For a responsible and sustainable digital future

HOW IS ORANGE BUSINESS USING FINOPS TO IMPROVE THE CARBON FOOTPRINT OF ITS CUSTOMERS' IS?

From FinOps to GreenOps for a sustainable digital future
An expert report by AdVaes

BACKGROUND

HYBRIDATION OF INFORMATION SYSTEMS (IS) WITH THE CLOUD INVOLVES SPECIFIC FINANCIAL MONITORING AND ENVIRONMENTAL IMPACTS.

ORANGE BUSINESS USES FINOPS TO BETTER ADDRESS THESE ISSUES.

A hybridation of information systems

The architecture of information systems (IS) is now largely based on a model combining in-house data centres, private cloud and/or public cloud. The hybrid cloud model is also an increasingly popular infrastructure choice. The trend is to move progressively towards hybrid or multi-cloud models, and to reduce the proportion of non-integrated environments and traditional data centres. By 2025, 46% of French businesses are expected to have opted for a hybrid cloud model, with no in-house data centres [1].

New challenges with the cloud

With the cloud, businesses have specific expectations, all the more so if they adopt an "infrastructure-as-a-code" approach*. The management of data platforms hosted in the cloud (Data Cloud*) is often dysfunctional, with a lack of knowledge of all functionalities, ignorance of key updates, unnecessary duplication, and oversized resources. There are many ways of optimising this.

For a same scope, migration to the cloud can lead to increased costs for companies that have little or no control over their usage or lack governance. Purchasing, finance and accounting departments, which used to be responsible for orders and are now partly disinterested in this process, are turning to IT departments and their teams to encourage them to implement appropriate control methods and tools.

[1] Vanson Bourne - Entreprise Cloud Index (3,400 IT decision-makers surveyed worldwide in 2020 - data for France in % of respondents)

Taking control of budgets

Taking control of budgets is the context in which FinOps* is most often used. Beyond this, the approach can evolve towards GreenOps* to integrate the environmental dimensions of the issue, such as those linked to the IS carbon footprint.

Optimising the cost of cloud services services: a major challenge

Reducing the costs of cloud service use is a major challenge for businesses. Financial departments often have little or no control over this budget. This is in the hands of the IT department. However, given the complexity of the architectures used and the fact that they are highly interdependent, controlling and optimising the related expenditure is a major challenge for IT departments. FinOps is being looked at closely to help them meet these challenges more effectively.

Cloud services and greenhouse gas (GHG)* emissions

The growing use of cloud services has a direct impact on the energy consumption required to run IT infrastructures and on the resulting greenhouse gas emissions (carbon, methane and other gases).

By optimising the use of cloud resources, FinOps approaches make it possible to reduce energy consumption and the carbon footprint of information systems.

* GLOSSARY | PAGE 9

FINOPS FOR AN EFFICIENT CLOUD SERVICE MANAGEMENT

An ongoing process

FinOps is a continuous, iterative process in which companies are increasingly engage as they adopt the cloud. The aim of FinOps is to balance cost, speed and quality in order to achieve greater efficiency. It is a cultural change that requires stakeholders in the organisation to cooperate and work towards a common goal.

Any FinOps approach involves different levels of consideration of the IS technical perimeters:

- Infrastructures, including those hosted in the cloud;
- Middleware environments;
- Applications and data platforms.

Depending on the level of cloud use maturity, the FinOps approach will not be the same. If an organisation wishes to migrate to the cloud ("move-to-cloud"*), the FinOps analysis will be carried out upstream. This approach makes it possible to recommend the migration path best suited to its context, particularly in "lift-and-shift"* strategies. If an organisation is already using cloud services, the FinOps analysis will be carried out with the aim of optimising existing approaches.

FinOps at Orange Business

Following the methodology recommended by The FinOps Foundation, Orange Business supports businesses in implementing a FinOps approach as early as possible in their Cloud and Data Cloud projects.

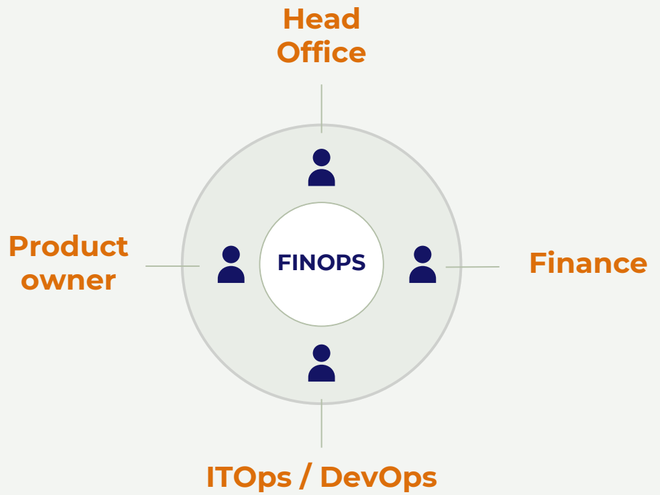
Orange Business' FinOps approach covers the main cloud platforms on the market, as well as the platforms it offers directly. It also covers data platforms.

An approach based around 6 principles

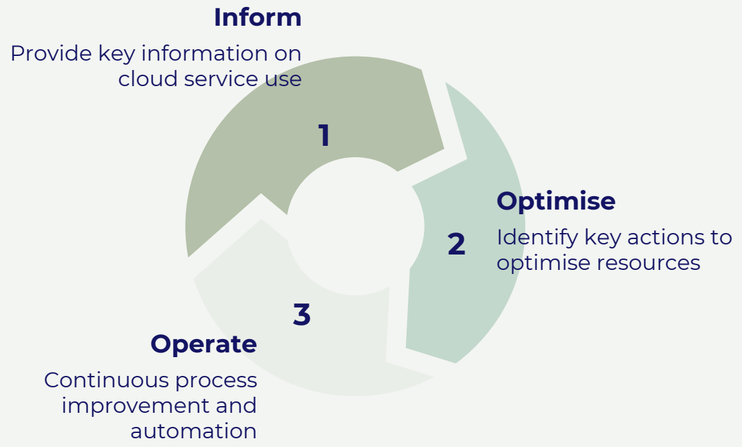
1. **Team collaboration**
2. **Value-based decisions**
3. **Cloud use responsibility**
4. **Accessibility of FinOps reports**
5. **Centralised FinOps team**
6. **Benefits of the cloud elasticity cost model**

To find out more about Orange Business' cloud platforms, see its online presentation.

THE FINOPS ECOSYSTEM



THE FINOPS PROCESS



ORANGE BUSINESS' FINOPS APPROACH FOR CLOUD PLATFORMS

MONITORING COSTS AND INVOICING

This is a relatively complex task for cloud and data cloud platforms.

Setting up dashboards makes it easier to monitor consumption and the associated costs.

MONITORING OF COST BREAKDOWN BY PROJECT

Cloud operators generally send a global invoice with no details. Few systems make it possible to define the share of consumption in real time for each project. IT departments need this allocation key in order to redistribute costs or re-invoice internally.

UNUSED RESOURCES

FinOps helps to identify and eliminate unused resources, such as those dedicated to PoC (Proof of Concept) or MVP (Minimum Viable Product) projects that have been left open even though they have been completed.

IMPROVED ARCHITECTURE

In many cases, the landing zones for infrastructures hosted in the cloud are those recommended by default by cloud operators. However, for some projects, recommendations are not necessarily the best ones. Re-architecting is sometimes advisable to avoid activating cloud services that are unnecessary.

Thanks to its experts in each type of cloud infrastructure, Orange Business can advise on the best practices to follow in order to optimise architectures.

MANAGEMENT OF PROVISIONING OFFERS

FinOps makes it possible to analyse the resources needed to keep infrastructures running smoothly and to project future consumption over time. By better defining the volume of cloud instances to reserve, IT departments can limit their commitments to what is really necessary.

IDENTIFICATION OF RESOURCES TO BE STOPPED

FinOps helps to identify resources, such as VMs*, that can be shut down according to defined periods in order to reduce the associated consumption of CPU, GPU, storage, etc. By setting up probes and scripts, shutdowns and restarts can be managed automatically.

RESIZING RESOURCES

Also known as "rightsizing", this approach enables to check that the resources allocated are not oversized in relation to expectations.

+ Compliance with the governance recommendations of The FinOps Foundation

Orange Cloud Adviser

For its cloud platforms, Orange Business has developed its own FinOps tools. For other cloud service offerings, in particular those from hyperscalers such as AWS, Google GCP, Microsoft Azure, etc., the company uses the tools of these operators. This approach is appropriate if the customer is in a single-cloud context. However, current practices are increasingly based on multi-cloud and hybrid approaches, including on-premise infrastructures. The use of third-party tools capable of connecting to all the different service providers is becoming essential. These tools retrieve key information, usually via APIs made available by cloud suppliers, and display it in dashboards. Orange Business, for example, uses the NetApp CloudCheckr or NetApp Spot tools, or UseITCloud from Prologue. These CMPs (Cloud Management Platforms) have integrated FinOps functionalities.

KEY RESULTS

A FINOPS APPROACH APPLIED TO INFRASTRUCTURES HOSTED IN THE CLOUD CAN DELIVER SAVINGS OF UP TO 30%.

A promise of substantial savings

The FinOps approach applied to infrastructures hosted in the cloud can deliver economic gains with a 30% budget reduction, depending on the customer's maturity on the subject. The promise of gains is considerable given the investment required to implement such an approach. As well as reducing costs, the benefits include improved visibility, greater internal collaboration and better changing monitoring.

Once the infrastructure has been optimised, the next step is to identify possible ways of optimising applications and data. Depending on the context of the cloud migration, the benefits of FinOps will vary. Lift-and-shift migrations do not offer any significant gains in terms of application performance without application redesign or optimisation (see "refactoring").

Only by rewriting applications in a "cloud native" mode can make different choices of infrastructure, resource allocation and associated operation: using containers, Kubernetes clusters, microservices, functions-as-a-service, CI/CD approaches, etc. These actions make it possible to optimise actual consumption as closely as possible, and to make additional gains in terms of applications and data processed, including environmental aspects.

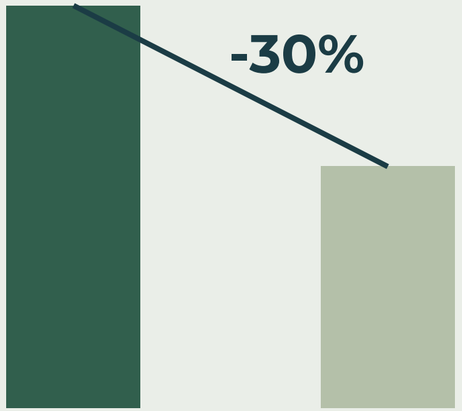
The keys to project success

To support the most critical stages of FinOps projects, Orange Business:

- Sets up and runs workshops on tagging resources. This work is necessary to identify the reserved instances and evaluate their share per project. In most cases, this work has not been done beforehand and is difficult to automate. This work requires the availability and investment of the customer's teams, which can slow down the project. It's an essential stage before moving on to the next one.

- Establishes a relationship of trust at the highest administration level, all the more so if a tool is deployed to access the consumption of the various cloud services used. Customers may be reluctant, for security and confidentiality reasons, to connect third-party tools to their IS or to give access to sensitive data. Choosing a trusted partner is key to FinOps projects.

IA for Green & FinOps | The implementation of frugal AI, combined with an algorithm designed to reduce the electricity consumption of network antennas, has enabled Orange Poland to cut its electricity bill by 15% across its entire data network. The reduction concerns the network, its mesh, faulty antennas that over-consume, etc.



potential economic gains

A FINOPS APPROACH SPECIFIC TO DATA AND DATA CLOUD PLATFORMS

The FinOps approach also applies to applications and data platforms. Companies are often faced with malfunctions in the way they use their applications, and have no control over the expenditure involved. If an internal rebilling process is set up based on resources consumed, it can prove either difficult to put it in place or incorrect. Redundant applications lead to over-billing, which can be eliminated or reduced. To do this, customers need to optimise their data architecture. A specific FinOps approach can help identify possible levers for improvement.

OSP Diagnostic Go Fast to the Data Cloud

This offering is designed for organisations with on-premise data platforms that are committed to a cloud "lift and shift"* strategy. It accelerates the migration of their data platform to the cloud.

Using accelerators, it is possible to estimate, in a matter of days, the best targets, the operating costs and the different migration scenarios to be considered.

OSP Data Cloud Starter

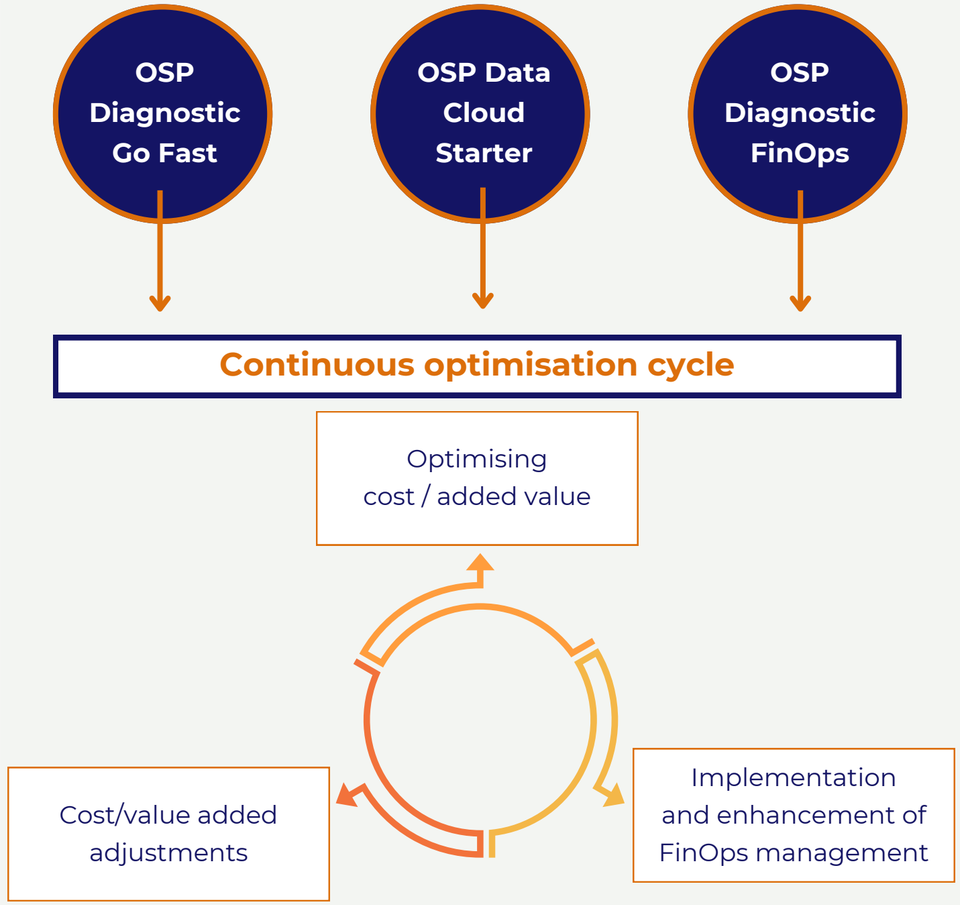
This offering enables customers to create a Data Cloud platform based on use cases. It helps them to define services to be activated according to these use cases. As with OSP Diagnostic Go Fast to the Data Cloud, it enables customers to estimate operating costs and different scenarios, including financial optimisation during the implementation phase. It supports the creation of a PoC (Proof of Concept) for use cases.

OSP Diagnostic FinOps

This offering addresses data platforms already hosted in the cloud. It responds to customer need to audit their existing data management practices in line with current best practice. It helps them to identify data services that businesses need most, and how best to activate them efficiently, in order to reduce their financial impact and, by extension, their carbon footprint.

INTEGRATING FINOPS INTO DATA CLOUD OFFERINGS

Data Cloud services of Orange Business are part of a continuous optimisation cycle based on a FinOps approach.



FINOPS STAGES FOR DATA CLOUD PLATFORMS

Analysis of current situation

- Audit of existing systems
- Identification of data consumption use cases
- Identification of data assets
- Identification of TCO (Total Cost of Ownership) indicators

Platforms analysis

- Prioritisation of data platforms to be migrated, those that consume less data
- Definition of architecture options
- Definition of trade-off criteria (cost, performance, etc.)

FinOps calculation and measurement

- Costs estimation for each scenario
- Implementation costs estimation
- Choice of solution

Implementation roadmap

- Solution roadmap
- Implementation and progress monitoring over time

POINTS OF ATTENTION

Upstream of the project, it is key to ensure that the customer has a sponsor and that the FinOps approach is part of the customer's data platform strategy. Similarly, it is essential to ensure that the approach is understood at the highest level, in senior management or at Comex. To do this, Orange Business can draw on its offer to measure the maturity of companies in terms of data use and exploitation. In the project phase, Orange Business relies on an approach that favours in-house work, with support from the Chief Data Officer (CDO)*, to convey the right messages to the departments involved in the process.

At an operational level, the lack of communication and understanding between IT and business teams can be a major obstacle (e.g. KPIs definition, bottlenecks that overload the IT team, etc.). Thanks to the choice of a decentralised data architecture ('Data Mesh'), it is possible to better federate the project and rebalance the weight on business lines. Orange Business also has a team to support customers' internal change process (e.g. acceptance by business lines of tools implemented, training to use them, etc.).

FROM FINOPS TO GREENFINOPS TO SUPPORT SUSTAINABLE IT

FinOps and the carbon footprint

FinOps approaches enable consumption to be optimised and financial savings to be made. They also lead to other benefits, in particular those linked to reducing the carbon footprint of the IS. Optimising the cost management of cloud services potentially has a positive impact on the energy consumption used to operate cloud services, and on reducing the associated greenhouse gas emissions. As a result, the FinOps approach advocated by Orange Business is gradually evolving towards a GreenFinOps approach, supported by best practice guidelines.

Putting businesses on the path to GreenFinOps

Before developing new applications in the cloud, Orange Business encourages its customers to adopt a FinOps approach and to take advantage of best practices in eco-design, which the company can also advise on through specific support offerings. Orange Business also wants to engage its customers beyond cost optimisation and FinOps approaches, so that they become part of a GreenFinOps approach as much as possible.

Orange Business has created a carbon calculator linked to its FinOps tool and for its cloud offering. In addition to assessing the financial savings, this calculator also makes it possible to estimate the reduction in CO_2 emissions associated with the actions carried out and to be part of a GreenFinOps approach.

Orange Business has begun its first work about "Green Data" in 2022. The aim is to adopt approaches that make better use of data with fewer resources. Today, the company is working on its own data repository and taking advantage of FinOps. This is inspired by French standards such as the RGESN (Référentiel Général d'Écoconception de Services Numériques). The idea is to create a bridge between "Green Data" and "Data Cloud", so that architects can adopt best practices, such as those that use AI to reduce their environmental footprint.

ENVIRONMENTAL IMPACT OF IT IN FRANCE [2]

~ 3.2%
of GHG emissions

~ 6.2%
of energy consumption

~ 2.2%
of final water consumption

[2] Source GreenIT, 2021

RECOMMENDATIONS, AREAS FOR PROGRESS AND NEXT STEPS

Going beyond cost optimisation

Orange Business' objectives are to go beyond cost optimisation and FinOps, to draw links with other levers: optimisation of cloud usage, observability, GreenFinOps, eco-design, standardisation of IT environmental footprint reduction [3], cloud networking to rationalise and optimise network configurations in multi-cloud / multi-zone contexts.

Supporting training programmes

To support the momentum around these projects, Orange Business has set up:

- A training programme for its consultants, focusing in particular on hyperscaler certification.
- A programme to identify consultants who are best placed to support businesses in a FinOps approach. These profiles must have advanced technical skills in IT infrastructures, including those in the cloud, to influence companies' architecture choices, particularly in move-to-cloud approaches.

[3] See INRIA's initiatives with PowerAPI, to which the Orange Group is a major contributor, and ADEME's work, including that of the PCR Datacenter and Cloud Services.

Leveraging AI in FinOps

Orange Business is looking at ways of using artificial intelligence (AI) to leverage FinOps, in order to automatically propose optimisations whenever possible, independently of human interaction. The company is considering introducing a co-pilot-type function into its FinOps approach.

Integrating IoT data

For Data Cloud offerings, the next steps are to integrate control of all data coming from connected objects and IoT (Internet of Things) solutions.

FinOps is at the heart of everything (data strategy, AI projects, Green IT, Modern Data Stack, etc.). FinOps, and beyond that GreenFinOps, provide in-depth knowledge of the IS, and of good and bad practices.

These approaches help customers to get an overview with the aim of improving and detecting the root causes of problems (governance, architecture, usage, etc.). Orange Business audits are part of this approach and open up all possibilities.

NEXT STEPS

Extending actions towards GreenFinOps and eco-design

Training employees and increasing technical expertise

Using artificial intelligence (AI) to automate and predict FinOps metrics

Integrating data from connected objects or the IoT

GLOSSARY

ADEME (Agence de la transition écologique): French Agency for Ecological Transition, under the supervision of the French Ministries of Ecological Transition and Territorial Cohesion, Energy Transition and Higher Education and Research.

Chief Data Officer (CDO): A data specialist whose role within a company is to organise and validate data so that it can be understood and used. He or she ensures that the data collected both internally and externally is reliable, consistent with each other and can be processed to make the right decisions.

Data Cloud: Infrastructure hosted in the cloud that guarantees the availability, integration, portability and security of a service's data, as well as a full range of on-demand computing, storage, delivery and advanced analysis capabilities. This infrastructure enables businesses to harness their data to drive transformation and create value.

Data Mesh: A decentralised data structure which organises data according to specific areas of activity (such as marketing, sales, customer service, etc.). This enables those responsible for these data to manage it more effectively.

FinOps ("Financial Operations"): An approach to the financial management of IT environments that enables organisations to optimise the costs associated with their operation and related operations..

Green Data: Data stored, managed and distributed to optimise energy efficiency and reduce overall environmental impact.

Greenhouse gas emissions: Greenhouse gases (GHGs) are present in the atmosphere, retaining some of the heat received from the sun's rays and having a major impact on climate regulation (rising temperatures). Some GHGs are emitted naturally and/or as a result of human activity. The main GHGs include: carbon dioxide ($C0_2$), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases.

GreenOps ("Green Operations"): An approach to managing IT environments that enables organisations to reduce the environmental impact of their operations and related activities.

Infrastructure-as-a code: An approach to provisioning IT resources using configuration files and scripts, based on software development practices. It is often used to deploy cloud services and orchestrate containers.

Lift and shift: The process of accurately replicating an application or a workload, along with its data storage and operating system (OS), from an IT infrastructure that is generally hosted "on premise" to a public or private cloud.

Move-to-cloud: The process of moving IT resources, data and applications from an on-premises infrastructure to public cloud services, such as those managed by AWS, Microsoft Azure or Google Cloud.

MLOps (Machine Learning Operations): An essential function of machine learning. It focuses on streamlining the process of bringing machine learning models into production, as well as maintaining and monitoring them.

VM (Virtual Machine): A VM is an illusion of a computing device created by an emulation software or instantiated on a hypervisor. The emulation software simulates the presence of hardware and software resources such as memory, processor, hard disk, and even the operating system and drivers, enabling programs to be run under the same conditions as those on the simulated machine. (Wikipedia)

ABOUT

Methodology

The information analysed and published in this report comes from internal Orange Business documents (reports, technical documentation, use case studies, notes and internal work), interviews with experts on the subject addressed, supplemented by information from recognised external public sources and/or AdVaes internal databases and analyses.

CSR at Orange Group

As a subsidiary of the Orange Group, Orange Business follows the charter of its majority shareholder.

This charter is available on the Group's website.

The Orange Group's Corporate Social Responsibility (CSR) policy focuses on the following areas:

- Governance;
- Fundamental freedoms;
- Digital inclusion and territories
- Ecological and energy transition;
- Responsible products, services and uses;
- And the responsible employer.

Detailed information on the Orange Group's CSR policy and commitments is available on the online media library: gallery.orange.com/RSE.

About Orange Business

Orange Business is a digital services company belonging to the Orange Group, with expertise in networks, connectivity and digital solutions integration (service platforms, data analysis, cloud solutions, etc.).

The company supports private companies and public organisations worldwide in their sustainable digital transformation. It combines a global presence with a local approach, supported by more than 29,000 employees who are experts in business issues. It defends an ethical, responsible and inclusive vision of digital, while helping its customers to reinvent their services.

About AdVaes

AdVaes is a neutral and independent market intelligence and operational strategy consultancy specialising in the analysis of cloud computing and data markets and the ESG approaches of digital service providers.

The company helps organisations to develop and implement their strategy, to enhance the value of their actions and investments, and to make informed decisions in terms of innovation with the cloud, and on ESG issues of digital and reducing the environmental impact of IT activities. The company supports executives, their managers and their employees in 4 operational areas: insights, assessments, anticipation and/or awareness.

“ORANGE BUSINESS THANKS ADVAES AND ITS INTERNAL TEAMS FOR THEIR CONTRIBUTION TO THE PREPARATION OF THIS REPORT.”

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