On a production line dedicated to the tightening of parts, each of which requires the application of a precise level of force, the operator was equipped with a dynamometric Wi-Fi key. A 5G geolocation antenna monitors this tool and sends its position to the cloud server in real time; an automatic controller connected to this server can then relay tightening instructions to the dynamometric key.

This mix of technologies helps reduce the need for manual operations on the production line, and therefore limits human error. This results in enhanced security, and facilitates compliance with traceability requirements.



A2



Ubisense, Siemens

First disaggregated switch

Design a flexible and efficient cost network

An essential component in simplifying network deployment and the integration of information systems

Reducing dependence on incumbent suppliers, reducing investments and controlling operating costs are among the key challenges addressed by network disaggregation and softwarization. For Orange, the implementation of these approaches must serve to design more flexible and more profitable networks, and to ensure more rapid deployments and simplified integration of information systems. Developed by the Group's teams, ODOS (Orange Disaggregated Open Switch) is one of the cornerstones of this disaggregation dynamic. It is the first disaggregated network switch to enter production in the business IP network, and focuses on providing fiber optic access to B2B customers. It is based on the SONIC Open Source operating system, which aims to both support and accelerate hardware and software innovation.



A6

CyberDog

Guide my robot

Remotely controlling and piloting a robot via XR combined with 5G networks and digital twinning technology

In combination with 5G and digital twinning, extended reality (XR) and robotics can be employed in various industrial environments, ranging from staff training to remote surveillance, as well as remote control of machines or accessing hard-to-reach locations. Using an Orange XR headset connected to a 5G network, the user visualizes the CyberDog robot's digital twin within their own surroundings. By working with the twin, they can pilot CyberDog remotely. Using the 5G network, CyberDog receives information from the headset in near-real time, and moves in sync with its digital twin. This solution is compatible with several types of headsets and robots; the application can work with various technologies, and the robot is controlled via an API.



Private 5G Hybrid

Combine public and private networks to facilitate industry 5.0

Providing companies with a network that's perfectly adapted to their business goals, using the best technology in terms of latency and privacy

5G is a lever for the development of Industry 4.0, and this demonstration illustrates the benefits that a private hybrid mobile network architecture, using 5G Stand Alone (SA), can bring to industrial clients. This solution enables them to benefit from a private and public mobile network simultaneously, via the same equipment or terminal already in use on site. This configuration keeps the company's defined data within its own facilities, for faster processing (reduced latency) and enhanced privacy. The other part of the data is processed via the usual operator services, and can be used both on and off the customer's site. This 5G SA solution addresses a number of practical working needs for industrial clients, and helps optimize their operations. For Orange, the solution represents yet another lever for monetizing its networks and strengthening its position in the private network market.



Cross Cloud optimization

Master the service placement with guaranteed QoS and security

A B2B solution combining best practices with a dedicated platform



C6

Planning, designing and automating a complex system architecture for a cloud supplier is a process that requires finely honed expertise and in-depth knowledge of the tools available. Indeed, misconfiguration of the cloud can result in higher costs and the mobilization of unnecessary data resources (and therefore energy). This complexity is often an obstacle to the dynamic evolution and modification of these architectures. The solution proposed combines a dedicated platform with established best practices: this combination enables optimization of hybrid cloud architectures while also simplifying the associated actions, based on several parameters such as cost, energy or security. Using this approach, which integrates the challenge of controlling costs on a per-second basis, companies can make the right choices for the evolution of their multi-cloud environment: localization, supplier, etc. In doing so, they benefit from support that is fully adapted to their needs, while also maintaining continuity for services already in place and their associated security levels.

Power of declarative operations

Offer unified lifecycle management for Cloud and CDN

A new approach for automating CDNs, improving resource scaling and saving energy

Content Delivery Networks are undergoing a cloud-native transformation. This demonstration presents the benefits associated with this evolution, in terms of how the deployment and lifecycle of CDN technical components are managed. Automation is entering the fray, and helping to simplify the deployment of CDN applications and their infrastructures. Various recurring tasks can now be fully automated, such as updating OS and CDN licenses, along with the application of security patches. CDN servers adapt their dimensions in a dynamic and autonomous way, which makes them more energy-efficient. Between the optimization of commonplace operations, auto-adaptation of scaling and improvement of energy-efficiency, the automated management of CDNs in cloud-native mode is a promising prospect.



T3

uCPE Connect

Virtualize all networks, IT and Security

Simplifying the virtualization of network functions and giving operators greater flexibility

In a market impacted by profound, fast-moving technological evolutions, Orange Wholesale France is innovating in order to offer its customers solutions that are adapted to their needs in terms of advanced functions. The uCPE Connect project, notably, was designed specifically for third-party network operators (ORT) in the wholesale market, in order to support the virtualization of network functions on uCPE equipment deployed to end user clients. The tool, which takes the form of an application, simplifies virtualization management, offering various advantages into the bargain: optimization of resources, flexibility, autonomous management of services, etc. Another particular feature of the solution is its agnostic design, allowing it to be adapted into various configurations.



Frontline workers management

Digitalize and optimize deskless workforce performance

Orange Business proposes a digital solution adapted to the needs of front-line workers

Frontline Workers or operational staff are essential to the economic and social health of any country. The recent health crisis highlighted their critical role and the need to improve their digital equipment: currently, just 20% of IT budgets are devoted to this segment – even though it represents 80% of the world’s workforce. Orange Business is responding to this challenge with an innovative and modular offering, encompassing terminals, services, support/consultancy and applications. The goal is to sustain frontline workers’ productivity and commitment, while also connecting operators on the ground to the rest of the company, offering them the same business tools and HR services as their colleagues in the office. In this demo, the impact of these innovations is illustrated through the workday of a forklift operator in a warehouse, showing the benefits of dedicated solutions such as Monstock (stock management), as well as a SuperApp that brings all the company’s digital services together in one place.



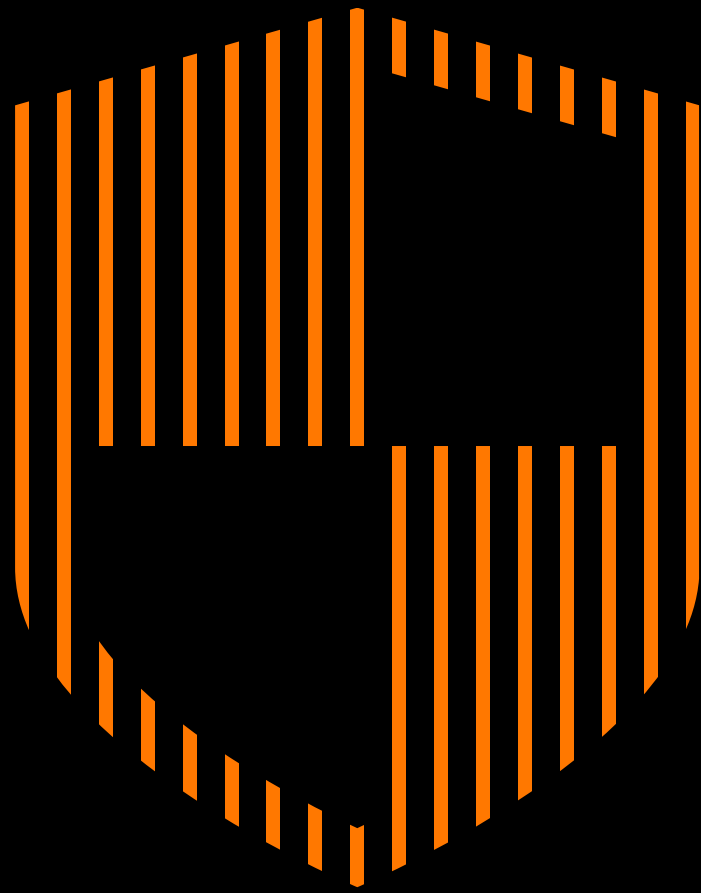
A3



OutSystems, Microsoft, Ivanti, MonStock, Samsung, Crosscall, Zebra

Demonstrations

Cybersecurity



Hookalert Trust System

Protect my personal data with AI

Combining the sum of our network data, Data/AI technologies offer new protections against the most common forms of cyberattacks

For both companies and individuals, phishing attacks are the most common form of digital malfeasance; their consequences include the theft and misuse of personal data for fraudulent purposes. In the field of cybersecurity, Data/AI technologies offer new solutions for protection against these attacks, including the two solutions presented in this demo.

The first, Hookalert, is an extension of the browser: based on Machine Learning algorithms, it alerts company employees when they visit a suspicious site – even ones that have never previously been visited or analyzed. The second, Trust System, is a scalable machine learning AI model whose job is to block attacks and suspicious behavior without bothering the user. Trust System has already been rolled out to orange.fr sites and apps, where it evaluates approximately 500 million requests per month.



C11

Secure manufacturing platform

Protect end to end digital supply chains

Securely sending sensitive information for 3D printing of parts in decentralized production sites

Additive manufacturing, or 3D printing, is becoming an increasingly prevalent industrial practice. Among its various uses, 3D printing makes it possible to decentralize the production of spare parts to locations that are closer to the end customer, thereby reducing the need to keep large stocks of physical parts in warehouses. However, this approach raises a new challenge: how to securely transmit sensitive information to multiple remote production sites.

This is the challenge this demo sets out to tackle: Viaccess-Orca and its partners have perfected a 3D printing solution for spare parts that meets the highest security standards. Built around Secure Manufacturing Platform technology, this innovation guarantees clients confidentiality and data integrity, as well as monitoring and control over the number of parts produced remotely.



A5

Orange Money distributor fraud detection

Boost the distribution network

How innovative algorithms combat fraud on Orange Money, while also helping to optimize the distribution network

Orange Money is one of the most popular mobile financial services apps in Africa. A significant proportion of the service's distribution is carried out by independent partners, who are paid on commission. This demonstration explains how the careful use of data, together with precisely designed algorithms, can help curb fraud in this sector. A task force of business and Data/AI expert was assembled in Senegal. The team created a database and innovative algorithms, featuring hundreds of indicators capable of automatically detecting fraud patterns on a daily basis. In addition to reducing underhanded practices and complaints, this "data-driven" approach highlights a new way of segmenting the points of sale network, which is now making it possible to optimize distribution and the customer base in strategic zones.



Orange Money fraud detection

Analyze behavior users to fight against fraud with new rules and AI

Orange Senegal uses AI and behavioral analysis to detect and curb fraud in mobile financial services

Following the observation of a rise in fraud-related incidents linked to the Orange Money service, the Group's teams in Senegal have found a way to fight back. Turning to AI, they have perfected advanced behavioral analysis models enabling the identification of fraud cases that would previously have slipped past traditional detection systems. The solution automatically spots fraudulent transactions, and more generally provides widespread visibility over potentially suspect behavior. With this project, Orange Money's distribution chain in Senegal benefits from improved levels of oversight and security.



Container security

Protect cloud infrastructures using static and dynamic tools

A new approach to security for containers, combining static and dynamic analysis

Containers are now a key technology for the pooling of services within cloud platforms, and for the dynamic of network softwarization more generally. However, their use implies a rethink of traditional security management tools, as these need to be adapted to the dynamic functioning of massive container use. Such is the outlook explored in this demo: by combining the power of static analysis with the efficiency of dynamic analysis, it is possible to improve container security by protecting them from both potential malicious activity and against known or future vulnerabilities. These tools also enable us to provide a global, unified view of the security status of an entire container stock. The ultimate goal is to consolidate and automate the security management for services deployed via the application of this dual approach to Cloud or 5G hosting infrastructures.



Research contract with Télécom Sud Paris

My security partner

Support the digital usage from smartphones to home devices

A conversational agent dedicated to cybersecurity issues for the general public – analyzing and detecting threats, and increasing consumer awareness



C4

Digital insecurity is gaining ground – attacks are adapting and recurring, user awareness is lacking, and protection systems are too complex and varied. This observation is reflected in the statistics: for example, 8% of users in France were victims of fraud over the course of the previous 12 months*. The Orange teams have come up with an innovative response to these challenges: a digital support chatbot. From a smartphone, the chatbot can help users raise any doubts they have about any communications channel (email, SMS, calls, etc.), provide them with advice and context, or collect information on fraudulent actions observed. The information collected will enrich the AI knowledge bases on which the solution is based – these already feature several cases of fraud, along with data and resources from cybersecurity operators. By analyzing a household's equipment and suspicious digital content, sharing information and best practices and explaining the recommended courses of action, the chatbot helps to establish a sustainable culture of cybersecurity.

*OpinionWay study carried out for Orange, July 2022

Securisation of the Edge computing

Identify threats for my applications

The highest standards of cybersecurity for industry 4.0

Edge Computing will be a key technology for Industry 4.0, contributing to the improvement of on-site operations using an integrated telecoms infrastructure. This demonstration presents a private 5G network solution based on the operator's own infrastructure. What makes this solution unique is its combination of the benefits of private 5G connectivity with the addition of Customer Edge Computing. The emphasis is on security – a key issue in the context of Industry 4.0. This requirement is reflected in the preventative analysis functionalities of applications developed by third-party software editors, as well as proactive detection of vulnerabilities, executed within an Edge Computing environment. Using this approach, our industry clients will be able to optimize their operations with a network that is adapted to their needs; one that is both agile and meets the highest standards of cybersecurity, under the wing of a trusted operator like Orange.



C5



Palo Alto Networks

Cybersecurity for Home and office

Protect networks and IoT devices

Automatically consolidate security for devices connected to home or SME networks

How can we better ensure the security of connected devices on «unmanaged» networks, such as those in homes or small businesses? This is the question answered by the VITA and OPUS software developed by the start-up SAM Seamless Network. These innovations offer internet service providers (ISPs) a solution to secure devices connected to their residential and business networks, using automatic discovery and identification of the devices. The demo demonstrates their value by simulating an office and connected home environment, where multiple devices are connected via Wi-Fi, including IoT devices. SAM's solutions automatically detect these devices and provide configuration tailored to their characteristics to ensure the best protection against cyber risks, without human intervention. They are an asset to enhance ISPs' cybersecurity arsenal and improve the satisfaction of their end customers.



T2

Intelligent security guard

Surveillance and security of business and residential buildings

A high-performance alternative to traditional physical security systems

Discover e-Guard, the innovative service from Orange Poland designed for multi-residential or commercial buildings. Providing a comprehensive surveillance and security solution (software and hardware), e-Guard harnesses the power of AI and advanced video analysis mechanisms. With change for features - like access control and management, real-time video surveillance, and identification and reporting of suspicious situations, e-Guard offers an array of enhanced functionalities. Drawing upon Orange's robust fiber optic and mobile network infrastructures, this solution represents a powerful, reliable and profitable alternative to traditional physical security systems.



C18

LLM generative AI video

Ensure a secure environment to personalize and distribute content

Protecting the interests of content creators while simultaneously improving the viewer experience

Generative AI tools are in the spotlight, and are helping to redefine a number of sectors – including television. Viaccess-Orca has decided to evaluate their impact, in terms of both benefits and disadvantages, in partnership with Microsoft Azure. Indeed, while AI tools can be used to generate fake videos, motivating studios to implement protective measures, they are also an opportunity to enrich TV platforms with new functionalities. The demo highlights two scenarios, one featuring end-to-end content creation, and the other looking at a recommendation system using large language models to improve the viewer experience. Recommendations are then provided to production studios on how to protect themselves against the proliferation of counterfeit content, and how to improve audience engagement and satisfaction.



T4



Microsoft Azure OpenAI

Intellectual property and licensing

Protect and value

Intellectual property puts the Group at the cutting edge of new communications standards

At Orange, the management of intellectual property and licenses falls within the remit of Research. IP and Research follow the same underlying theme, in alignment with Orange Innovation's objectives and the orientations of the "Lead the Future" strategic plan: creating value. As such, intellectual property management is a commercial and international activity that is central to the innovation process. Through IP transfers and licensing rights, etc., our inventions can sometimes pop up in unexpected places: did you know, for example, that when you go to the movies in France, the high-quality sound you experience is based on Orange patents? Over 2,000 industrial operators around the world are licensed to use our technologies. As such, each year Orange ranks among the biggest filers of patents in France (and is the leading network operator in the field). In addition to this goal of generating value, this animation will allow you to explore and understand how intellectual property also nourishes our reputation as an innovative operator.

Orange Expertise

Provide singular forward-thinking on core business, while securing our top-notch experts

**Orange Experts:
a strategic asset
for the present,
and insights lighting
the way for the future**



C21

In a rapidly evolving technological and competitive environment, Orange can count on its eight communities of experts. Representing their countries and functional activities, they play a major role in keeping the Group at the forefront of innovation, and elucidating current and future challenges in the sector – all while securing and developing this human capital that is essential to our business. To illustrate the Orange Expert program’s tangible impact, the demonstration presents examples of initiatives undertaken in three communities. The first is a memo outlining the various technological initiatives undertaken in 6G by the major stakeholders in the sector, when forward thinking on rationalization was required (before standardization had even been mentioned). The second consists of a prototype for an AI-driven supervision tool aiming to reduce or eliminate the impact of service incidents in the context of network cloudification. The final initiative showcases an innovative and fun training program to detect and develop talent in the field of cybersecurity. Also notable is a mini-conference, based on feedback on the ID and Payments ecosystem in India, offering insights into business opportunities for MEA. These various forms of expertise amount to a precious resource in terms of Orange’s competitive edge, showcased both internally and within the Group’s ecosystem, with a view to shared progress and mutual enrichment.

Mini-conferences

Mini-conferences

New retail connectivity



The European IA Act

Understanding the European regulatory framework on AI that will come into force in 2026

This conference will look at the AI Act and AI Pact. In April 2021, the European Commission set forth the European Union's first regulatory framework for AI: the AI Act. This regulation will apply automatically to all EU countries, and is based around the notion of risk. According to the level of risk it poses for users, an AI system will be subject to a greater or lesser level of supervision, aiming to ensure responsible use in compliance with citizens' rights.

As such, the AI Act underlines several fundamental principles which all AI systems used in the EU will need to comply with: security, transparency, traceability, non-discrimination, and respect for the environment. It also promotes the principle of the human guarantee, i.e. tools must be supervised by humans rather than fully automated. In addition to the AI Act, which will come into effect in 2026, there is also the AI Pact: a transitional process based on the voluntary participation of stakeholders (both within and outside Europe), who will be invited to explore the key principles of the AI Act in 2024 and 2025.

Understand the future of LAN

Why is the Matter unified communications standard for the smart home essential for the global industry and Orange countries?

Discover the two strategic goals behind Matter, a new standard for smart homes

In the Orange Home ecosystem, the Matter format and Thread are paramount in terms of supporting the Group's ambition as a benchmark operator in domestic networks, and as a guarantor of Wi-Fi quality. Matter, a new standard for communication and interaction between objects in a smart home, will have a profound impact on customers' domestic networks in the coming years. It aims to simplify the user experience by providing a secure, high-performance and interoperable standard, capable of managing all devices in a household regardless of their manufacturer. In order to maintain its central position in domestic networks, and to continue innovating competitively alongside new players in the Smart Home market, Orange must plan ahead for the arrival and integration of this standard; this mini-conference will take a closer look at these topics, sharing key strategy elements on the Matter standard format and Thread technology.

GNPy : new optical network design

How the GNPy (Gaussian Noise in Python) tool can change the relationship between operators and suppliers in the design of optical transport networks

In each of the countries in which it operates, Orange uses a national optical network linking various towns and cities in order to transport voice and data traffic over long distances.

The design of these networks is based on proprietary modelling tools, making the Group dependent on its suppliers and their products during the design phase.

Developed by a community of academics, suppliers and operators, GNPy is the open-source tool that will rectify this situation. By integrating physical public models, GNPy provides a technical basis for shared discussion, allowing it to compare and challenge suppliers. Because it is agnostic, this tool makes it possible to model scenarios combining equipment from different suppliers.

And because it is open-source, it “on-boards” the entire community around a key challenge for the future automation of optical transport networks: the definition of open, standardized APIs.

157 Terabit/s: a new transmission record on Orange's networks

Orange is testing technology to unlock data flow speeds on its optical transport networks and avoid any risk of congestion

In the context of massive and continuous traffic growth, Orange's fiber infrastructure is quickly filling to capacity. Of course, spectacular surges in performance have been achieved in the field of optical communications: the flow rate over a wavelength has soared from 10 Gbit/s in the late 2000s to 400-800 Gbit/s today. However, the total capacity for data transfer over fiber networks has not evolved at a similar pace, with the total volume per frequency unit (bit/s/Hz) approaching saturation. However, a new technology is changing the game and tapping into the useable spectrum width in order to increase the operable bandwidth of the fiber infrastructure. Tested on the ground by Orange in the south-west of France, the solution uses the Group's existing fiber optics to their fullest capacity, boosting their total transport capacity to over 10Tbit/s. This major leap forward shows that our current infrastructure is ready for the transmission technologies of the future, and that it will be able to sustain the increase in traffic over the coming decade.

Open Radio Access Network (RAN) sharing

How Open RAN Sharing will bring new momentum to the sharing of infrastructures between operators

In the context of network softwarization/cloudification, opening up access networks via Open RAN holds significant promise and development potential, notably for RAN Sharing.

Already implemented by the Group and having generated operational gains (optimization of energy consumption and costs), the concept of RAN Sharing is “going mainstream” with Open RAN.

One of several benefits this technology offers is giving operators greater independence to deploy their own software on a shared cloud infrastructure.

Open RAN Sharing will enable operators to stand out from the competition, to open their ecosystem to new players, and to reduce operational costs.

The conference will outline the theoretical gains that network sharing via Open RAN is expected to deliver, as well as the lessons drawn from an initial experimentation phase carried out in the field by Orange Romania and Vodafone.

Satellite network for direct service to mobile and IoT

Using non-terrestrial networks to supplement connectivity in zones with low coverage

«Is it possible to use direct satellite-to-mobile connections to bridge gaps in a terrestrial network's cellular coverage? This conference sets out to examine this proposal, which suggests evaluating the ecosystem and the technological challenges associated with extending coverage via non-terrestrial networks. Non-Terrestrial Networks (NTNs) represent a credible alternative for supplying profitable and omni-present connectivity, or of ensuring the resilience and continuity of service where needed. An analysis of the ecosystem will enable the Group to establish its position for any potential partnership with satellite operators.»

Smarter Networks: artificial intelligence at the service of networks

A program to boost our networks using AI

At a time when AI plays an increasingly important role in the supervision and operation of networks, the “Smarter Networks” program has been launched to provide support for the countries in this field. Following an exploratory phase with several countries on the integration of the first AI use cases into network operations, the industrialization phase can now begin. As a reminder, AI is considered an important lever in terms of achieving level 4 (on a scale of 1 - 5) in network automation, according to the reference framework defined by the TM Forum. The incorporation of AI will help make network operation more efficient and reduce operational costs, ultimately resulting in optimized quality of service for the end user.

The objective for the Orange teams is to develop and perfect a scalable and replicable SmartNet. ai tool. At the same time, the ecosystem is being closely monitored in order to provide optimum support and guidance for each country in the definition of the most relevant “Make or Buy” strategy for them.

Time series: from theory to telco use cases

Using Machine Learning to improve roaming traffic forecasting

«Time series are sequences of numerical values representing the evolution of specific quantities (such as the number of connections to a server) over time. These temporal series contain considerable value potential as a decision-making (forecasting) tool, and this potential can be fully harnessed using Machine Learning algorithms. This conference examines the topic in two ways. It begins by explaining the issues encountered when combining Machine Learning with time series, and the inherent mathematical concepts at play. It then explores the applications aspect, by examining a use case with high economic impact being explored by Orange Innovation and Orange Wholesale: traffic forecasting for international roaming.»

Paris 2024, a springboard for innovation

The upcoming Olympics will pave the way for new technological opportunities in the business and public markets

As an official service provider for the Paris 2024 Olympics, Orange will seize upon the opportunity provided by this global symposium to showcase several new innovation milestones. This conference will provide an overview of the new technologies to be deployed in the ultra-demanding context of world sport, which is characterized by the most stringent requirements in terms of availability, performance, security and environmental standards: universal walkie-talkies on a mobile network, live video on private 5G, an IoT platform for physiological monitoring of athletes, tracking athlete positions using LTE-M, etc. In addition to the solutions themselves, the conference will explain how Paris 2024 represents a springboard for these network and platform technologies, with various long-term applications for industry, health, transport, media, etc. – both for businesses and the general public.

Mini-conferences

Customer experience



Social impact assessment of Orange programs

How can we better understand the effects of our programs and keep improving them?

For a committed and responsible company like Orange, social impact assessment is a response to the growing expectations of its stakeholders on major social issues. But how should we define and assess the notion of “social impact”? To answer this question, the conference underlines the importance of looking at the consequences of actions carried out on beneficiaries and society as a whole, going beyond the economic dimension and standard activity indicators. It provides information on the need for reliable, detailed social impact measurement of the various programs implemented by Orange in its territories - coding training, online risk prevention, etc. - to better understand what the beneficiaries actually gain from them. Social impact assessment is also a powerful lever for continuous improvement of programs. It enhances the value of the work of teams in the field, and contributes to strengthening Orange’s extra-financial reporting.

Challenges of women's entrepreneurship in Africa

Digitization as a driving force for female entrepreneurship in Africa

Around 24% of African women start their own businesses, but female success stories tend to remain rare or under-reported. The reason for this disparity is that pathways to success are strewn with obstacles for female entrepreneurs – these include difficulties in mobilizing contact networks, financing, and the major limitation of achieving a practical work/life balance. This conference shows how digitizing their operations can help Africa's female entrepreneurs to overcome these obstacles, through improved business management, enhanced professional and innovation practices, and simplified access to information and networks. Entrepreneur and president of the FAADEV association (which represents 3,500 working women in Senegal) Seynabou Pouye will be sharing her experience, and connecting the work of Orange Research teams to the reality on the ground.

Present and future of mobility transactions

Identity, messaging, payments: how our operator technologies can simplify the mobility of the future

With the growing use of new modes of transport in the context of the multi-modal and soft mobility era, digital tools are transforming the ways in which we get around on a daily basis. This evolution also impacts our user habits: there is now a wide diversity of disparate offerings, shared or combined consumption practices, new payment tools, etc. In this increasingly complex environment, users need interfaces for mobility services to be simple, secure and user-friendly, from the first use through to payment. This conference reviews the present and future of transport payment methods, and explains the potential of the operator technical assets (in terms of identity, messaging systems, payment options, etc.) that will make Orange a key player and facilitator in the future of mobility.

Innovation Waves

How to unleash potential for searching and incubating innovations

How to unleash the potential of employee creativity in the pursuit of innovation and incubation of solutions supporting company strategy and development

Launched in 2023 by Orange Poland, the Innovation Waves program aims to ignite the spark of creativity within all our Polish teams. It brings together innovators from different sectors of the organization (including field staff) to discover and test innovative solutions that contribute to Orange's strategy. With a specific methodology and budget, the program takes place in waves, in correlation with specific business challenges. It is redefining what's possible, pushing boundaries, and making innovation a way of life. Director of the development strategy of Orange Poland, Krzysztof Kaczurba, together with the development strategy expert, Marta Makowska, presents and discusses this initiative detailing its key steps, methods, and the role of each stakeholder.

In English

Orange Poland's refurbishment process

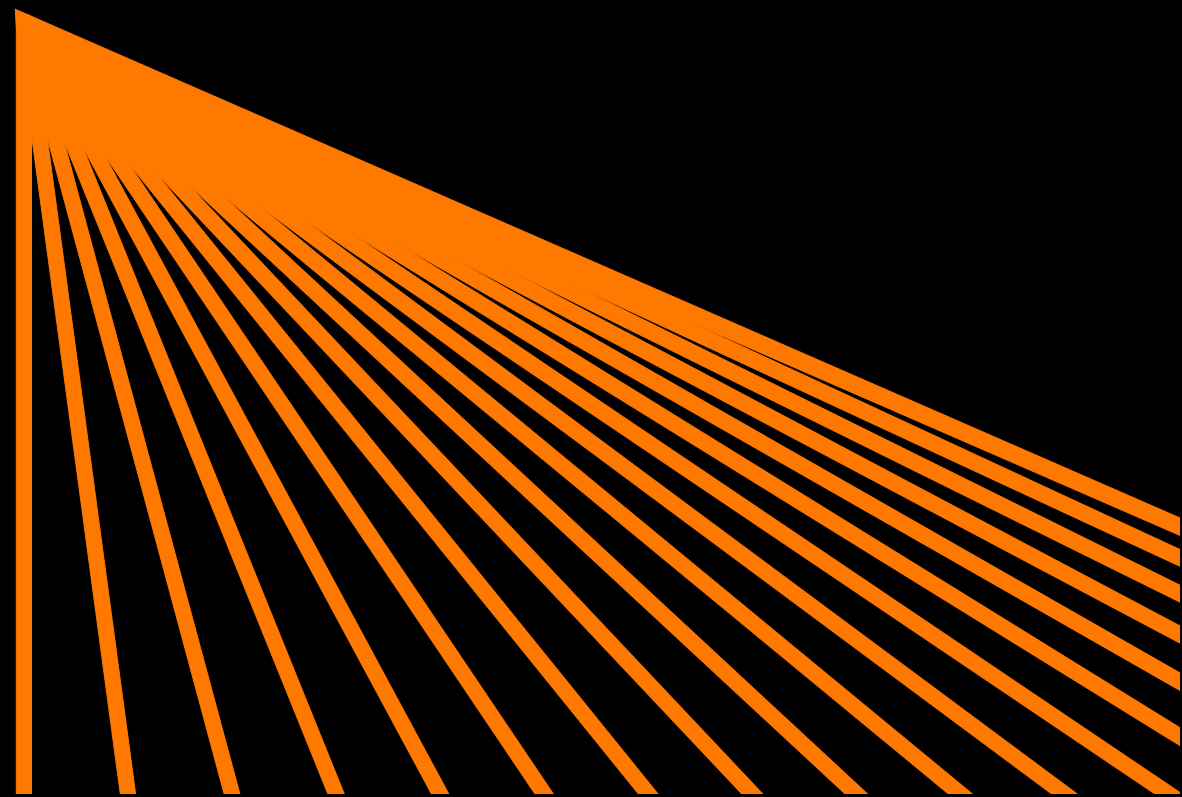
How a small yet highly motivated team helped the Orange Group take a giant step towards the circular economy

Join us on a journey of innovation, environmental consciousness and value creation following the story of Orange Poland's complete refurbishment process for Liveboxes. With the number of Livebox installations increasing exponentially in the late 2000s, the question of how to recover and reuse these boxes became paramount. In response, a new customer devices team took the initiative to develop a testing tool for used Liveboxes, paving the way for the establishment of specialized production lines for in-house, end-to-end refurbishment. This approach has not only been adopted by numerous Orange countries, but has also influenced the Group's product eco-design policy.

In English

Mini-conferences

Telco as a platform



Towards a boom in Livebox innovation

An initiative to create an open-source OS shared by all domestic set-top boxes

Did you know that domestic set-top boxes such as the Livebox are piloted by hundreds of different operating systems (OS)? This fragmentation in the Customer Premise Equipment (CPE) industry is problematic, and efforts to address it focus mostly on the work of component integration, rather than on software innovation and data. In fact, such innovation is becoming more time-consuming, complex and costly.

Orange is contributing to the Open Source prpl initiative, which aims to develop a new shared, standardized and multi-operator OS for Livebox-type Wi-Fi units, in order to create favorable conditions for innovation. In fact, experience shows us that terminals can become accelerators of software innovation provided there is standardization between operating systems, in tandem with market consolidation. With this approach, operators can work faster and more efficiently in the creation of new services, and in making them available to customers.

Pikeo 5G

En route to automated deployments and operations on the Pikeo experimental network

In this conference, we explore how the automation revolution will impact the deployment and management of the networks of the future. We'll explain how, using its Pikeo experimental network, Orange has tested and demonstrated automated deployment and "autonomous" operation of a 100% software 5G SA network. For Pikeo, Orange Innovation's teams have developed and implemented an automatic deployment chain for network functions, based on the Flux CD (Continuous Deployment) open-source tool. This chain operates independently of the cloud infrastructure selected; in this case, it deploys the 5G solution (O-RAN radio and 5G Core) on a private Orange cloud. This progress in terms of automation and orchestration opens up several pathways to optimization, notably in terms of deploying software developments more frequently and more rapidly, while also facilitating the management of complex, multi-operator 5G software networks.

Value and architecture of neutral networks

How to maximize the value of infrastructures in new ecosystems, for shared coverage without stitching and improved energy management

By building upon virtualization technologies, neutral host networks can be easily deployed within new ecosystems. This model straddles the infrastructures of public operators and those of other stakeholders (companies, TowerCos, etc.) – for example, it is already deployed via Distributed Antenna Systems (DAS), which are found in airports, stadiums, etc., but also via masts and pylons belonging to TowerCos. In this context, private standalone networks may set aside a neutral section open to all public operators, or the latter may do the same in their own infrastructures. In the first instance, the private network guarantees optimal connectivity to users of the sites it covers (stadiums, shopping centers or others), and in the second the operator can provide new services at the site level.

N.B.: an example of the approach outlined in this conference is presented in the Neutral Host Private Network demo.

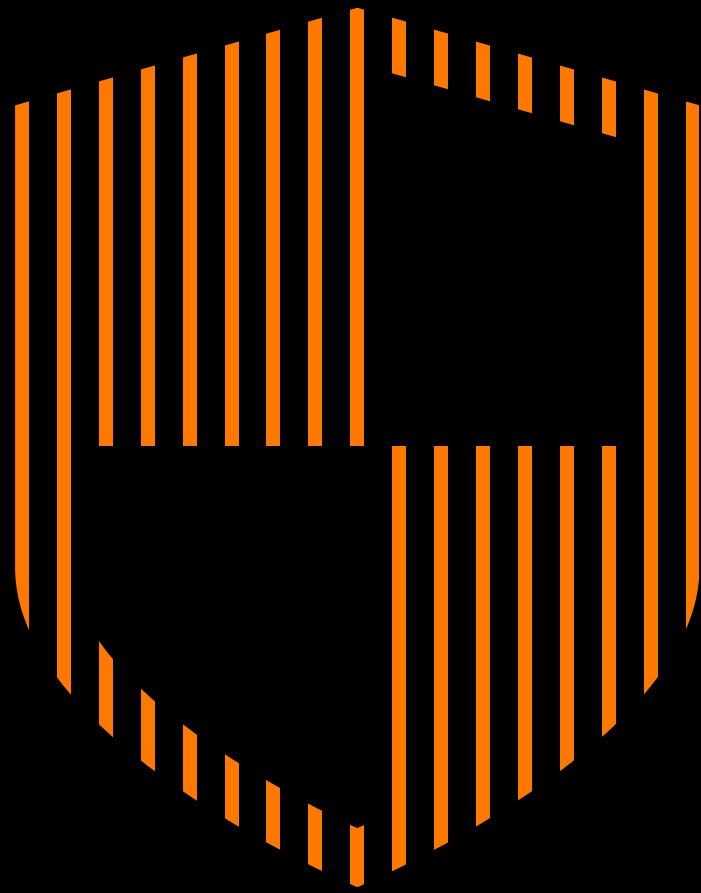
Graph Machine Learning, the new AI frontier ?

Graph Machine learning provides greater flexibility in the depiction of complex phenomena

Machine Learning is used to create AI models capable of playing chess, recognizing speech, and generating images or text. However, these models work with rigid data structures, whereas many other phenomena require greater flexibility. Graphs exist to provide this flexibility in the modelling of complex systems such as social media, web pages, communications networks, etc. At Orange, they are notably used to represent interactions between users and devices such as routers and 5G antennae. In addition to breaking down how these graphs work, the conference shows how Machine Learning techniques can be applied to them. It will also look at the opportunities that can be generated by Graph Machine Learning in fields such as IT security, medicine, physics and marketing.

Mini-conferences

Cybersecurity



Cryptography in a quantum world

How the emergence of quantum computing brings new cybersecurity risks

Although we may not see them at work, cryptographic algorithms maintain the flow and security of our digital lives. Below the surface, they are the beating heart of almost every type of internet use: web browsing, email, secure messaging, banking transactions, cryptocurrency, etc. The development of quantum computers constitutes a threat to these fundamental mechanisms: equipped with a computer of this sort, an attacker could easily break the locks that currently protect our applications and infrastructures, sparking a profound and unprecedented upheaval in users' digital security. This mini-conference will outline the current threat status of quantum computing and its temporality, and provides insights into our potential defenses.

Academic Security Operations Centers

Orange Romania makes cybersecurity affordable for SMEs and local authorities

In English

Having identified the heightened need for cybersecurity during peak Covid-19 pandemic, in 2021 the Orange Romania teams launched an accessible cloud platform providing in-depth training on cybersecurity for students and employees, requiring minimal investment and operating costs. This conference takes you on a journey through the project's evolution, from its inception as a crisis response to its transformation into a sustainable solution catering to the needs of SMEs and the public sector. Leveraging open-source tools and support from Orange Fab Romania, the platform's initial architecture has been enhanced with AI-based features. Today, the Academic SOC's (in collaboration with leading technical universities in Romania) offer managed cybersecurity services tailored to the size of SMEs and local authorities, notably simplifying the training and integration of cyber analysts.

Find us on:

orange.com

Open Tech Days - Hello Future Orange

Share on your social networks:

@Orange #OpenTechDays

Document published by the Communications Division of Orange Innovation

