WAVESTONE

Industry 4.0 Barometer

Market trends and experience feedbacks

2023 edition

Contents

Edito

For the eight consecutive year, Wavestone is taking a step back and reflecting on Industry 4.0 trends in France. Our experts share their convictions and recommendations for tackling the major future industrial challenges.

The 2023 edition, signed for the second consecutive year with France Industrie and BPI France Le Hub, focuses on monitoring the technological and organizational maturity of the entire French industrial ecosystem, from start-ups to major groups. Particular attention has been paid to themes at the heart of current events: the rise of Artificial Intelligence power and its derivatives, the generalization of industrial cybersecurity, and sustainability, which is an essential component in ensuring the long-term durability of French industry.

For the first time since its creation, the Industry 4.0 barometer is enriched with testimonials from major players in French industry.

We wish you a good read and hope you enjoy reading it!

Olivier FONTANILLE
Associate partner
Wavestone

Vincent MOULIN-WRIGHT
General manager
France Industrie

Eleone De Galzain
Partnership manager
BPI France Le Hub

Methods

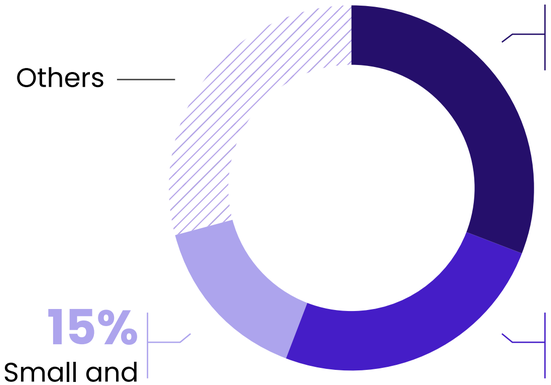
An identical approach to previous editions:

- A survey with 28 questions launched during summer 2023
- Qualitative interviews to complete the survey results
- A panel made of clients and partners of Wavestone, BPI France LeHub et France Industrie

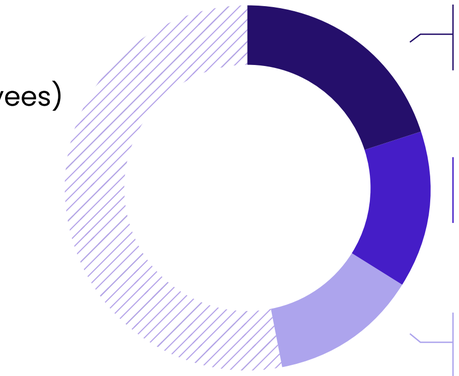
Respondents with characteristics representative of the French industrial ecosystem:

Function

Company size

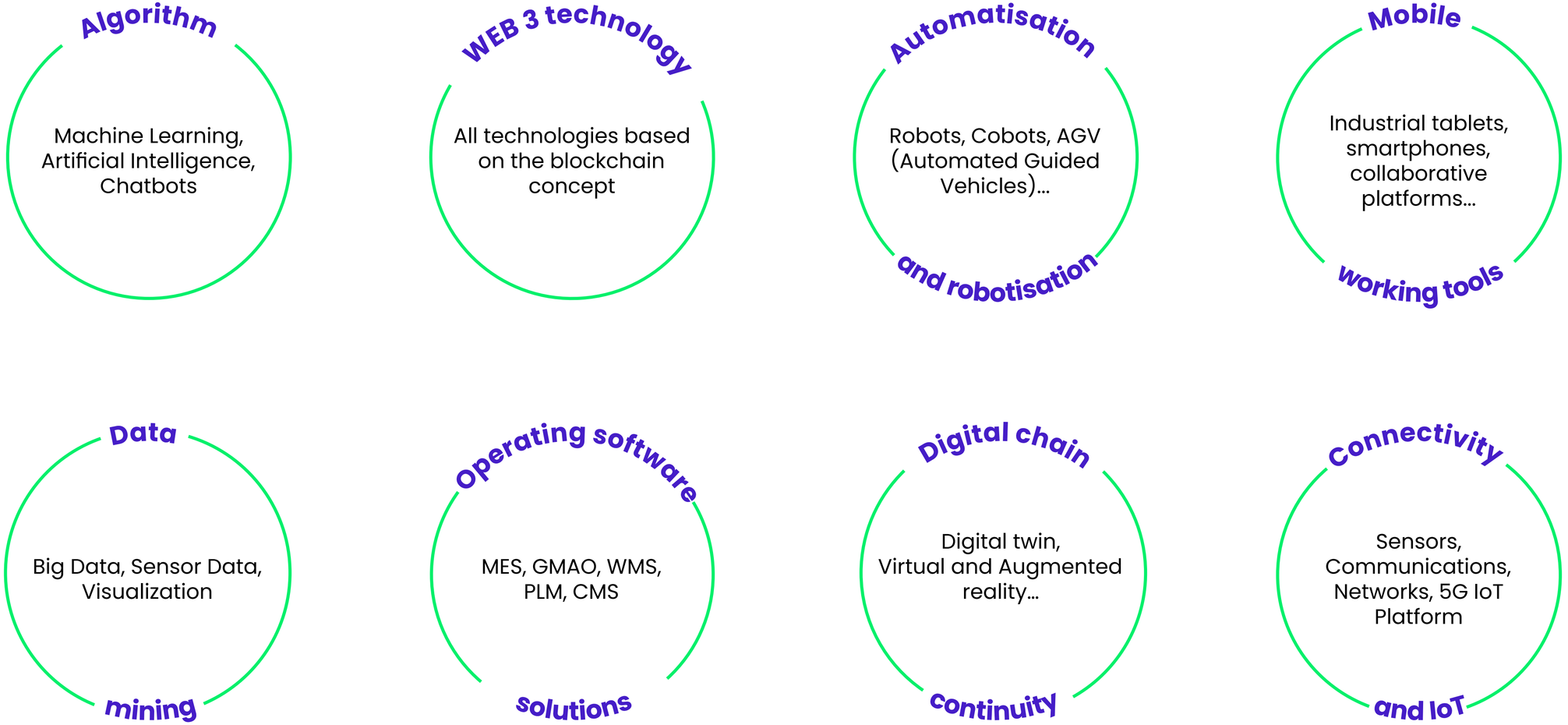


Business sectors



Key concepts

A simple categorization of Industry 4.0 technologies



Key messages

Overall maturity: progress limited by deficient infrastructure

French manufacturers are making progress in implementing Industry 4.0 technologies. Mobility technologies and operating IS remained at the top of the ranking. However, the maturity of their foundations and infrastructures, and the availability of resources and skills, are still insufficient to fully meet the challenges of industrial performance.

Data / AI: progress held back by data availability

In the spotlights, projects linked to the implementation of AI and generative AI are making lightning progress. Nevertheless, manufacturers are still facing issues of acculturation and ROI. The availability and quality of data and the obsolescence of industrial infrastructures are holding back the mass deployment of these new technologies.

Cybersecurity: preventive actions yet to be deployed

Cybersecurity is almost completely integrated into all industrial activities, from the project phase to field operations. Although manufacturers seem to be fully aware of its importance, there is still a need to deploy preventive measures such as incident detection and the formalization of BCP/BRP plans.

Sustainability: Awareness of targeted digitalization projects

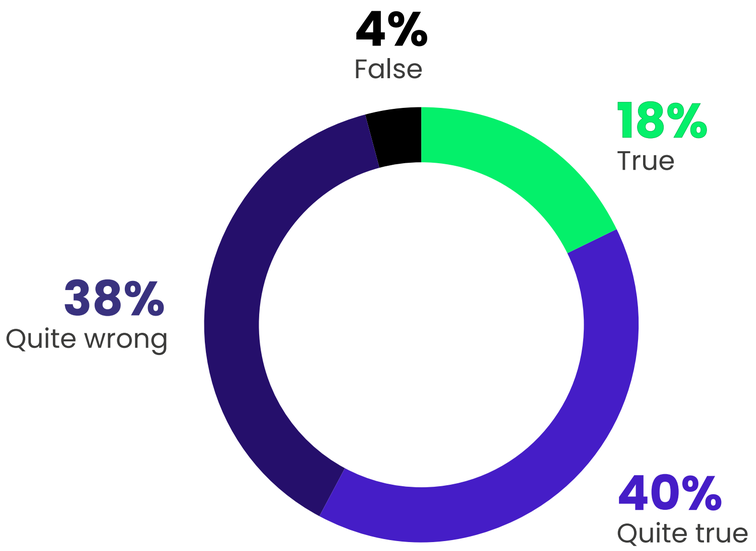
Last year’s growing awareness has now been converted into sustainable projects. French manufacturers have more widely embarked on projects to reduce their carbon footprint, motivated by government-imposed regulations (BEGES, etc.) and the associated financial gains. More than three-quarters of them are already equipped with carbon-measuring solutions.

01. MONITORING INDUSTRY 4.0 TRENDS AND COMPANIES' DIGITAL MATURITY

Industry 4.0 : progress to be confirmed

Today, **Industry 4.0** is a matter of course for companies, yet inadequate **industrial infrastructures** still hinders the implementation of new solutions.

My organization is fully mature when it comes to Industry 4.0 solutions implementation (technological and organizational base)



Only 7% of companies implement their Industry 4.0 solutions at the forecasted pace

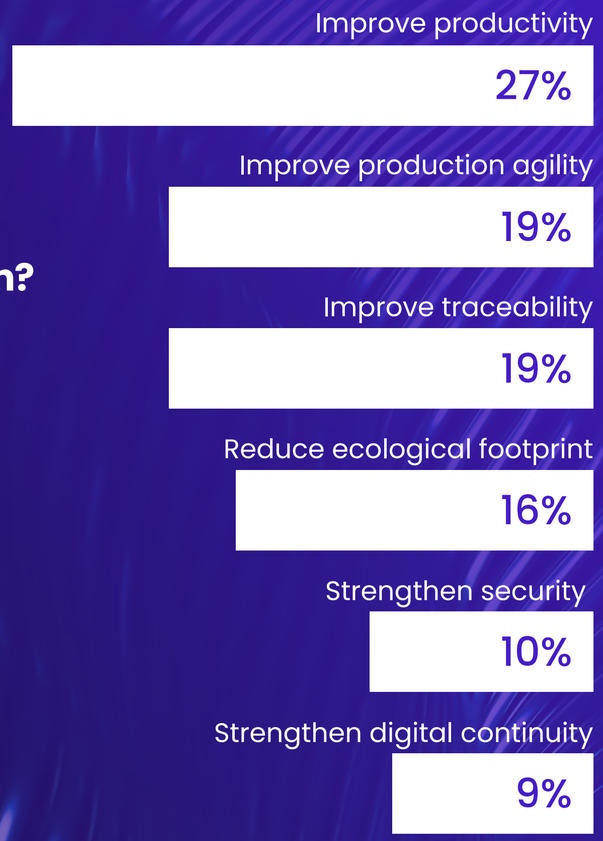
All these companies rely on an existing operational IT structures or requiring only minor, non-blocking upgrades.

Companies mature in their implementation of Industry 4.0 solutions, with global initiatives driven and business-oriented projects (group directives).

Still, they struggle to implement those solutions at the originally planned pace because of industrial infrastructures which are either obsolescent or in need of major modernizations, combined with a lack of IT skills.

Industrial performance, the key driver of 4.0 initiatives

What challenges are Industries 4.0 initiatives addressing in your organization?



The survey confirms the trends of previous years: **improving operational performance** (productivity and production agility) is the primary challenge addressed by Industry 4.0 initiatives.

E.g.: production processes automation, personalization of production, etc.

Improving traceability has moved up to second place this year.

E.g. real-time tracking of raw materials, products and equipment, advanced quality control, batch management, etc.

Completing the podium, **the reduction of ecological** impact maintains its position as one of the main challenges this year.

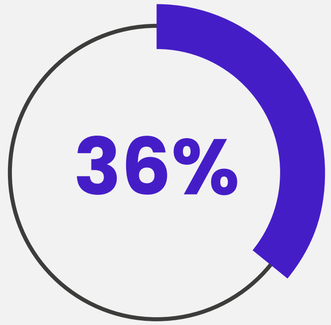
E.g.: reducing energy bills, reducing non-quality, integrating recycled components, etc.

Industrial pedestals continue to be modernized

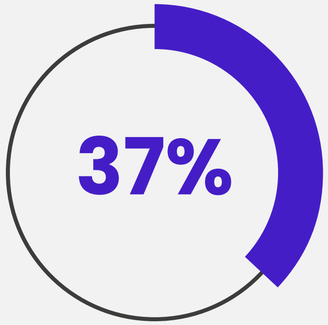
Only 37% of the respondents agreed that **the existing IT infrastructure can accommodate the implementation of Industry 4.0 initiatives infrastructure**, a rising proportion compared with last year(+18%).

Most projects can bel implemented on the existing infrastructure requiring minor evolutions

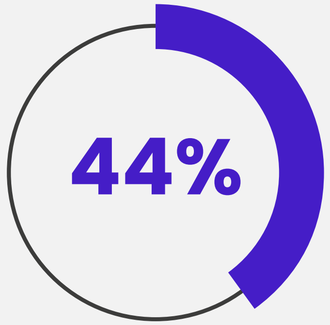
LARGE CORPORATIONS



ETI



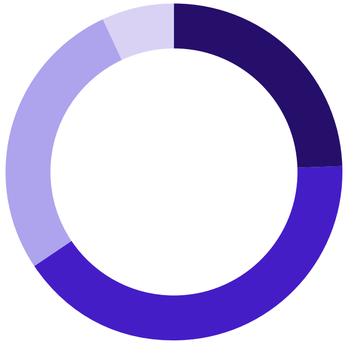
SMES



The transformation is more expensive for large corporations, since complexity and resource availability (in volume and skills) slow things down. SMES are more agile, though they might underestimate implementation challenges.

Most projects are implemented with internalized resources.

Skills repartition in Industry 4.0 projects



24%
Fully internalized

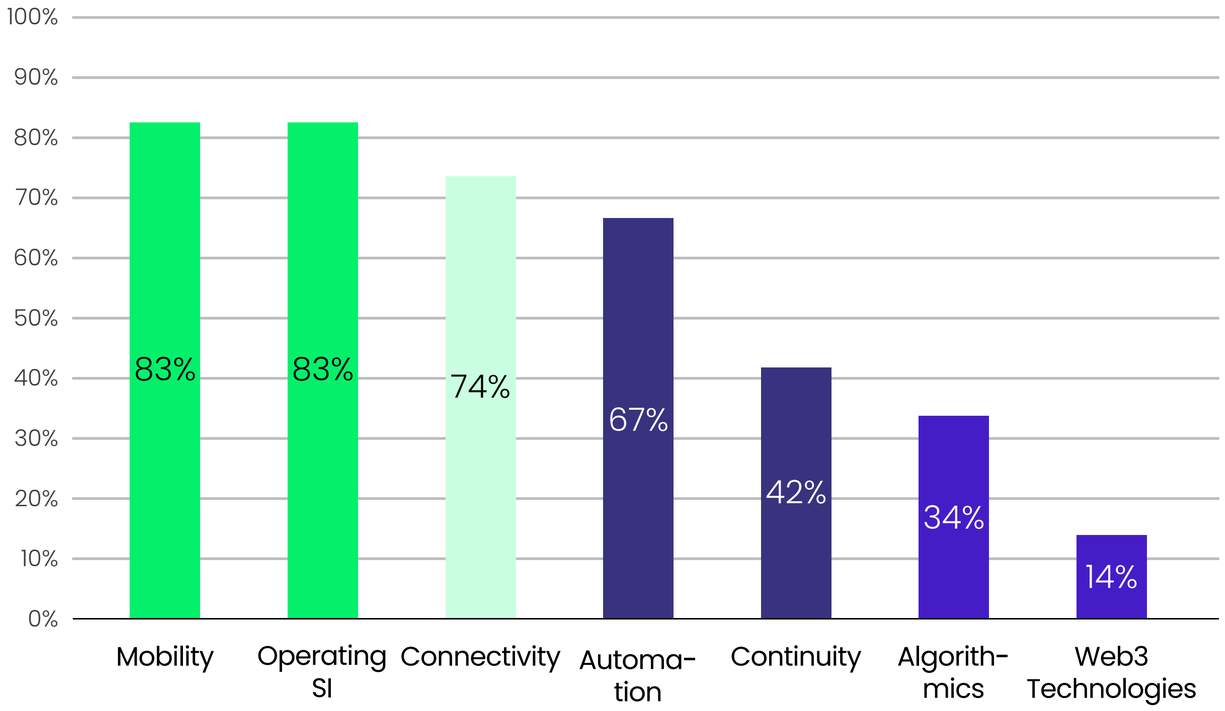
41%
Mostly internalized with a few external resources

28%
Mostly externalized with a few internal resources

7%
Fully externalized

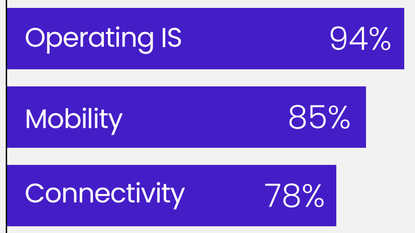
Manufacturers are making progress by benefiting from technological revolutions

What is your company's maturity level for each theme?



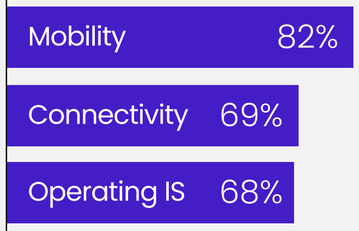
Once again, this year, mobility technologies and operating IS are the most mature technologies. The level of maturity of algorithms remains a limit to the implementation of AI use cases.

Large corporations



Large corporations are mature when it comes to using operating IS. They seem to remain at the PoC stage for the most advanced technologies, probably due to the complexity of their infrastructures.

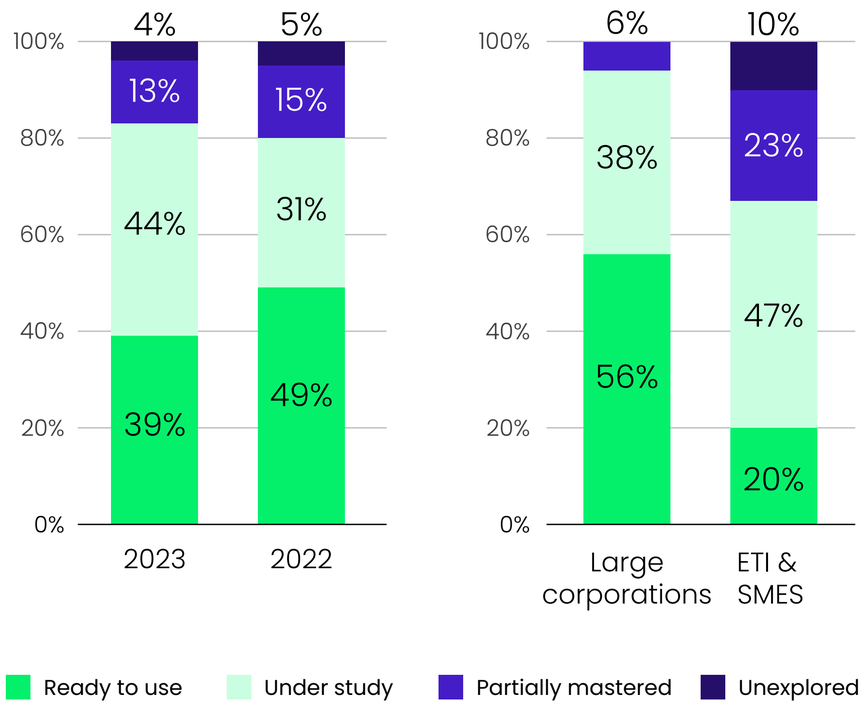
ETI & SMES



ETIs & SMEs are more mature in the most accessible technologies and complex Industry 4.0 use cases thanks to their more agile structure compared to larger groups.

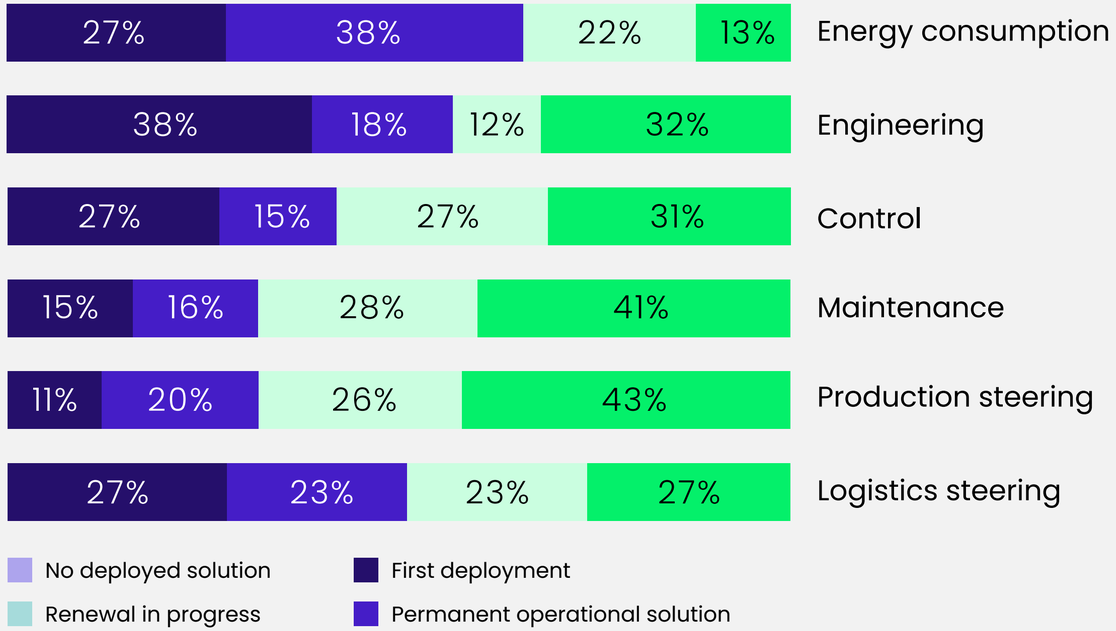
Operating IS seen as structuring tools undergoing renewal

Operating IS maturity level



Maturity level gap 2023 Large corporations, ETI and SMES

2023 IS categories' maturity



Despite an increase in overall maturity and in the number of operating IS, there has been **a decline in their mastery**, explained by **many renewal projects or first-time deployments**. (estimated at 45%).

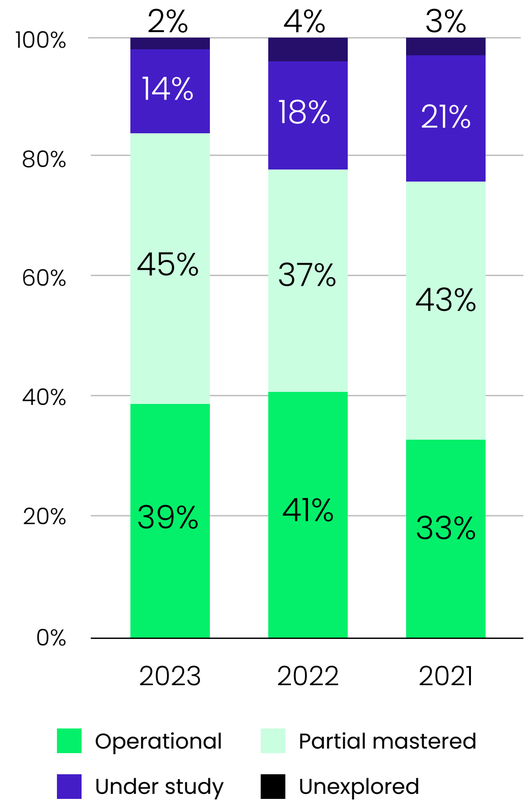
Operational Information Systems maturity have reached a higher level in big groups than in SMEs (+27%)

Mobility is an accessible and widely used technology

Their accessibility, low cost and rapid ROI are all factors that explain the steady increase (+5% since 2022, +7% since 2021) in the level of maturity of mobile work tools. The simplest use cases, such as deploying tablets or smartphones to digitilize, or remote-control tools are now mastered by most respondents.

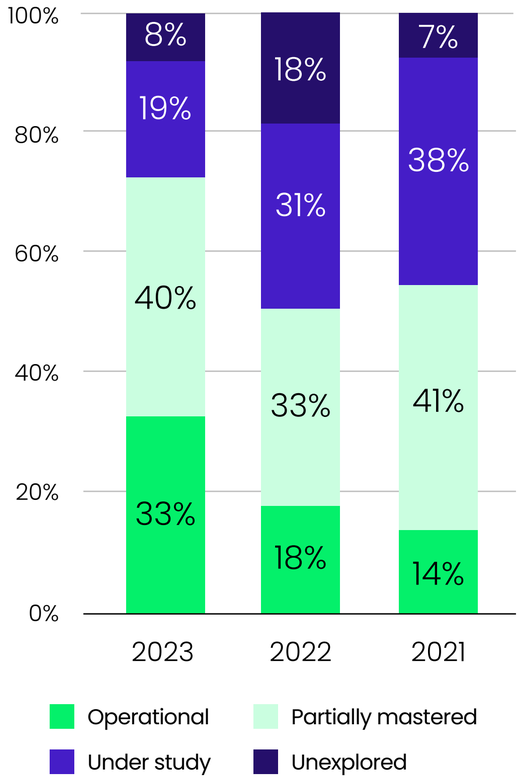
Mobility technologies accelerate operational performance by supplying human resources in real time.

Maturity level of work tools mobility



Data & connectivity, a necessary progression to integrate IA technologies

Maturity of data and connectivity exploitation



Improved connectivity and data usage are designed to increase processes efficiency and exploit the full potential of available information to strengthen the position of manufacturers in the market.

This progress is creating an ecosystem conducive to AI, providing access to the data needed for machine learning and predictive analysis.

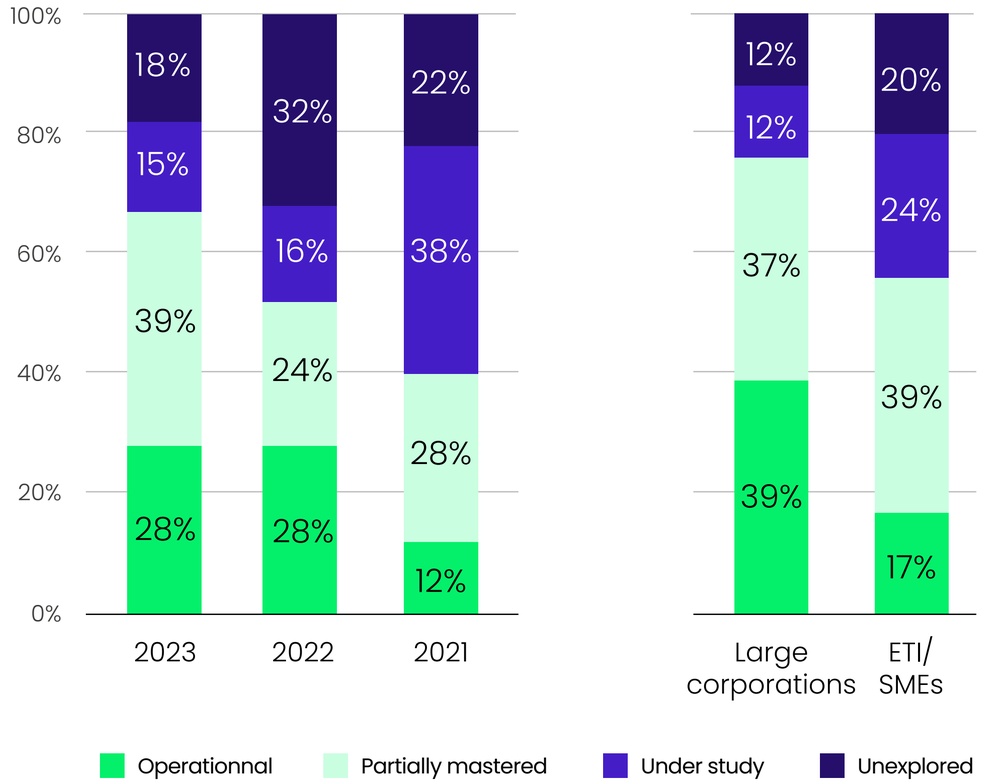
Manufacturers still need to facilitate access to their data while making it more reliable to achieve the volume and quality needed to implement AI technologies.

Automatization is moving forward

Manufacturers continue to improve their skills when it comes to the use of automatization technologies (+15% partially mastered). Major groups are making greater use of these technologies to make their production systems more agile while giving new responsibilities to their employees.

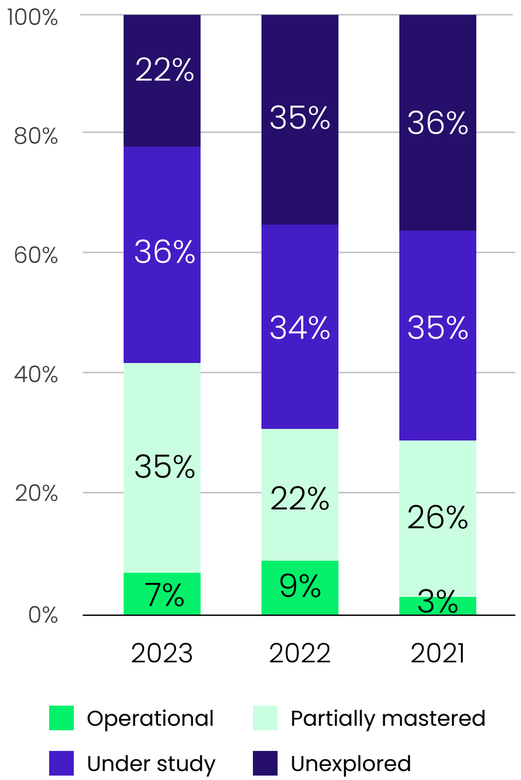
The arrival of AI in industry is making it possible to improve automatization by equipping systems which can learn, make autonomous decisions and adapt to changing situations.

Automatization maturity level



Digital continuity shows a clear commitment to upgrading

Digital continuity maturity level

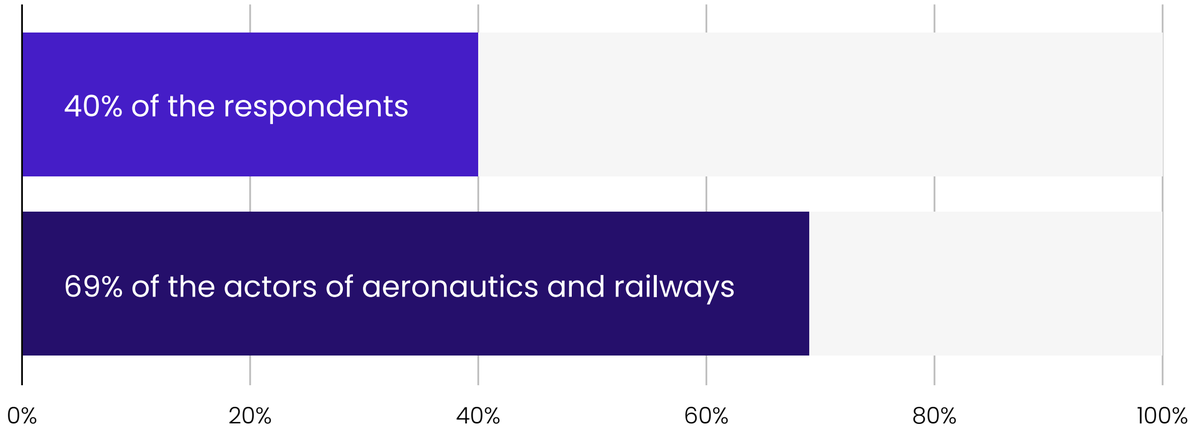


Digital continuity technologies are among the least mastered Industry 4.0 pillars. Nevertheless, manufacturers have launched upgrading projects(+13% partial mastery).
The low operational maturity of digital continuity, fundamental to Data and AI technologies, is an obstacle to the implementation of these new use cases.

Digital continuity enables performance breakthrough leaps in data usage. In addition to optimizing technical interfaces through data model compatibility, it streamlines interactions across the entire value chain.

Industrial digital continuity refers to the consistent use of digital technologies at every stage of manufacturing, from design to production, to improve the efficiency and synchronization of industrial processes.

Numerical continuity through the example of aeronautics and railways



… consider the difficulty of accessing data (linked to data architecture) as an obstacle to the use of AI in their organization

Large-scale transformation projects will enable us to step up a gear in terms of traceability and safety. Change management is essential to the success of transformation projects.

The challenge of digitalizing sectors such as aeronautics and railways, where projects have a significant engineering component, lies in resolving **the workload between design and production**.

Digital continuity from PLM to MES or ERP is a major area for improvement in these environments **which often have a complex IS architecture (functional coverage or local variants).**

Made In France : a better knowledge of french solutions

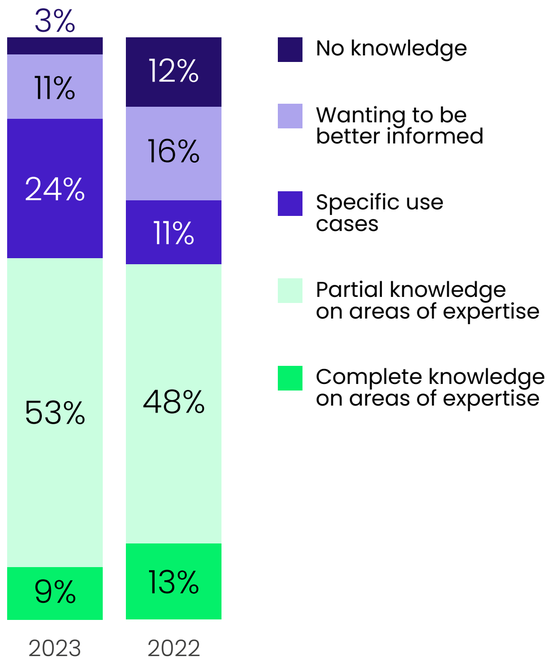
Do you feel that you are sufficiently informed about existing French solutions on the market and potential partnerships with French companies?

Geographical and cultural proximity is the third deciding factor in choosing a solution.

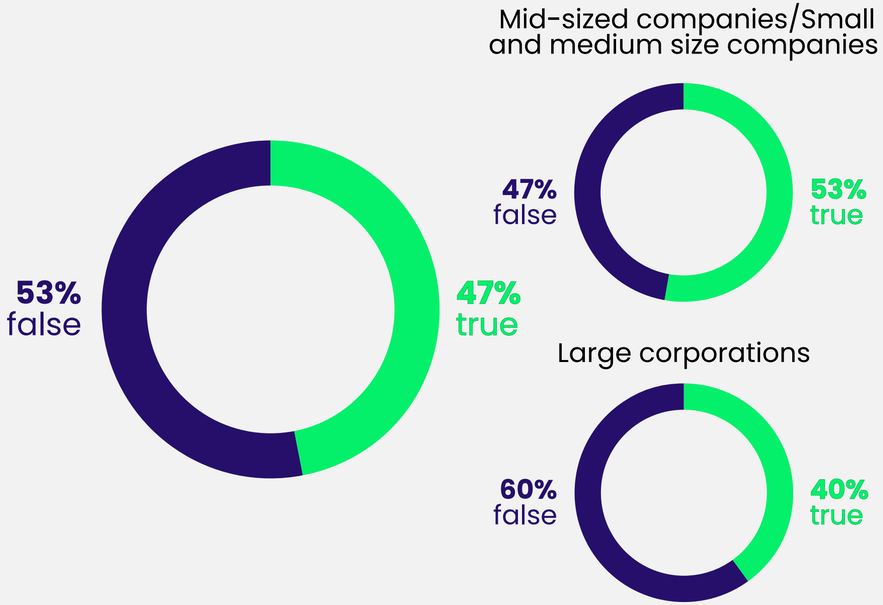
Industry 4.0 Barometer 2023

A more sustainable French Offer driven by French digital sector that is in full expansion ; +20%

Slack study, July 2023



Public support is a determining factor in the deployment of my Industry 4.0 projects



One manufacturer out of two thinks that public funding is a decisive factor in deploying Industry 4.0 initiatives.

Round table extracts

Stéphanie Lakkis

Vincent Champain

Vincent Moulin Wright

/ Ultimately, the overall picture is contrasted.. The importance of digital is no longer questioned for industrial operations, but it's difficult to move forward at a good pace. How do you see this in your business?

When the issue of digitalization has really gained momentum in industry in 2015, we set up a collective initiative, the "Industrie du futur" project (as part of the government's «New Industrial France» program). Since then, **a lot of progress has been made. And it's partly the result of this strong dynamic that has supported companies, particularly SMEs and ETIs.**

Three levers have enabled these advances.

- **support :** through the development of an ecosystem of support, awareness-raising, POCs (Proof Of Concept) that you can demonstrate, etc,
- **funding :** government aid helps trigger more projects, even if the bulk of funding still comes from companies,
- **solution offerings :** in particular, sovereign offerings, which are improving significantly,

It's thanks to these three levers that progress is being made on the industry of the future in France today. The momentum is created when intermediary bodies, companies, ecosystems and major corporations - which also set examples because they pull the strings - get into gear.

Vincent Moulin-Wright – General Director- France Industrie

/ You're in daily contact with your industrial customers in France. What's your take on the issue?

In recent years, digitalization has become a real competitive lever. Thanks to digitalization, we are now able to relocate industries in France. Manufacturers are faced with ever-increasing complexities in terms of performance and energy efficiency, and **digitalization is undeniably the key to meeting these challenges.**

We can illustrate this with the sports shoe manufacturing industry. It's an industry that we've been recovering since 2020 with Chamatex, which is once again producing shoes in Ardèche. They have used the leverage of digitalization to automate and digitize their manufacturing process.

Digitalization is embodied in **the use of a number of tools, notably the digital twin, which combines the physical and real worlds** to feed data into our system and constantly **optimize the performance and productivity of our indexes**.

Stéphanie Lakkis - General Manager Factory Automation Siemens France

/ In the end, the study also shows that basic subjects can be complex, especially within a large group. I'm curious to hear your perspective on how one might go about it.

"It's at low tide that we see those who were swimming without swimsuits": ambitious digital projects often reveal weaknesses in IT fundamentals. Or **if there is an unresolved technical debt, it will be impossible to move forward with industrial transformation.**

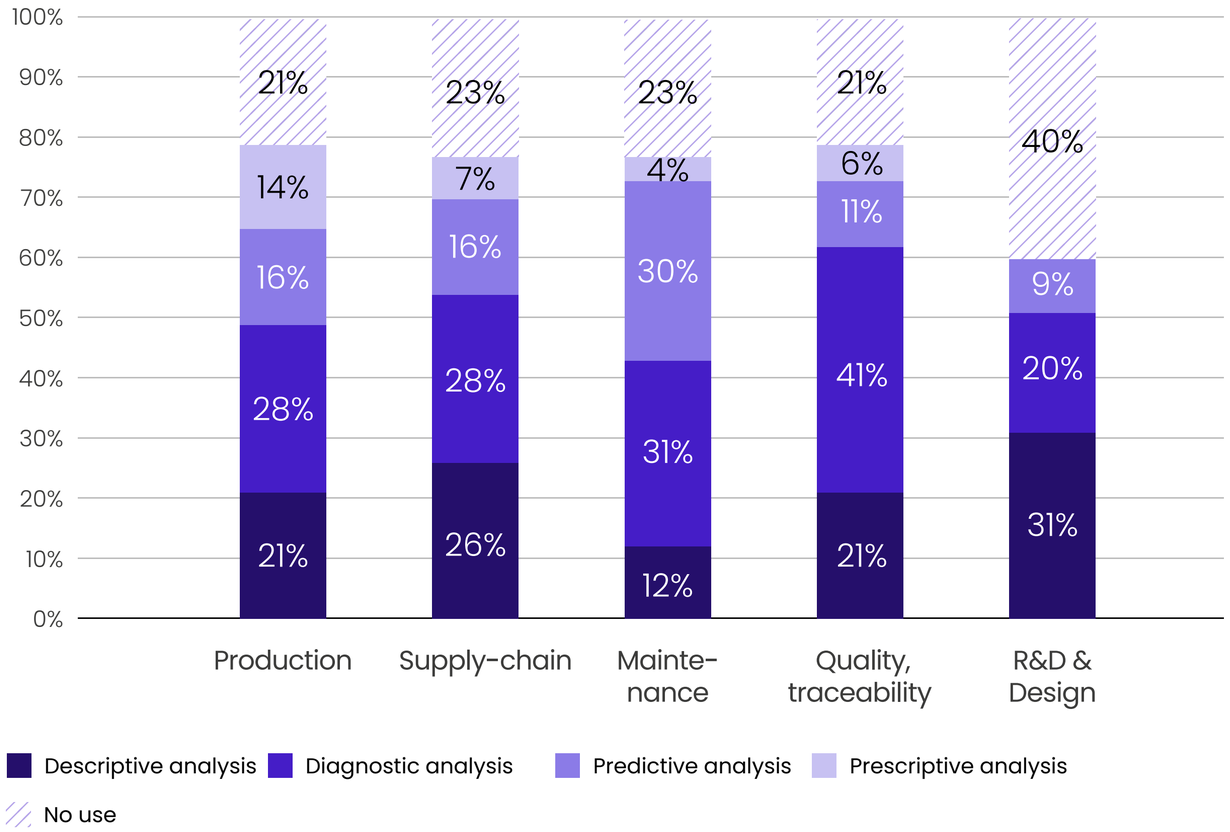
This technical debt may relate to servers, workstations, networks, available skills or security layers. For this reason, *it's essential to not separate digital from IT*. We also need to start from processes and ways of working, rather than pushing IT tools "out of the ground": the triptych between methods, tools and processes is inseparable. This is why we have a "digital performance" team at Framatome, which uses digital to improve process performance.

Vincent Champain - Senior Executive VP Digital Performance & Information Technology - Framatome groupFramatome group

02. DATA, AI AND CLOUD, THE TECHNOLOGICAL REVOLUTION ON THE RISE?

Data and AI : An accelerator for operational performance

How are you using Data / AI technologies in the following fields?



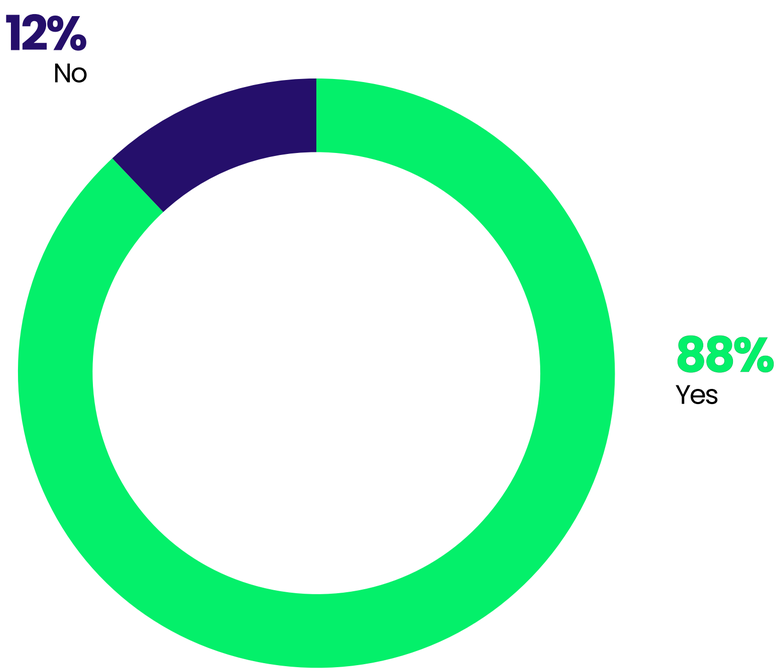
Data / AI technologies are being used in production and supply chain systems, reflecting the challenges involved in industrial performance.

They rely on repetitive activities with tangible results to learn, test and validate their models before they are used in more complex use cases.

Descriptive analysis: summary of past performance.
Diagnostic analysis: identifies the causes of past failures and determines the underlying factors.
Predictive analysis: anticipates future events using predictive models.
Prescriptive analysis: recommends adjustment actions to resolve identified problems and optimise production.

Investments in Artificial Intelligence and Data technologies

Did you invest in IA/Data technologies?



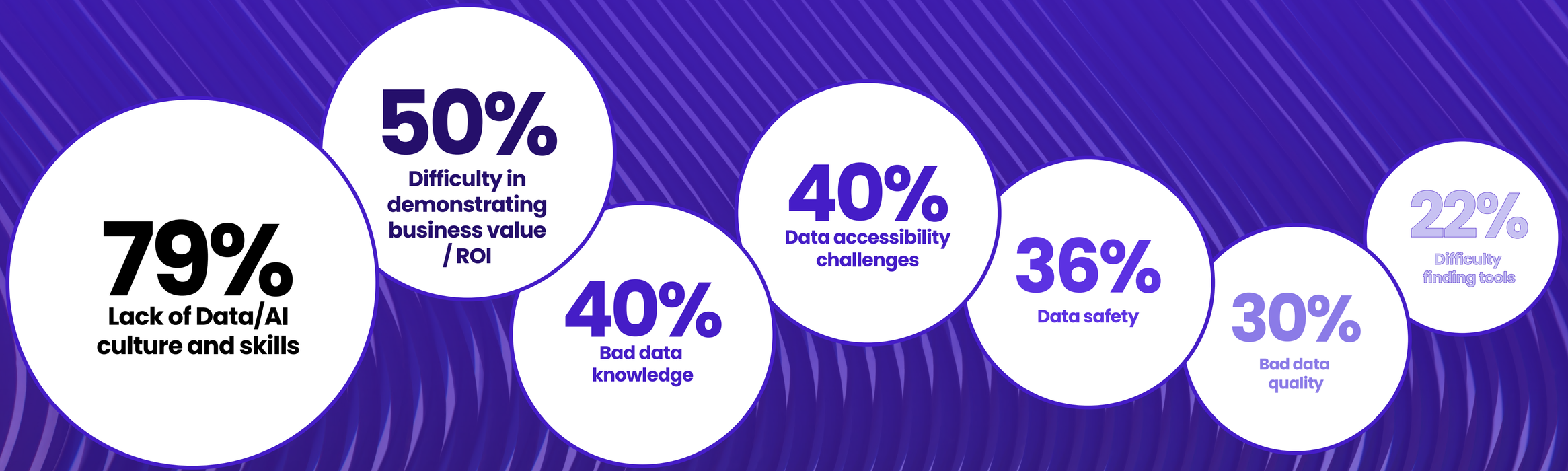
With the emergence of generative AI solutions, 88% of companies have invested in AI solutions and are using these solutions as an acceleration of industrial performance.

Companies who did not invest in Data and IA risk accumulating a maturity gap and a cultural debt.

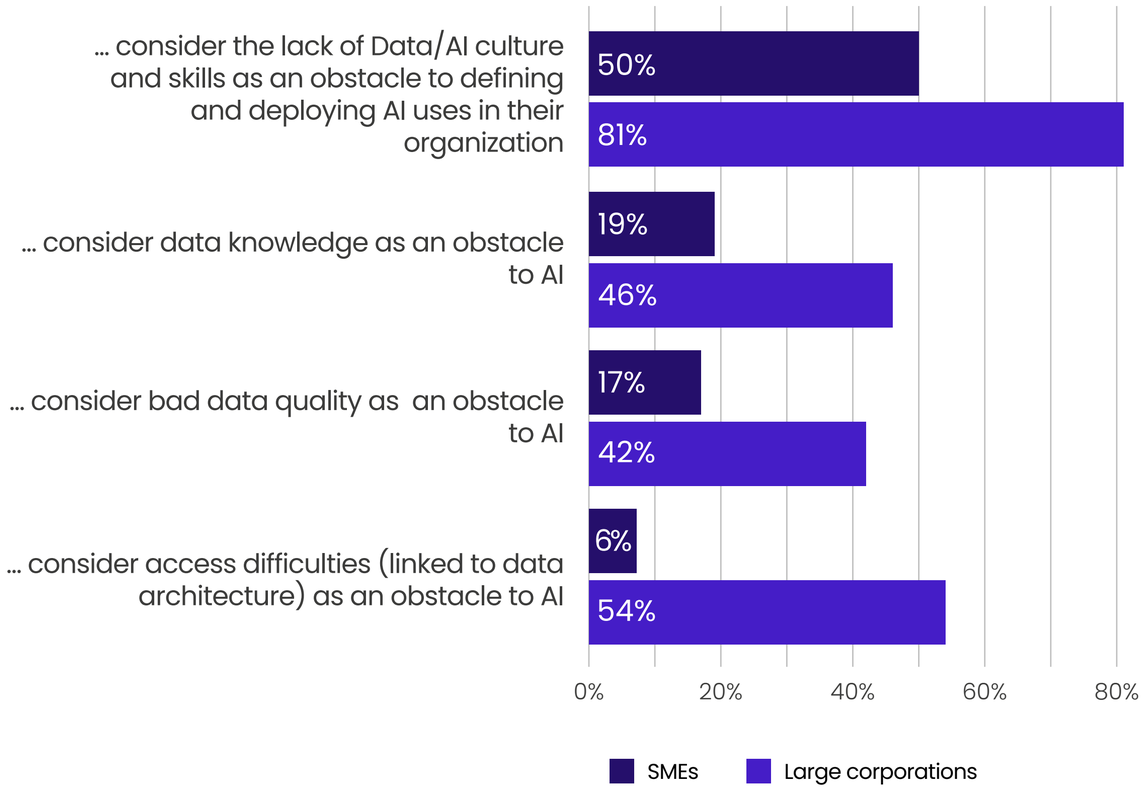
Data and AI are a culture to develop

Finding a financial reality to data projects is crucial for developing more complex use cases. Appropriating AI technologies involves **raising team awareness** and **investing in data reliability projects.**

What are the obstacles to using Artificial Intelligence in your organization?



Data culture: SMES are more in line with their needs than large corporations

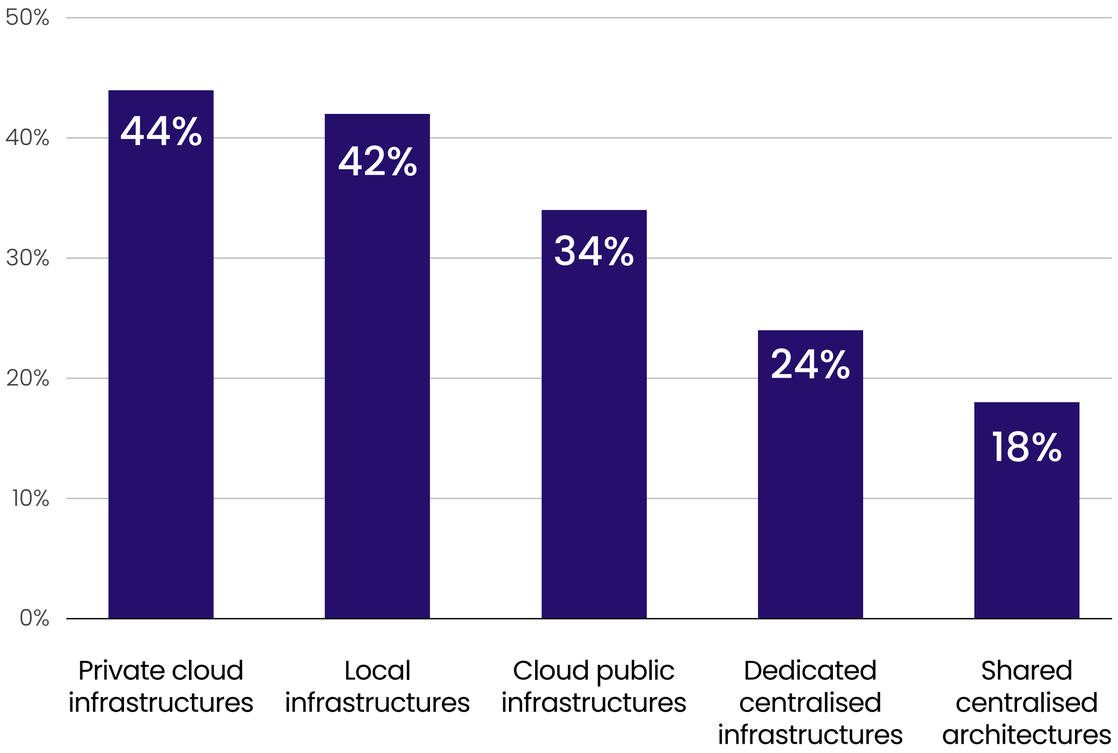


SMEs consider that they have a good control over their data. They have a level of Data culture and skills that enables them to better respond to their needs in terms of Data/AI use cases.

This difference can be explained by greater constraints within large groups: a more sprawling IS architecture, more diverse data, more diverse data management systems, as well as greater data volume and variability.

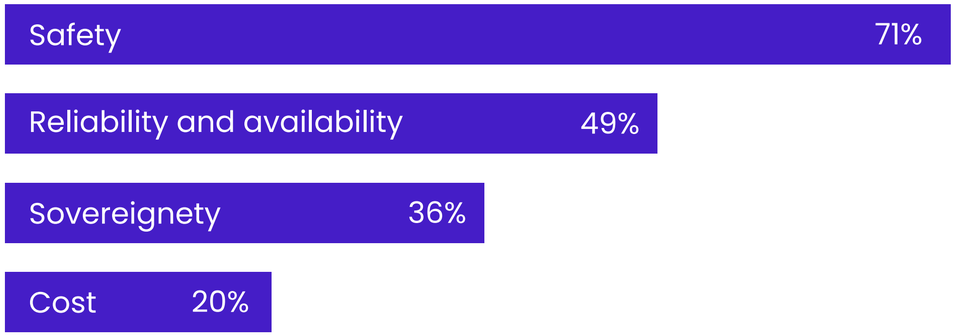
Maximize data storage efficiency with a mixed infrastructure

What type of data storage do you prefer for your organization?



Given the persistent obstacles to full cloud adoption, it's common to opt for a mixed approach. The **local storage/private cloud combination** is the manufacturer's favorite infrastructure mix.

Main obstacles for cloud system use

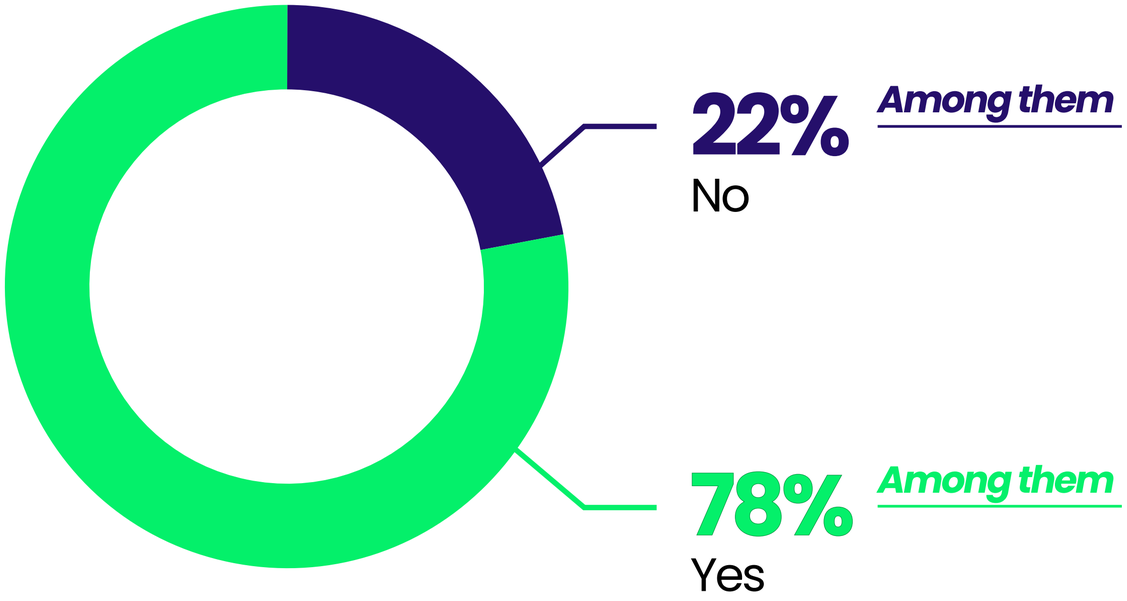


Above obstacles are relevant criteria for choosing the right balance between private cloud and local infrastructure storage.

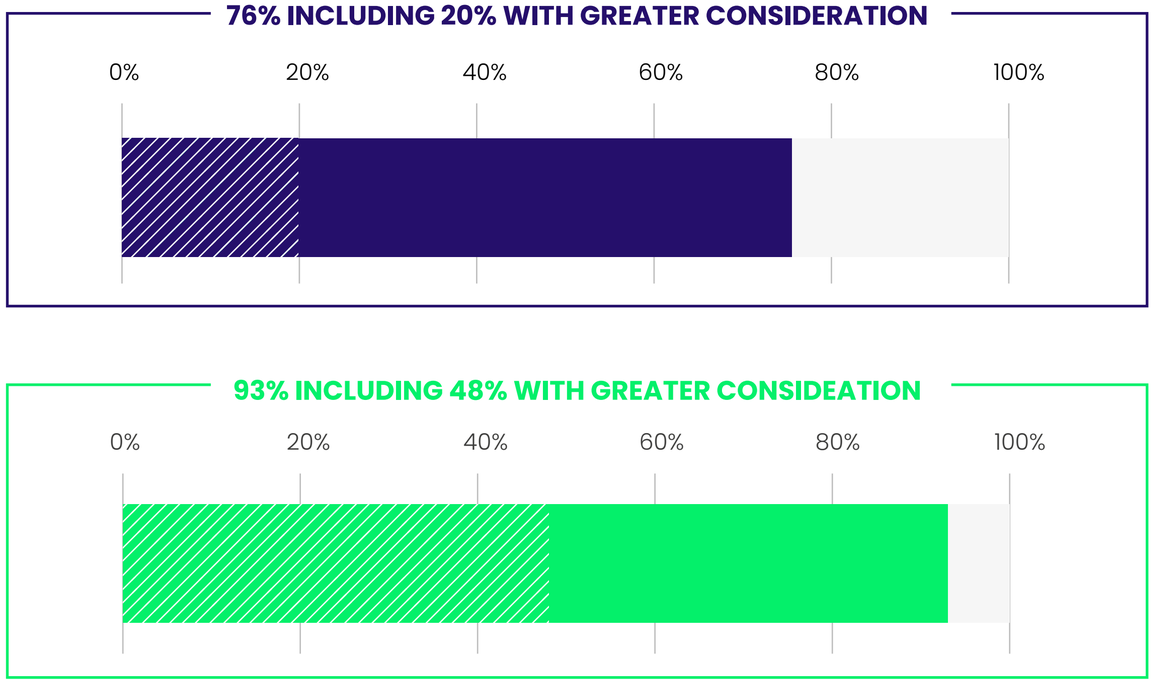
Companies that integrated AI technologies have strengthened their cybersecurity policies

The implementation of AI technology requires the development of technological foundations (increased computing capacity, move to Cloud, APIsation, etc.). These projects offer opportunities to adapt cybersecurity to the needs of their company.

Share of respondents who have updated their security policy to face emerging technologies, especially AI



Share of respondents saying they take into consideration cybersecurity requirements in all phases of their Industry 4.0 projects



Round table extracts

Philippe Herbert

Raul Bravo

Stéphanie Lakkis

/ When we look at the deployment and adoption of technologies, we notice that it's connectivity and algorithms - advanced uses of data, artificial intelligence, machine learning - that are making the most progress. Philippe, what's your take on this democratization?

When we talk about connectivity and algorithms, everything revolves around data, digitization, the digitalization of industrial processes, AI, and even cybersecurity. In all of this, we need a nervous system to ensure that this data circulates securely within the network. That's why industrial 5G is a marker of the maturity of Industry 4.0, a promise of flexibility, mobility, real-time and security.

Philippe Herbert – President of the Industrial 5G mission, Ministry pf Economy, Finances and Revival

/ About that, we're delighted to have you with us Raul. With Outsight, you specialize in mass data processing. Which use cases are more attractive the field from your point of view?

3D perception technology allows us to make a quantum leap from Industry2.0 or 3.0 industry directly to use cases that were science fiction not long ago.

For example, we're working in automotive factories to autonomously guide cars from the infrastructure, so that they can go directly from the production line to the parking lot. We can also make intersections smarter and safer by understanding the interactions between vehicles and users such as bicycles or pedestrians, to avoid accidents or optimize their functioning. With these technologies, we can monitor processes to extract intelligence, improve operations and enhance safety.

Raul Bravo - Outsight Fondation President

/ When we talk about AI and advanced use cases for data, what are the use cases, the major directions we're trying to follow in France today?

AI is a technology that is becoming increasingly important for manufacturers. This technology obviously has benefits and represents a real lever for competitiveness, but it's important to maintain control to understand what's going on in these highly complex systems and then to make them simple to use.

Today, it's vital to maintain control over industrial processes that will increasingly take advantage of AI. Manufacturers are not all at the same maturity stage, and we need to support them with progressive solutions.

In all cases, the first step is to capture data for initial monitoring, before moving on to more complex models, such as predictive models and prevention.

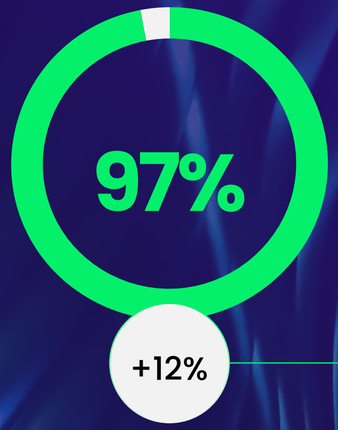
Artificial intelligence can be introduced gradually. We can define a three-stage method for applying AI to an industrial process:

- agree on measures of success and define key performance indicators (to maintain control over the application of AI),
- train models with very high connectivity to ensure accurate measurements and data,
- test and ensure the quality of models before deploying them in the real world.

Stéphanie Lakkis - General Manager Factory Automation Siemens France

03. INDUSTRIAL CYBERSECURITY, A MUST ?

Cybersecurity is mainly integrated in all activities in the industrial perimeter

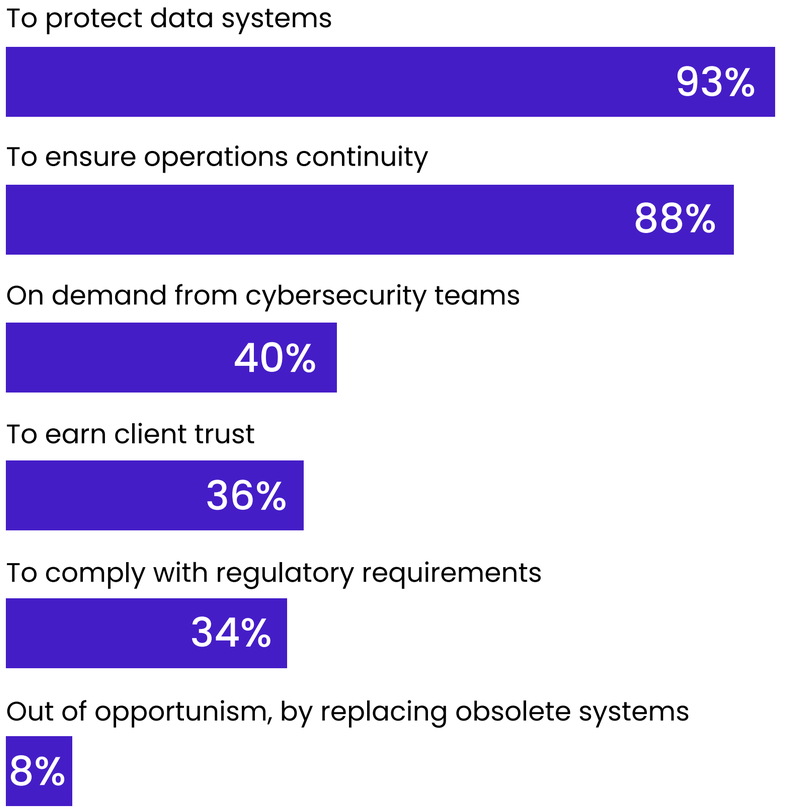


of manufacturers say they include industrial cybersecurity criteria in their Industry 4.0 projects

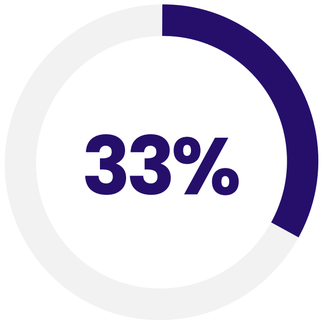
+12% Evolution vs. 2022

Earning the trust of customers is a key challenge for companies in the **chemicals, electronics** and **energy** sectors. For all companies, integrating cybersecurity into all stages of projects is essential to safeguard **sensitive data, advanced technologies** and **critical infrastructures**.

Main reasons for choosing integrating

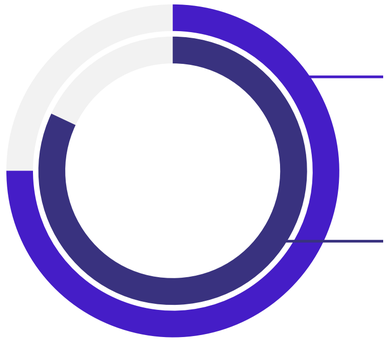


Cybersecurity : preventive measures are being deployed



of respondents have already **suffered damage because of a cyber attack**

Cyber attacks prevention :



75% of respondents implemented **incident detection systems**

82% have established **BCP/ BRP (Business Continuity Plan / Business Recovery Plan)** to ensure the company’s resilience

To ensure the detection of anomalies within an industrial perimeter, it is now possible to set up detection systems on the OT (Industrial Computing): at the periphery with firewalls or within the networks themselves with EDR probes.

Once BCPs and DRPs have been formalized, it is essential to test them.

Round table extracts

Philippe Herbert

Vincent Champain

/ Cybersecurity is also a major issue, and our manufacturers are aware of this. How do you address this issue when you represent a company like Framatome?

Cybersecurity seeks to protect us from system flaws - it cannot be mastered without addressing all the elements of the system – IT infrastructure, applications, but also cyber culture. In the nuclear sector, where risks are particularly high, Framatome has developed solutions for its customers to detect and resolve any faults that may appear in industrial systems.

Framatome's two strong points are culture and resilience.

In many companies, there is a lack of rigorous behavior in terms of phishing or respect for good cybersecurity practices. And yet managers feel that it's cybersecurity's problem, not theirs – can you imagine a site manager feeling that he's not responsible for workers who never use their helmets, gloves or harnesses? It's all the same!

The second point is resilience, i.e., you must assume that you're going to be attacked one day, and that these attacks will succeed. The question is: how can you rebuild quickly? In many companies, the answer is evasive. Companies generally have a cybersecurity strategy focused on technical means. **My advice is to take an interest – and that of your Comex – in culture and resilience too.**

Vincent Champain - Senior Executive VP Digital Performance & Information Technology Framatome group

Every time we hear the word "cybersecurity", we immediately get a chill down our spine... But we must live with these threats by taking several precautions. 5G and private networks are two ways of doing this. **5G has been built from a standards point of view, with the best cybersecurity criteria.**

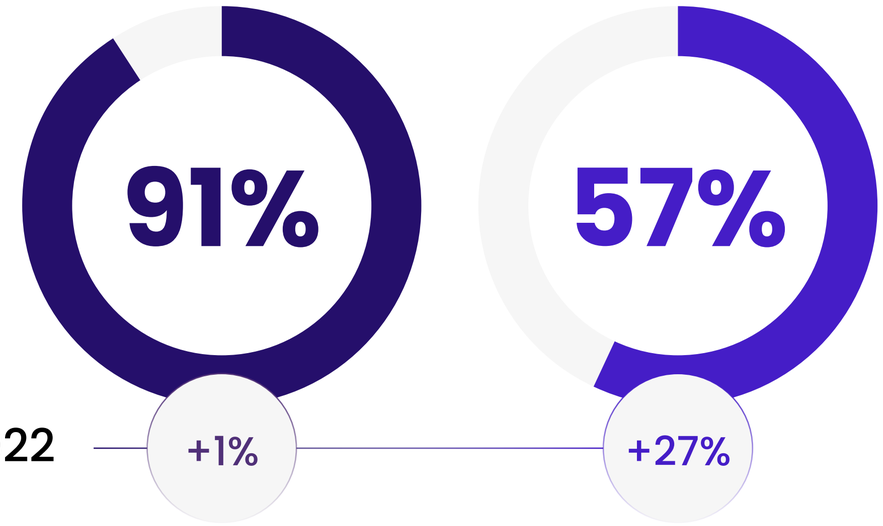
Philippe Herbert - President of the Industrial 5G mission, Ministry pf Economy, Finances and Revival

04. SUSTAINABILITY, MOVING TO ACTION?

Sustainability: from awareness to concrete action

91% of manufacturers have initiated reflection.
57% have launched their action plans.*

Nearly **1 in 10 manufacturers have not initiated a study of their low-carbon trajectory**, despite the obligation to be carbon neutral by 2025.

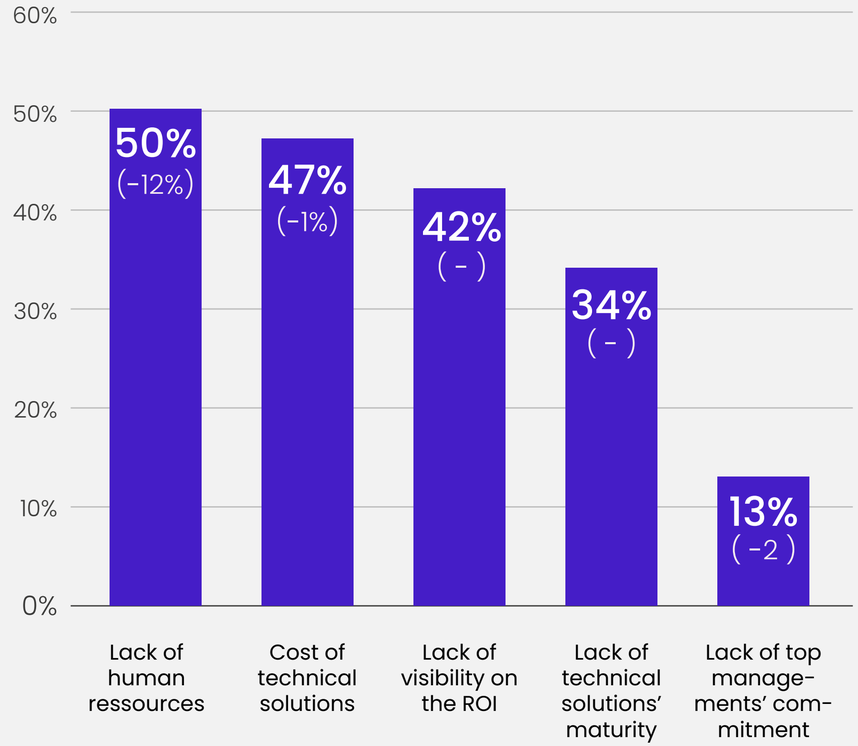


source : Wavestone CSR Barometer 2023

Evolution of the main obstacles to decarbonisation projects (2022 vs. 2023)

The **lack of human resources** is still being felt, but to a lesser extent than last year, while **budgetary problems** persist.

It is necessary to find a financial reality for its projects.



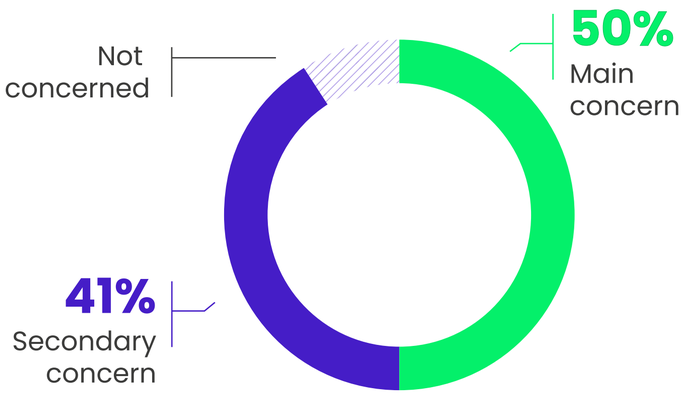
(Evolution vs. 2022)
(-) data not available

Numerous decarbonization projects emerge, often triggered by financial considerations

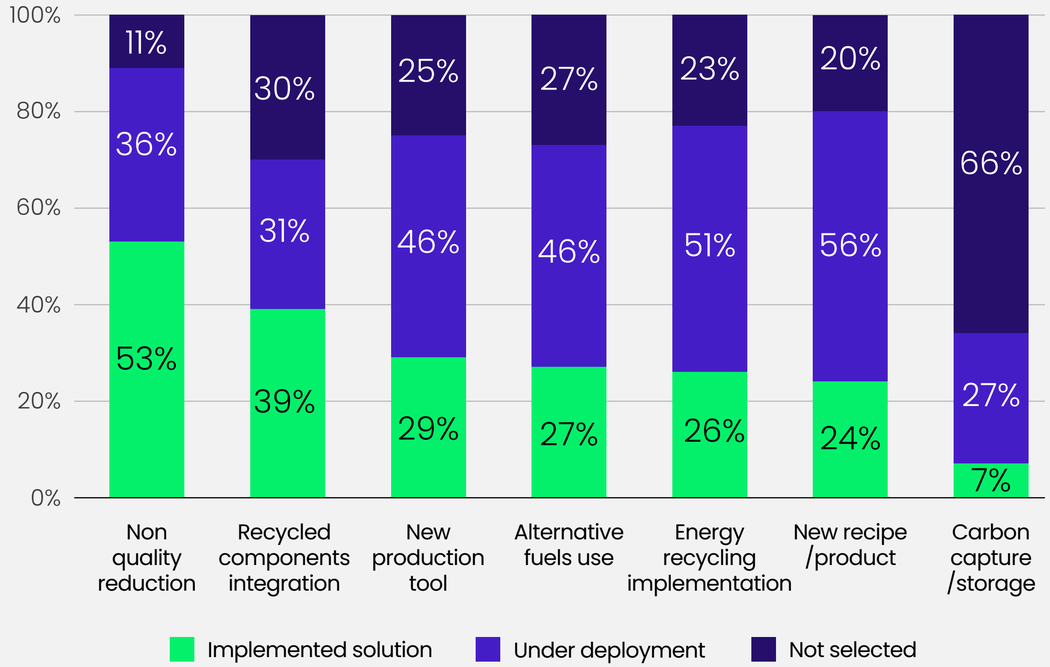
Although 29% of respondents consider carbon impact to be an essential criterion, it does not generate enough impact in their decisions alone.

Technical and financial criteria continue to take priority. As a result, projects with a high financial, commercial or technical ROI are far more represented than projects aimed solely at decarbonization.

Is decarbonization a main drive in your Industry 4.0 projects?



What Industry 4.0 improvement paths are you exploiting to decarbonize your production activities?



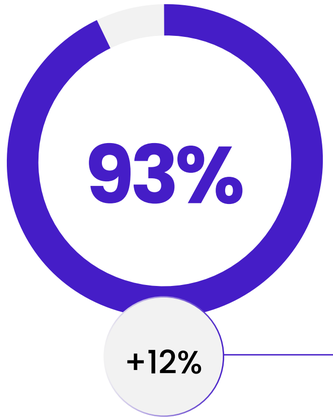
ICP: a simple way of taking carbon into account in decision-making

An ICP (Internal Carbon Price) also makes it possible to anticipate legislation, secure purchases, raise awareness and communicate on reduction efforts, and above all promote reduction actions without disrupting existing processes.

Nearly 50% of the top 500 listed companies have opted for this solution, which is often valued at between €5 and €100/T of CO2.)

Source : https://letsgofrance.pwc.fr/fr/publications/2022/du-bon-usage-du-prix-interne-du-carbone-par-les-entreprises.html

Reducing energy-related emissions is a key issue, driven by financial motives

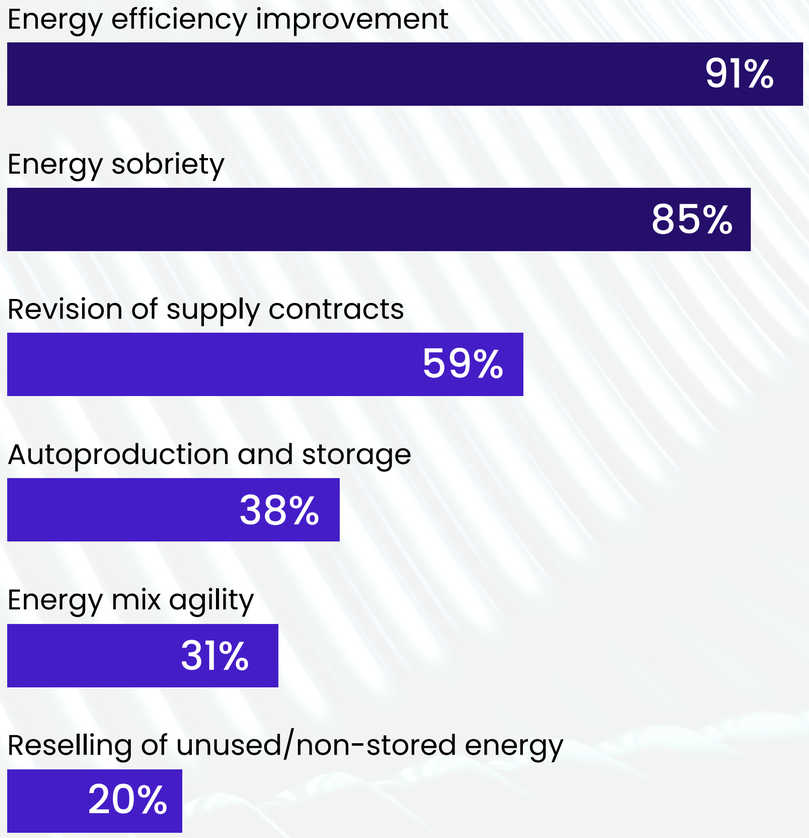


of manufacturers have launched at least one project to **reduce their Scope 2** emissions.

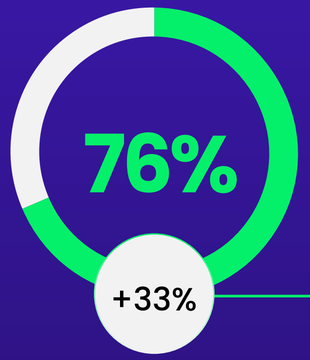
+12% Evolution vs. 2022

The energy crisis and the financial challenges that follow are the main triggers for new digital projects to master consumption control.

What actions are you implementing around your energy mix?



Regulations encourage deployment of environmental impact monitoring tools



of manufacturers have at least one tool for measuring their environmental impact

EMS : Energy Management System
CMS : Carbon Management System
SMS : Sustainability Management System

Evolution vs. 2022

As part of the climate ambition of carbon neutrality by 2050, new regulations are being introduced. The GHGBS (GreenHouse Gas emissions Balance Sheet), which were mandatory only for direct GHG emissions, must now cover all significant indirect emissions (scope 3) for all companies with more than 500 employees, and that starting from January 2023. An emissions reduction plan must be drawn up as well.

The CSRD is an European directive that requires companies to provide auditable reporting on extra-financial criteria: environmental and social impacts. It will come into force in 2024 and will affect around 50,000 companies in Europe. It aims to improve the transparency and reliability of sustainability reporting.

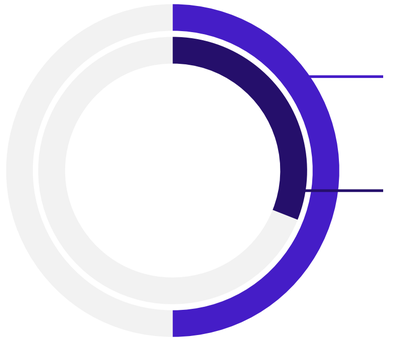
How mature are manufacturers when it comes to monitoring their carbon impact?

CMS implementation **allows to go beyond simple calculations by steering low-carbon action plans** and assessing the performance of action levers, something that is not necessarily possible with an in-house tool.

SMEs in particular face financial difficulties in the face of sustainability

SMEs struggle to prioritize ecological footprint issues when it comes to competing with operational challenges.

Share of respondents considering the « Ecological impact reduction » challenge as a major one.

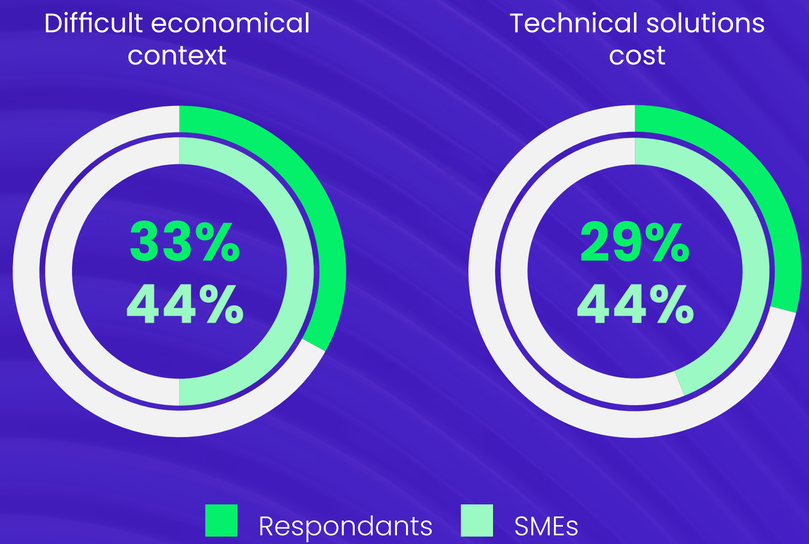


50% of respondents

31% of SMEs

As part of their Industry 4.0 projects linked to sustainability and decarbonization, SMEs are focusing their efforts on **reducing non-quality** and **integrating recycled components into production.**

Main difficulties encountered in environmental impact reduction projects



SMEs report more financial concerns.

They need a more dynamic industry and more external boost to set up sustainable development projects.

Round table extracts

Stéphanie Lakkis

/ How can we reduce our environmental footprint as much as possible in the future, while at the same time striving for performance?

Industry is probably one of the few economic sectors in France to have taken this subject extremely seriously. It has a very positive record in terms of decarbonization. What's more, it has **a very ambitious, robust and well-financed decarbonization project and trajectory.** We are helped through this by public policy and technology, even if three levels of uncertainty persist:

- the availability of carbon-free electricity in France,
- financing, with the need for margins and profitability (over-taxation of production is dragging down the competitiveness of French industries),
- regulations, which still act as a brake in some cases.

About the 2050 carbon neutrality target for industry, in some fields we are hamstrung by the laws of chemistry and physics. However, thanks to research, and deeptech in particular, we know that there are tracks that will enable us to break some glass ceilings. What wasn't possible today will be possible tomorrow or the day after tomorrow.

Vincent Moulin-Wright - General manager France Industrie

Raul Bravo

/ There's a paradox: digital technology has a carbon footprint, so how do we make sure the balance is positive in the end?

To take the example of data privacy, we can no longer deploy large-scale systems that track people's movements without guaranteeing anonymity. And we're able to do so because **innovations have been born out of this constraint.**

Energy consumption is at the same level as confidentiality today: even if it may seem paradoxical, we now know how to **process massive amounts of data while being very energy-efficient with our processes. Paradoxes are opportunities for innovation, differentiation and faster progress.**

Raul Bravo - Outsight President and Founder

/ ROI is the number one issue for our customers. How can we bring help and solutions to these manufacturers who have very short-term ROI and responsible balance issues?

I'd like to give you three concrete solutions for decarbonization:

- think of the industry and the industrial site before you even create it, thanks to the digital twin,
- optimize energy consumption and know where to source,
- optimize the entire value chain by tracing the carbon footprint from raw material to factory gate, using proven solutions and blockchain technology.

Stéphanie Lakkis - General Manager Factory Automation Siemens France

Vincent Moulin Wright

Glossary

Key concepts

Industry 4.0 : concept referring to the contribution of new technologies and, more generally, digital technologies to improve the performance of industries and transform operating methods.

Industrial IT platforms: brings together all the industrial infrastructures (network, connectivity, cybersecurity, data...) underlying the technologies implemented by Industry 4.0.

Sustainability : economical, social and environmental development answering to current needs without comprosing the ability of future generations to meet their own needs.

Other definitions

GHGBS (GreenHouse Gas Balance Sheet) : documents listing and assessing the greenhouse gas emissions generated by an organization.

CMS (Carbon Management System) : a tool for measuring, monitoring and managing greenhouse gas emissions.

EMS (Energy Management System) : technological solution for monitoring, controlling and optimizing energy consumption.

ERP : Enterprise Resource Planning.

CMMS : Computerized Maintenance Management System.

AI : Artificial Intelligence.

Industrial infrastructure: low-level technological foundation with both little differentiation by sector and a common challenge of upgrading to state-of-the-art to support the business's Industry 4.0 initiatives (Data management, OT, network, cybersecurity, Data platform, IOT etc.).

IoT (Internet of Things) : interconnected network of physical objects equipped with sensors, software and communication technologies, enabling the collection, exchange and analysis of data for a variety of applications.

IT (Information Technology) : all the tools, devices, systems and processes used to collect, store, process, transmit and manage data and information within an organization.

MES : Manufacturing Execution System.

BCP/DRP (Business Continuity Plan, Disaster Recovery Plan) : system developed by an organization to ensure the availability and continuity of its operations in the event of major disruptions.

PoC : Proof of Concept.

ICP (Internal Carbon Pricing) : financial mechanism designed to integrate the cost of greenhouse gas emissions into an organization's economic decisions by setting a price on these emissions.

PLM : Product Lifecycle Management.

ROI (Return On Investment) : financial indicator that measures the return on an investment.

Greenhouse gas emission scopes:

- **Scope 1 :** direct emissions coming from a company's activities,
- **Scope 2 :** indirect emissions coming from the energy bought and used by the company,
- **Scope 3 :** indirect emissions outside of the company's control(supplies, etc.).

IS : Information Systems.

SMS (Sustainability Management System) : organized structures helping companies to plan, implement and improve sustainability performances.

WMS : Warehouse Management System.

Thanks

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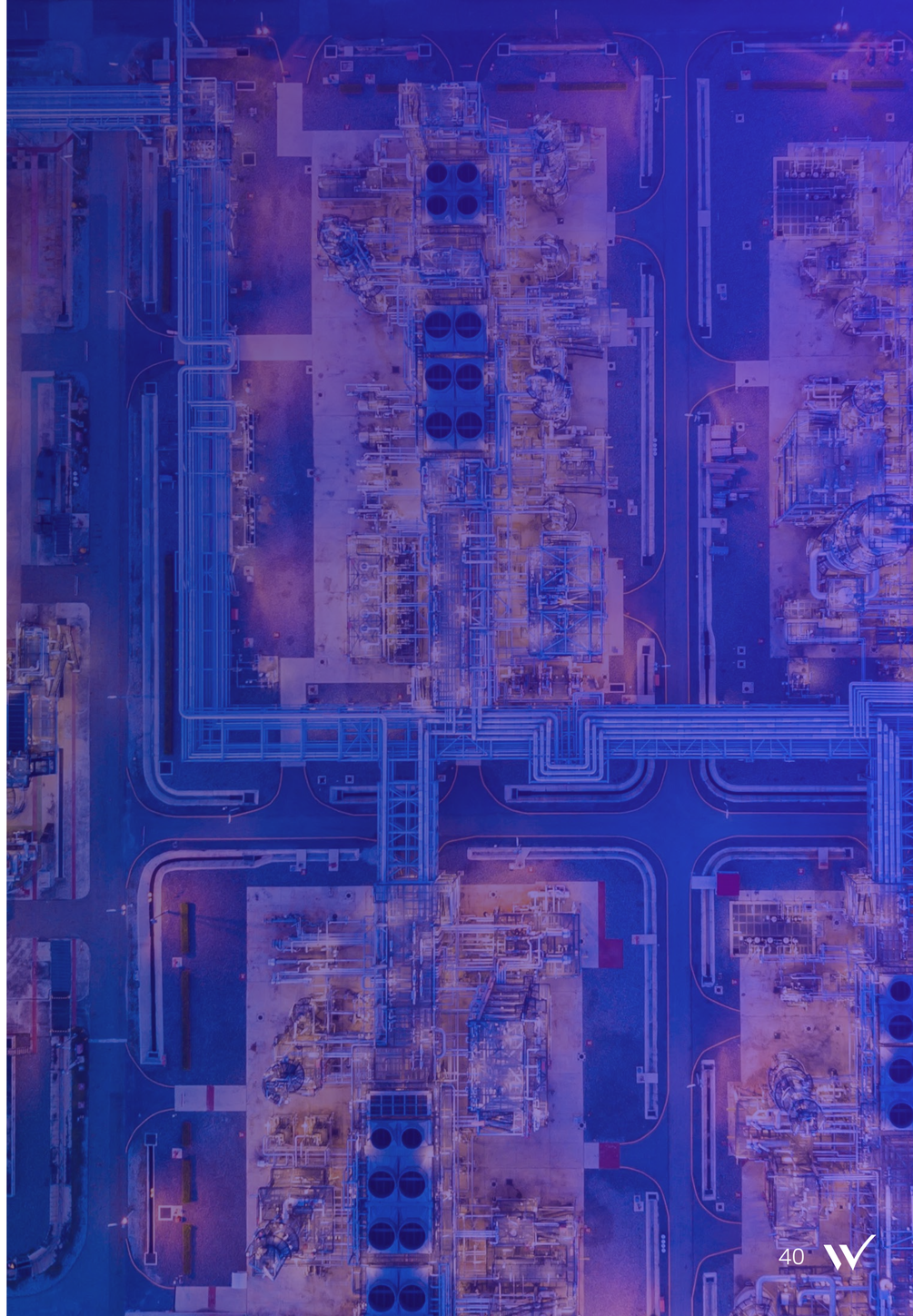

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