

The Real Deal of Generative AI

EMERTONDATA



WHITE PAPER

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Wittgenstein once said: "**The limits of our language signify the limits of our own world**". When it comes to AI, it's undeniable that the emergence of large language models (LLMs) has, in just a few months, pushed back the boundaries of what's possible in the corporate world, and beyond. This **revolution** reached the general public at a speed unimaginable just two years ago.

The evolution of models and their comparative performance is now an almost daily news topic: Mistral AI seems to be outperforming Claude, which is itself hot on the heels of Open AI's latest arrival... The emergence of innovative new functionalities in GAMAMS services, as well as record investments reaching hundreds of millions of dollars, feed a considerable cacophony that sometimes makes it difficult to distinguish what is long-term, even science-fiction, from what is **very real and tangible**.

That's why, for the duration of this white paper, we propose to put on pause the endless discussions about value potential, the speed of innovation, and fantasies about singularity and the replacement of humans, to focus on the **concrete questions that arise daily in companies**, whether they be our industrial flagships or startups.

We conducted a survey of numerous players in the sector, whom we chose to clearly identify, to provide the most contextualized snapshot. The results are enlightening: a year and a half after the appearance of ChatGPT, all the companies surveyed have industrialized generative AI use cases, and **80% of them indicate that large-scale employee training on generative AI is a priority**. However, the abundance of ideas and the resulting proliferation of applications pose a risk to achieving genuine economic benefits in the short term.

This white paper, which brings together numerous testimonials, aims to answer **several fundamental questions**:

- How can we make the best choice regarding technologies and use cases? Which business needs should **be prioritized**?
- What **choices** should be made on generic or specialized AI and core business areas?
- How can we ensure **control, robustness and confidence** in these new technologies?
- How can we **prepare organizations** for the evolution of work through the deep integration of generative AI into decision-making and operational processes?

We hope that this white paper will provide **clear answers and valuable guidance** to help businesses navigate effectively through this rapidly changing and, admittedly, incredibly exciting economic landscape.

Happy reading.



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TABLE OF CONTENTS



01

EDITO



02

SYNTHESIS



03

INTERVIEWS

1. Building the next gem: strategies for the rise of generative AI startups
 2. Open source ecosystem and generative AI: insights from Hugging Face
 3. Which generative AI use cases should be prioritized to maximize impact?
 4. Towards a sovereign and more sustainable AI: exploration of challenges and issues
 5. Future of work: tomorrow, all “augmented” with Generative AI?
 6. Is generative AI already a profound catalyst for transformations in banking and insurance?
 7. How to ensure robustness and compliance of generative AI?
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SYNTHESIS

The ensemble of interviews we conducted, the diversity of profiles, and the surveyed companies have allowed us to reach the following conclusions:

- **Generative AI is already a significant driver of transformation for companies.** Specifically, nearly all of our interviewees report having already industrialized a use case involving generative AI, with all of them planning to do so in the near future. Moreover, when asked about the speed at which this technology will be adopted by their teams, all estimated that generative AI will be fully integrated into their employees' daily operations within 3 years, with half of them believing this adoption will happen within 1 year.
- **Generative AI offers a broad range of opportunities for our interviewees.** All major functions within companies appear poised to be affected by the transformation induced by generative AI. We also observe this diversity in what drives the data and AI leaders we interviewed to invest in this technology. While productivity gains are their most frequent motivation, they also cite improvements in customer experience, enhanced employee experience, and support for product innovation.
- **All of our interviewees report a positive and optimistic attitude among their employees towards generative AI,** often describing their own judgment of this technology as "enthusiastic" and "pragmatic." Explicitly questioned on the matter, none of our interviewees expressed viewing generative AI as a risk to employment in France.
- **Our interviewees have also identified significant needs for training and support, a topic that nearly all consider highly important in their roadmap for the coming months.** The first aspect of this support obviously concerns generalist chatbots, like ChatGPT, which a significant proportion (between a quarter and half) of the surveyed companies' personnel already seem to be using.
- Finally, **the main points of attention identified by our interviewees are data security, ethics and model biases, and the costs of implementing these technologies.** We note in this regard that many internal and secure versions of these chatbots, known as SecureGPT, have already been deployed within large French enterprises.

INTERVIEWS

1. Building the next gem: strategies for the rise of generative AI startups

Guillaume Avrin, National coordinator for artificial intelligence

Vincent Rapp, Responsable Sectoriel Numérique @ Bpifrance

Emmanuel Papadacci-Stephanopoli, Chief Product Officer @ La Fabrique by CA

Pascal Simon, Investment Strategy @ Kaukana Ventures

2. Open source ecosystem and generative AI: insights from Hugging Face

Yoach Lacombe, ML Engineer @ Hugging Face

3. Which generative AI use cases should be prioritized to maximize impact?

Harriet Rees, Chief Information Officer @ Starling Bank

4. Towards a sovereign and more sustainable AI: exploration of challenges and issues

Olivier Abecassis, CEO @ Qwant

Catherine Duvéau, Data science and governance department manager @ Safran Aircraft Engines

Lamia Azizi, Professor @ College of Computing, UM6P

5. Future of work: tomorrow, all “augmented” with generative AI?

Renata Alves Santos, Deputy Chief Data Officer @ TotalEnergies

Maxime Marembaud, Group Chief Data & Digital Officer @ Sodexo

Claire Lebarz, Data & AI Officer @ Malt

6. Is generative AI already a profound catalyst for transformations in banking and insurance?

Ahmed Besbes, Chief Data Officer @ Direct Assurance

Maxime Havez, Chief Data Officer @ Crédit Mutuel Arkéa

7. How to ensure robustness and compliance of generative AI?

Jean-Marie John-Mathews, Ethics Researcher & Co-founder @ Giskard

BUILDING THE NEXT GEM: STRATEGIES FOR THE RISE OF GENERATIVE AI STARTUPS



Guillaume Avrin

National coordinator for artificial intelligence



The government has unveiled a nearly 4 billion euro investment plan to boost sovereign digital technologies. What is your strategy for promoting the growth of French start-ups in generative AI, and what portion of this budget will be allocated to them?

In terms of strategy, we are bringing together all the necessary components to develop competitive generative AI in France:

- We must ensure that the French ecosystem can access to satisfying computing infrastructures. We have notably funded the expansion of the **Jean Zay supercomputer, a public and free supercomputer hosted by CNRS**. Everyone can use it to train generative AI models, with the only requirement being they must publish their results, which does not mean that the model must be open source. This is extremely advantageous because training models can cost millions of euros on traditional infrastructures. We are in the process of integrating this supercomputer in a computing environment, linked with the private cloud providers, such as Scaleway, OVHcloud, and OUTSCALE, **to ensure that all stakeholders have access to a sufficient computing power** on each step of an AI model lifecycle: research, development, adaptation and fine-tuning, deployment, maintenance.
- Regarding data, France coordinates a European initiative that brings together 16 member states to **consolidate all the resources necessary for training generative AI**: data that highlights national heritage, representing the different languages and cultural specificities of European Union. This is important for our local companies, as non-European companies train their models on data that may not perfectly suit our needs.
- We also support two programs operated by Bpifrance:
 - The first aims to **create digital repositories for generative AI**, bringing together all the shared technological components within the AI ecosystem by developers and users. This includes foundational models, fine-tuned models, APIs, and tools for model evaluation.
 - The second program, called **"Accelerating the Use of Generative AI,"** funds partnerships between developers and users of generative AI to speed up the dissemination of this technology.

Our “grandes écoles” and universities offer excellent education and research, but the talent trained here is obviously tempted to join GAMAM or other large start-ups in the US ecosystem. How can we keep them in France?

I may be playing devil's advocate here, but it's **a complex subject**. Analyzing the situation itself, in terms of the positive or negative impact of these moves to US companies, is not straightforward.

First, let's remember that all the co-founders of the main French AI companies – Mistral AI, H, etc. – have worked at American companies. Thus, in a way, **a stint at a Big Tech company contributes to the training of our French AI talent**. If we judge start-ups by the amount of funding they have managed to raise, the best path is clearly to benefit from the excellent mathematical and engineering education available in France, gain experience by working several years at the GAMAM companies, and then return to create their own companies here.

The main advantage of working at GAMAM companies is that the computing resources available to tech profiles are unparalleled compared to what is found here. A French entrepreneur, that came back in France to create his AI company after a stint at OpenAI told me that he had at his disposal there the equivalent of the entire Jean Zay supercomputer just for himself. **Individuals who have access to such computing power gain an experience of supercomputing for AI model training that is extremely rare and sought after**. It is said that there are 50 generative AI talents worldwide, and these are actually the 50 people who had access to supercomputers for a long enough period.

Well, among these 50 individuals, there are French people who have returned to create start-ups in France. Therefore, the answer is not straightforward. We certainly want to retain our talents, but **I also want to emphasize the importance of repatriating talents who are genuinely beneficial to our ecosystem**. Our main competitors, the United States, the United Kingdom, and China, have policies to attract talent, so France should adopt a similar approach here.

It is often said that money is the most important aspect to bring back our talents, but that's not entirely true: we also **need to provide them with the necessary resources, notably computing power**, so they can continue working here on cutting-edge technology topics.

The last point is simplification: our best talents must not be absorbed by tasks and administrative procedures that have nothing to do with their research. **We need to make it easier to secure funding and facilitate individuals' ability to participate in activities** spanning both public and private sectors, minimizing unnecessary complexity or barriers.



Vincent Rapp

Responsable Sectoriel Numérique – Coordination IA –
Direction de l'Innovation



What is Bpifrance's vision of the impact of AI on the French economy?

We can now see that this impact is growing, but the technology is coming up against an industrial and economic web that is **not yet sufficiently digitized**. Yet digitization is the first step towards the use of generative AI. A Bpifrance study shows that 70% of SME owners do not use AI, and 60% have no plans to do so in the short term; therefore, there is still **considerable room for improvement in terms of adoption**. In this respect, training is an important element of Bpifrance's strategy. Conversely, Generative AI can, in several sectors, be an incentive for companies to digitize.

However, following the rapid launch of several generative AI projects, we are finding that **buyers are holding back** somewhat, as ROI is not yet guaranteed, and implementation is often rather complex. The offer needs to be structured, with more off-the-shelf solutions.

Are you optimistic about France's positioning in this field? What conditions do you see as necessary for the creation of French gems in the Generative AI ecosystem?

Bpifrance is optimistic by nature, because that's what it takes to take risks and invest!

The key to creating these gems is talent. In France, we are fortunate to have a very good education, particularly in mathematics, but that's not enough. What's missing here is **experience in operations and processes**, which is much more present in the United States, thanks to GAFAM. In fact, it's no coincidence that the companies that do best here are those whose founders (or C-levels) came over from the USA or went through incubators with this culture.

What's more, **AI requires considerable investment**. Firstly, it requires capital resources, and in this respect, France is very well placed in Europe thanks to France 2030, even if it is still well below the United States. AI also requires data and computing power. This requires our legislation **to make enough data available** to companies wishing to create LLMs. As for computing power, this is undoubtedly an issue to be addressed at the European level.

The development of AI also involves **structuring the ecosystem**, establishing a connection between supply on one hand, and demand and the economic web on the other. On this front, we are far behind the Americans, who take many more risks and where this connection is more fluidly built.

Let me come back to the question of investment. Bpifrance is pursuing its role of public support for innovation. However, I feel that **France is lagging far behind when it comes to private investment**. Even our biggest gems – such as Mistral, which is strongly supported by the French public ecosystem – raise a big part of their **private funds abroad**. This is probably the point on which I'm a little pessimistic: the ability of private investors and major groups to take over from public investment and support the development of our start-ups.

What qualities and criteria do you consider essential when considering an investment?

Once again, **the personal qualities of the start-up's founders and first employees** are a decisive factor in our decision-making process.

Beyond this simple criterion, the start-up's positioning in the AI value chain is very important. We won't fund 15 companies like Mistral which are extremely capital-intensive. We're looking **to fill the gaps and weaknesses in the existing French ecosystem**, for example in hardware – not GPUs, a market dominated by Nvidia, but in CPUs and middleware.

Large companies are mobilizing to assess the impact of Generative AI on their business and prioritize initial use cases. How can we ensure that ETIs, SMEs and small businesses won't be left behind by this revolution?

I'm convinced that 90% of AI's final use cases will be implemented in these small and medium-sized businesses and midcaps. It is therefore vital to put in place plans **to support and disseminate AI**. This is what we have started to do with the **IA Booster France 2030**, a program which is specifically aimed at SMEs and ETIs in all business sectors.

Given the volatility of talent and the appetite of the big American players, don't you fear that these startups will struggle to build their teams and thus achieve their objectives?

At the moment, the context is rather favorable for us. Many researchers who had gone to work abroad, especially in the United States, are looking **to return to France**. There are multiple reasons for this. Firstly, **the salaries offered in France are becoming competitive again in the market**. But beyond this aspect, there is a lot of turnover in the United States. Many are not entirely satisfied with their situation there: the competition among developers is very fierce; the quality of work is not perfect; and many senior profiles struggle, within the huge teams that have been formed there, to understand the overall vision of the company and to find their place within it. Some high-profile individuals are willing to significantly reduce their salary to regain this **sense of belonging here in France**.

However, it remains very challenging for many French startups to **recruit the best profiles**, namely those who are highly operational or have very strong scientific expertise.



Emmanuel Papadacci-Stephanopoli
Chief Product Officer

How has La Fabrique by CA been structured within Crédit Agricole? What is its operating model? How do you go from identifying an opportunity to deciding to invest in and launch a new start-up?

La Fabrique by CA is Crédit Agricole Group's fintech start-up studio. Startup studios have existed for about a decade. The main distinguishing feature is that **we are both investors and creators of companies**, whereas, in incubators, the initial idea is brought forth by the founders.

Being a startup studio allows us to share knowledge and strategies between startups and accumulate a certain experience in business creation. Our success is **reflected in the survival rate of our startups: 80% survival at 3 years**, whereas the norm is usually around 10%.

Our shareholders are members of the Crédit Agricole Group. This sets us apart from other studios in two ways: start-ups have to fit in with the CA Group's strategy, and from the first day of their existence, **they have synergies with a major banking group** (a start-up is only launched if an internal partnership is already strongly in mind), whereas the priority of many start-ups is rather their valuation, with the prospect of an acquisition.

However, startups don't only work with the group. A significant proportion of our start-ups' sales are generated outside the Group. This ability to seek out contracts in the marketplace is a very important indicator of a start-up's long-term viability.

Do you plan to establish a center of excellence in generative AI by pooling expertise from each of the startups in your ecosystem?

I've been following AI since my master's on the subject in 2002. At that time, the technologies were already available but not widely deployed – the only concrete applications were in medicine and video games. Regarding financial services, until very recently there were two only types of players: fintechs who based their entire product on AI, and those who, conversely, were very much behind the curve.

When I first arrived at the Fabrique by CA, I wanted to make up for this delay, **by adding AI profiles to the tech team and position the team much more strongly on the subject.**

Then came generative AI. From my perspective, this technology is very plug-and-play. Therefore, rather than creating an "academic" center of excellence for generative AI, I want to foster a mindset and capability among the CTOs of the Fabrique start-ups: **stay connected, understand the technology, test, and leverage the latest models ahead of the competition.**

A very concrete example: we are currently exploring the possibility of creating a start-up that aims to help people in a situation of dependency to understand which aids, from different administrative or social levels, they are entitled to. Many people have already tried to solve this problem using conventional techniques, such as decision trees. To me, it's obvious that generative AI will solve this use case by exploiting the mass of textual information emanating from all the country's social players.

I've got another interesting example: our latest start-up (GENIAL, ex-CibleR) helps local players roll out targeted money programs in the region, particularly for public authorities and regional banks. Its role is to direct these funds. We quickly realized that generative AI makes it easier to connect eligible beneficiaries and inform them about the benefits to which they are entitled. This technology makes it possible to do this **in a natural, personalized way, using natural language, among a large number of retailers and cultural venues in a given territory.** The start-up is already enjoying great success. It won a tender from Atout France for France.fr, the website accompanying the Olympic Games, to deploy an accompanying module that will offer personalized suggestions to tourists visiting the site.

We will never create a start-up dedicated to generative AI. That's not our business, but **we want to exploit this technology to solve specific business problems.** We currently have 12 start-ups, and I'm convinced that the majority of them will soon be using an "off-the-shelf" generative AI algorithm.

[In hindsight, what other factors have contributed to the success of the tech start-ups you've created?](#)

Regarding the factors of success, they are not limited to AI. For a startup to succeed, it needs to excel in all aspects: tech, regulatory, go-to-market, offering, monitoring, and finance. When it comes to data, a startup that fails to grasp that data isn't central to its business model and relies excessively on a third party for this component, will eventually become overly dependent on that third party.

Today, **AI is becoming the norm, a necessary tool.** This was not the case two years ago.



Pascal Simon
Investment Strategy



Kaukana Ventures is a startup studio built by Emerton Data. Can you describe how Kaukana Ventures works, the company's motivations, and your first experiences with the startup studio?

To us, the key is our ecosystem logic. Kaukana Ventures is part of a group that comprises both strategy consulting and data consulting teams. We are convinced that the combination and immediate ability of scientific, technological and business expertise can **help our start-ups grow fast, find the right positioning on the market, and have access to a wide variety of technological options**. The experience we have acquired of certain sectors, like industry and energy, and our proximity with the main actors involved are a key factor of success when bringing solutions to the market. We can rely on **our core team of strategy consultants, data scientists, and software engineers**, to reach the speed and relevance that allow us to come up with the right options quickly.

We have a **hybrid, agnostic operating model**, in the sense that we have already investigated, developed and accelerated some business opportunities from our own ideas. In other cases, we collaborate with founders who approach us with their own project, we discuss the topics where joining forces would be relevant, and we work together to accelerate them.

Our first experience, which is also a success story, is **Agrisight**. It develops an end-to-end supply chain software tool for agriculture, cereals in particular, optimizing both margins and the carbon footprint for food producers. This project **has been incubated and developed at Kaukana Ventures**, up to the first industrialized product, and the first commercial references, before letting the start-up join forces with another agritech to scale up.

Kaukana Ventures is a hybrid project, as it happens relatively frequently that some consultants from Emerton work for the startup studio to transfer their expertise. Competition is fierce when recruiting data scientists, so is this opportunity for data consultants to work with Kaukana Ventures an advantage in that regard?

We do believe that this hybridization, this permeability between both mindsets and skillsets is an advantage. Data scientists indeed value this possibility to continue acquiring experience on multiple tracks, without having to choose one specialization right away. We think it's important for young graduates, or graduates with 3 or 5 years of experience, to work **on different projects and be exposed to different sides of business**, before committing to a single track. We provide them with continuous learning and the opportunity for entrepreneurship in the same ecosystem. They may one day switch to a more entrepreneurial role by taking the reins of a startup – that's how it works, and it might create an opportunity of partnership for Kaukana Ventures.

The amount of investments in AI are astronomical, with for instance a recent seed funding at 200M€. Do you think we are in an AI bubble today?

Obviously, I don't have a crystal ball, but I can answer with a metaphor: **we're probably not in a bubble, but more certainly in a wave.** The wave may be a little inflated, of course, but when a wave goes out to sea, it doesn't recede completely. To summarize, I think it's a question of timing and letting the wave pass.

OPEN SOURCE ECOSYSTEM AND GENERATIVE AI: INSIGHTS FROM HUGGING FACE



Yoach Lacombe
ML Engineer



Hugging Face

Can you please tell us about Hugging Face, in particular Hugging Face's mission?

We aim to **democratize and promote an ethical AI**, by developing a platform on which both private and public players can host and publish their models, alongside the associated datasets, demos, academic papers, etc.

You graduated from French “grandes écoles” and are now working for Hugging Face, which is an American company. Can you explain to us what attracted you to Hugging Face?

There were of course some material motivations: financial aspect, the available hardware, in particular the number of GPUs available.

But on top of that, I must say that the focus of Hugging Face on **open source** is very important for me, as well as the fact that, actually, the activity of Hugging Face consists in **helping people communicate about their work, their models**. I think that is something many French companies are pretty bad at – letting their employees communicate externally about what they have achieved. This behavior is contrary to that of Hugging Face, Mistral AI and the big American companies, and part of my work actually consists in promoting my work and **building my own portfolio**, which is something that really matters for researchers and entrepreneurs. This is a key factor contributing to the attractiveness of AI companies nowadays.

This is definitely inspiring for French companies, which house a huge number of data scientists and engineers. Can you tell us more about the range of tools that Hugging Face provides the AI community with?

Of course. First, there is the **hub of AI models**, which is the heart of Hugging Face. We are really targeting all members of the AI community, including creators (like researchers) and users of the models. The range of what one can host on Hugging Face is really large: the model checkpoints, their commercially permissive license, some associated datasets, the training code and necessary external libraries to train and distribute them at lower costs.

A second aspect of what we provide is a **set of facilities to experiment** with the models we host. It really is intended for all kinds of players, even those with little experience in AI. The demonstration capabilities are free, don't require any GPU and allow many types of models – image generation, LLM, the latest Mistral AI models, for instance – which are released by editors from all over the world. Thanks to this interface, **anyone can now keep up to date with the latest generative AI technological breakthroughs.**

The last point that I want to highlight is that we are making **GPUs available free of charge to public players** like laboratory researchers, who otherwise may not have enough funding to access necessary computational power to train their models. They can use these GPUs to showcase their work and develop their own proofs of concept that will benefit the rest of the ecosystem.

A lot of people believe that Generative AI is a sort of plug-and-play technology, so I would really like to know: is it really that simple to build a generative AI model? What skills does it take to build a model, either foundational or specialized, and put it to use?

It's definitely a very complicated task! Let's consider both training and deployment aspects.

The **training requires thorough expertise**, that we build up through different types of internal research and experiments. It is very time consuming because there's actually a lot to learn, and different peculiarities to understand. I'll give you just one example. Before we send our data to an AI model, we must convert each piece of them into a form that the model can understand, namely a sequence of numbers. This process is called **tokenization** and, although it's pretty simple to tokenize text, it's much more complicated to tokenize different mediums like audio files. How should we efficiently transform our audio file into a list of numbers that the AI model can work with? This single question has been the subject of years of research at Meta and by various academic teams, and remember that this is only the first step to create generative AI models on audio data!

Another big challenge related to training is that the models are trained across thousands of GPUs. **How do we coordinate all the GPUs**, notably how is the optimization gradient transmitted across them? There are plenty of such challenges, and the operational, experimental expertise required thus is increasingly vast. This is why only **few experts** are now in capacity to train large-scale models, like Mistral AI or Llama.

Once the model is trained, **maintaining the model in production is even more complicated**, and consumes a lot of human resources, but I would say it requires more traditional engineers than for training. Managing a huge number of parallel requests across a large number of GPUs is of course difficult, and it's only a small part of the challenge. This is what makes companies like **Mistral AI and Open AI so valuable** currently.

WHICH GENERATIVE AI USE CASES SHOULD BE PRIORITIZED TO MAXIMIZE IMPACT?



Harriet Rees
Chief Information Officer



Can you elaborate on your strategy for prioritizing generative AI projects?

Our primary focus is identifying use cases that **enhance customer experiences and streamline internal processes**. We are constantly evaluating potential applications, working closely with various business units to understand their unique challenges and goals. This collaborative approach ensures that our projects align with real-world needs and have the potential to deliver tangible benefits.

How do you gauge the effectiveness of these initiatives, especially given the relatively new nature of generative AI technology?

We utilize a combination of quantitative and qualitative metrics. For efficiency-focused projects, we track key performance indicators and compare them to pre-existing benchmarks. For initiatives aimed at enhancing quality, **we rely on user feedback, expert evaluations, and rigorous testing procedures**. We also consider factors like the model's accuracy, reliability, and ability to handle edge cases.

Considering the fast-paced evolution of generative AI, is rapid deployment always the primary goal?

While we recognize the importance of staying ahead of the curve, **we also believe in thoughtful experimentation**. We encourage our teams to explore new tools and technologies, fostering a culture of innovation and learning. We believe this approach leads to more robust and impactful solutions in the long run.

Can you share any examples of challenges you've faced when deploying generative AI?

We've learned that not all use cases are suitable for generative AI, especially those involving complex or highly sensitive scenarios. We've made deliberate decisions to exclude certain applications from our current scope and **focus on areas where the technology can truly excel**.

What are the key factors you consider when determining if a generative AI model is ready for deployment?

We prioritize a deep understanding of the model's capabilities and limitations. This includes comprehensive testing and validation to ensure accuracy and reliability. We also prioritize user acceptance and feedback, striving to create solutions that are intuitive and seamlessly integrated into existing workflows.

What are the primary areas your team is focusing on in the coming year?

Our focus is on developing **intelligent, interactive assistance for staff that can actively engage with users and provide best in class support.** We're exploring further applications that leverage LLMs and understanding to deliver the best possible experience for our customers.

TOWARDS A SOVEREIGN AND MORE SUSTAINABLE AI: EXPLORATION OF CHALLENGES AND ISSUES



Olivier Abecassis
CEO



Can you introduce Qwant and explain what makes it unique among search engines?

Like virtually all public search engines, we use an advertising model. However, **respect for privacy is in our DNA**, so we have no context on our users because we don't store any user data or history. This means that two different people performing the same search will get the same results and the same ads, regardless of their history. We have built the engine to counter the American model of ultra-tracking personal data. Our vision is that, even though we may never be as good as Google, **we can provide sufficiently relevant search results to users**, who must realize that the quality of Google comes at the cost of using their personal data.

Furthermore, **the data is processed on the French servers of OVHcloud**. We have developed an additional layer that ensures the privacy of users, even when using foreign technologies, like Bing; however, we will substantially reduce our dependency on Bing by the end of the year. I believe that European companies should not refrain from working with US tech for reasons of sovereignty, but rather use this tech wisely, so as not to lag, and **by adding the necessary privacy overlay upstream**.

What is Qwant's strategy regarding generative AI? Is generative AI an asset or a challenge for you?

Generative AI is an asset for Qwant because it allows search engines to **move from thematic searching** (getting pages related to a given theme) **to a question-and-answer interaction type**. Therefore, we have introduced a module on our search page that allows us to respond to several queries in a question-and-answer format. **Generative AI has significantly enriched our user experience**.

Do you have any initial feedback since the launch of this new feature, which integrates GPT3.5 from OpenAI?

Firstly, what's it all about? Rather than providing a list of web pages, **it supplies an answer to a question posed by the user** using our search engine internally. When we receive a query, we start by identifying all relevant documents using our search engine. Then we add a relevance engine, which allows us to identify the most relevant of the documents. Next, we use an LLM (Large Language Model) to generate a response from these documents. Today, we use GPT-3.5, and tomorrow, models like Mistral or LLaMa. However, we still need to filter certain queries (such as suicide requests, etc.), and **avoid generating too many hallucinations**, which is a flaw of certain LLMs.

The level of response is good, and the feedback is very positive. However, the cost of providing a response is high. We must **optimize query processing** by focusing on data selection and by limiting ourselves to providing short answers

Has Qwant developed other generative AI components in its search engine?

Yes, notably we provide **a summary of pages cited in search results using generative AI**. It's important not to lose sight of Qwant's product consistency. We remain cautious and want to deploy only **truly refined solutions** to maintain user confidence. In addition, we're trying to reduce our dependency on Microsoft Bing by the end of the year, and AI will greatly assist us in achieving this.

Does your proximity to OVHcloud provide you an advantage in terms of sovereignty?

Obviously, OVH helps us enormously. It's a cloud service that's very focused on sovereignty – **all its servers are in France** – and sustainability, since **OVH's data centers consume the least electricity of all cloud providers**.

OVH is a very important partner, complementing the software overlay that prevents data leakage. We need to be pragmatic about sovereignty. Total sovereignty in France will always be wishful thinking because we don't always have the means. Therefore, we need to progress gradually.

To conclude, what is your perspective on sustainability issues? What's your vision on this subject?

Currently, search engines maintain their knowledge of the web by constantly crawling and scanning all available IP addresses. This is **extremely energy-intensive** since 80% of documents on the web are spam. LLM publishers are increasingly scanning the web to build up their training bases.

We believe that this method is no longer appropriate and are looking to develop an alternative model in which **the sites themselves push their new pages or modifications** to the search engines. The savings in terms of money and electricity are enormous as data is only exchanged when necessary. There's a real awareness of this issue among players, who have the same interest as we do. **The transition to this push model seems inevitable to us and to the other players in the industry.**



Catherine Duveau

Data science and governance department manager



Could you present us the main current challenges for Safran Aircraft Engines?

Safran Aircraft Engines is a major global engine manufacturer, with three main missions: ensuring a safe flight for our customers, providing everyone with a safe and motivating work environment, and engaging our teams as key players in our transformation and our social and environmental responsibility.

Currently, there are **four growing activities to be managed simultaneously**: in the civil sector with an increase in LEAP engine deliveries, in the military sector with the tripling of M88 production rates between 2022 and 2027 to support deliveries to France and for export, in services with the quadrupling of LEAP activity between 2022 and 2027, and in R&T to prepare the company's future by developing the Rise and SCAF programs.

To support this growth and meet these various challenges, numerous recruitments have taken place in recent years.

How can AI be useful, especially for a company like Safran Aircraft Engine?

The applications of AI are very diverse and closely relate to our core business, both in terms of products and processes: **assisting in the manufacturing and inspection of our parts, analyzing our tests and calculations, predictive maintenance, supply chain** (mid-term forecasting of commercial demand), etc. Furthermore, AI, integrated into everyday tools, represents a significant source of productivity gains for all professions and activities.

Within the technical department, we have teams with strong AI skills. **These skills are essential as they allow us to prioritize the areas we want to invest in**, meet upcoming regulatory requirements for trustworthy AI, and drive innovation. These teams also contribute to **enhancing the internal expertise of our collaborators in AI** through training and coaching sessions.

To develop these skills, we form partnerships in the academic world, as well as with startups and other companies.

Can you tell us how you approach the subject of generative AI at Safran Aircraft Engines, and where you are in your roadmap?

There are two types of projects within engineering: first, we have deployed **off-the-shelf solutions** within Safran, such as Copilot or a secure chatbot; simultaneously, we are working on a number of value-driven internal use cases that utilize open source solutions. We have initiated around ten proof of concept projects and have already industrialized some of them.

Furthermore, we are currently establishing a roadmap in which some use cases are very conventional (related to text, code), while others are quite specific, **with some of them related to our part design activities**.

The question of 'make or buy' is very important to us. To address this, we need to develop a precise vision of the market and current and future technical opportunities.

In the aeronautics sector, sovereignty is a major issue, particularly in the military field. Could you tell us why sovereignty is crucial, and how you've responded so far in terms of infrastructure and data?

In the military sector, a **dedicated IT infrastructure** is obviously required, meeting higher requirements.

Beyond the military-related challenges, there is the question of data confidentiality and model control to comply with the AI Act requirements, which are specified by EASA for the aerospace sector. We need to have infrastructures suited to each level of data sensitivity: for example, we must maintain **very strict traceability of the processing and training performed on each piece of data** for certain applications.

Generative AI has arrived, and many use cases are emerging. Have you defined rules for implementing these use cases? What technical challenges do you anticipate to ensure sovereignty?

We necessarily apply the same governance rules as we do for other data and AI applications. We must be even more vigilant with generative AI.

Regarding technical aspects, generative AI requires even more GPUs than traditional AI applications. Moreover, since these models are built and trained on enormous amounts of data, **there is the concurrent issue of model protection alongside data protection**.

With all these challenges, can we say that sovereignty is synonymous with lagging innovation?

It is true that, since we cannot use cloud solutions in all cases, our deployments are somewhat slowed down. However, this also provides an opportunity to ask some important questions: how are these models structured? What are our priorities? How can we use them more sparingly? **This forces us to upskill our technical teams** and develop a genuine strategy on these topics.

In our industrial sector, all our competitors are subject to the same requirements – although the Americans retain an advantage because they can rely on AWS and Azure.

Conversely, is sovereignty synonymous with sustainability? What's your take on the subject?

Yes, because these sovereignty issues make us **much more aware of what we consume**. We must always ask ourselves: where are these models most relevant?

That being said, this question must be addressed in its entirety, including the sustainability of digital technologies. It is still an emerging topic, but it will become increasingly important in the coming years.



Lamiae Azizi
Professor at College of Computing



Can you tell us about UM6P, your role, and the place of AI within UM6P?

UM6P, Université Mohammed VI Polytechnique, is **an institution dedicated to research and innovation**. Created in 2017, it brings together 6,000 students, mainly from Morocco and the African continent. UM6P aims to position itself among the world-renowned universities at the forefront of Africa's development in certain key areas, such as **AI, food safety, industrialization, sustainable development, and behavioral and social sciences**.

The university is **strongly committed to sustainable development** and has achieved Silver status in 2020, and Gold in 2023 in the STARS ranking, a protocol for assessing the sustainability of universities.

As for me, after holding various academic and industrial positions, and setting up collaborative ecosystems for research and development in AI and related technologies between universities, public institutions, and the private sector in Australia, Great Britain and France, I recently joined the College of Computing. **The College of Computing aims to develop education and research in all the digital sciences**: AI and data science, cybersecurity, modeling and simulations, telecommunications, etc. This college is central to UM6P's strategy, and includes many Moroccans, binationals, and foreigners trained at leading international universities in their fields. At the same time, the creation of **the "AI Movement" center**, opened in 2021 by UM6P in Rabat, and **recognized by UNESCO as a category 2 institution**, further cements this ambition.

Why is sovereignty over AI an important issue for a country like Morocco and institutions like UM6P?

The nature of the issues is probably the same here as in other countries, but Morocco, even more than elsewhere, has made data sovereignty and AI a major topic. Data protection and exchange laws in Morocco are quite strict which require data to be processed locally. This calls for **local infrastructure and solutions**, enabling the development of a local market for AI solutions, and a training strategy in line with existing regulations.

In this respect, **UM6P has its own datacenter** and has set up the Toubkal supercomputer, the most powerful in Africa, to enable the various players in the Moroccan and African ecosystem (companies, startups or public institutions) to **train their own AI models locally**.

What role does training and cultivating talent play in the quest for innovation and sovereignty? How does UM6P go about nurturing and retaining talent, and meeting these challenges?

The training and cultivation of talent, like elsewhere, notably in France, is the key to success in terms of sovereignty and innovation. In this respect, we're thinking first and foremost of initial training, which focuses on those who will develop these technologies. But we mustn't lose sight of the need to train, or retrain, current professionals, whose jobs will, at the very least, be profoundly transformed by the innovations of the next few years – and it's also in this retraining that generative AI has a role to play. At UM6P and the College of Computing, **we offer a range of continuing education and executive training courses that meet these needs**, such as the "AI for Leaders" course recently launched by the College, which enables executives from various companies and public institutions to gain a good grasp of AI and its practical implications, particularly in terms of communication with their technical teams.

Through this training program and many others, UM6P aims to develop a **center of excellence not only for Morocco, but for the whole of Africa**. Offering Moroccans and Africans first-rate training here in Morocco, then supporting researchers and students who wish to create their own solutions here, is the **best way to retain this talent**. What's more, UM6P is developing numerous partnerships with several ecosystems abroad, notably through the creation of **UM6P France and Canada**. At the same time, UM6P has put in place a strategy, which is proving successful, to bring back certain Moroccans, dual nationals, or Africans trained, or settled abroad, who will contribute their expertise in the field and help build a system driven by Africans for Africa.

To conclude, I would like to add that UM6P's strategy is not to prevent or discourage people from going abroad to work in the field of AI, but rather to take advantage of it, to see it as **an opportunity to create a network** from which the country and the continent will benefit sooner or later.

From your point of view, is Morocco well positioned to make its mark in generative AI?

In generative AI, as in other cutting-edge technologies, Morocco can draw on a **wealth of Moroccan and African talent**. As you know, the continent is very young, growing fast and teeming with talent. Local training is very good, particularly in mathematics and computer science, which are the fundamental foundations of AI.

What's more, AI research does not require colossal resources, apart from the aforementioned computing power. In addition, pre-trained algorithms further reduce the cost of certain use cases. **The main investment is human**, unlike other future technologies, such as quantum computing which require substantial initial material investment.

AI research is therefore decentralized in a certain sense, easy to set up and bootstrap, once the players have been properly trained. So, I see no obstacle to **Morocco and Africa positioning themselves on a global scale in terms of local solutions based on AI and generative AI.**

In concrete terms, have you launched any projects to create sovereign generative AI? What are the leading AI start-ups in Morocco? What potential do you see in AI for Morocco?

Of course! For example, we have **created chatbots** (Multilingual LM) adapted to the Moroccan language and culture, used by public institutions and capable of interacting in dialectal Arabic. We are also working on generative AI solutions for sovereignty sectors such as cybersecurity, and for applications of national and continental interest such as renewable energies, agriculture and healthcare. **Numerous start-ups are emerging in Morocco**, for example:

- **Aerodrive Engineering Services:** provider of 2D and 3D drone mapping services for leading players in various sectors including energy, agriculture, construction and public works, etc.
- **AgriEdge:** thanks to its R&D efforts, helps farmers make better operational decisions through digital solutions for optimizing agricultural operations (fertilization, irrigation, harvesting).

UM6P is proud to contribute to the development of this network of start-ups, notably via **its investment fund, UM6P Ventures.**

I believe that Morocco has the potential to be a key player for the development of AI on the African continent. **Morocco is at the center of opportunities between Europe and Africa**, and the decentralized nature of AI research and the infrastructure that is being put in place will enable the country and the continent to take full advantage.

To conclude, what are your aspirations for the coming years at UM6P and for Moroccan in the field of AI?

May the vision for which I came here become a reality, i.e. to **enable Morocco and Africa to train the next global leaders in AI**, who will be able to create innovative, local solutions that **consider the continent's specific needs**. I really want leaders in their fields to grow up here and emerge from Morocco, Africa and UM6P, and I don't see any obstacles to that.

FUTURE OF WORK: TOMORROW, ALL “AUGMENTED” WITH GENERATIVE AI?



Renata Alves-Santos
Deputy Chief Data Officer



Could you share with us your responsibilities and main missions at Total Energies?

I am **Deputy Chief Data Officer at Total Energies**. I'm in charge of strategy, data governance and all uses of data within the Group.

At the same time, I'm working on a **generative AI task force**. Fueled by the pioneering spirit that has driven TotalEnergies since it was founded 100 years ago, TotalEnergies is built on a tradition of innovation, of which the **use of artificial intelligence technologies in an industrial context** has been a component for several years. This task force, which aims to make generative AI a transformative tool to support the energy transition, represents the vision driven by our CEO, Patrick Pouyanné.

Set up last year, the task force has two main focuses:

- **A work on the applications of generative AI for our businesses**, including the identification of 7 major themes and over 150 use cases, some of which are currently under development;
- **The deployment and adoption of TotalEnergies' GenAI assistant**, Microsoft Copilot, which will be rolled out to 30,000 employees worldwide.

What was the implementation process like for Microsoft Copilot?

We initially conducted a **pilot rollout** with 300 employees, which showed **very positive results**. Therefore, we decided to expand the deployment to employees who use Microsoft 365 tools on a daily basis.

In addition to the time and productivity gains facilitated by Copilot, we are seeing more **indirect positive effects**: the tool helps our employees become more proficient in certain tasks with which they are unfamiliar, and enables colleagues from different countries to work together, which is very important for a multinational like ours.

What support did you put in place to train your employees on this new tool?

During the Copilot pilot rollout, we recognized the importance of supporting users if we were to ensure that every employee could truly benefit from the tool. Therefore, we implemented **hands-on training sessions** where every feature of MS Copilot and the various use cases were presented.

An **illustrative example of this is the use of AI-generated Teams meeting minutes**. Many colleagues on our test panel were very impressed by this feature. Another feature our employees appreciate is Outlook's ability to create e-mails in a foreign language. For other elements of the Microsoft suite, such as Excel, there is still room for improvement.

We decided to implement this training as a prerequisite for the large-scale deployment of Copilot. For each tool in the suite, we provide a demonstration, highlight the main use cases, and aim to address the needs and ideas of the participants. **The acculturation process is thus a two-way street: training employees goes hand in hand with gathering their feedback and needs**. The training team has a cross-functional composition: digital, data, IT, cyber, and HR. This ensures the team can handle all questions that arise during the training sessions.

Additionally, we have also established a broad community covering various topics including sharing positive experiences, tips, news, etc. The goal of the community is to circulate information and encourage innovation. In this respect, **it's fair to say that generative AI enables people** who might never have met within the TotalEnergies organization chart **to meet and talk to each other!**

Do you offer your employees any tools in addition to Ms Copilot?

Yes, during the same training course, our employees will discover the **Microsoft Power Platform**, which includes low-code / no-code tools for application development and automation with complete autonomy.

It's important, on the one hand, to explain to employees that **generative AI is not the solution to all their use cases**. On the other hand, it's necessary to highlight the tools we already have so that each employee can decide whether Copilot is the appropriate tool. If not, it's key for employees to be directed to other resources (BI, Digital Factory, etc.).

What were the biggest challenges you encountered when implementing Copilot?

First and foremost, **establishing a clear comprehension and positioning of generative AI's capabilities**, what it can and what it can not achieve, is essential. Employees sometimes have misunderstandings or concerns about the tool. These concerns need to be promptly addressed.

Moreover, **we must not over-promise** either, explaining that not everything will be or is feasible today, and that we do not control Microsoft's development agenda.

Last but not least, getting certain departments on board, such as HR, cyber and data, is crucial to ensure the success of the initiative.



Maxime Marembaud
Group Chief Data & Digital Officer



Could you give us a brief overview of the Sodexo group and how you have structured the generative AI activities within it?

The Sodexo group is present in **45 countries**, and develops its activities in a very decentralized way. We offer a multitude of services, for different types of consumers.

Food services are the culmination of a number of stages and processes: the staff who produce the food, understanding consumer preferences and satisfaction, optimizing queues, managing supplies, defining the right price... Given the nature of our business, priority is given internally to local operational teams, who are ultimately the guarantors of the quality of our services. We chose to **build a digital and AI organization attached to the technical organization**, which reports directly to Sodexo's COMEX. The team operates globally, with a presence in the group's key regions, and is dedicated to delivering digital and AI products to closely support operational production for our consumers.

In this context, generative AI operates on three major pillars:

- **An efficient governance and a global acculturation plan**, which allows us to effectively communicate with employees across our regions. It ensures optimal optimization of tools and protects the company's proprietary data using the multitude of generative AI tools currently available to the public. To enhance usage, we facilitate various communities focused on sharing knowledge and best practices for different roles within the group.
- The opportunistic use of **off-the-shelf solutions**:
 - We are in the process of **deploying an AI assistant, Microsoft Copilot + Github Copilot**, starting with a pilot phase involving 1,000 employees. The challenge of this pilot phase is twofold: to properly identify the most relevant uses by mapping them to the company's various roles in order to prioritize large-scale usage (the Sodexo Group employs 400,000 staff); and to properly estimate the change management needs associated with implementation.
 - We are also testing other **off-the-shelf generative AI tools** to support commercial activities, which can be integrated into our CRM
- The **delivery of products and custom use cases** involving generative AI, created by our team which has historically developed our remaining ML use cases.

On that last point, can you give us concrete examples of use cases you're working on?

Here are three use cases which we have worked on extensively:

- A sales support use case designed to offer **initial AI-assisted responses to call for offers to which we respond**. We are focusing on both operational efficiency and the quality of our commercial proposals by ensuring good customization and contextualization;
- A use case for **managing, reading, and understanding the contracts** outlining the operational conditions of Sodexo sites;
- A use case to **support the construction of our marketing and communications content**, a function highly impacted by generative AI, through the analysis of consumer feedback based on their comments.

Generative AI also helps us process our data. For example, generative AI enriches our suppliers' data and improves the performance of our receipt-matching algorithms.

What are your long-term beliefs about the impact of generative AI and AGI regarding in-house operations and applications to customer sites for Sodexo?

In the medium term, I have two major beliefs.

Certain functions must be completely transformed in order to take full advantage of the value of generative AI, especially in terms of automation and personalization. In Sodexo's case, I'm thinking about the sales, marketing, and human resources functions, particularly in terms of employee relations. It's important to anticipate the impact that generative AI will have on these positions, with the dual aim of boosting productivity and increasing the value produced.

Secondly, in regards to on-site operations, which is at the core of our business, **generative AI can simplify the role of site managers** by streamlining access to information from the group and its various entities. Generative AI will also help us to better understand the needs of our consumers located on each site, and will allow us to **add customization to our recipes** while remaining compliant with our standard catalogs.



Claire Lebarz
Chief Data & AI Officer



First of all, could you introduce us to Malt?

Malt was founded in 2013 by Vincent Huguet (co-CEO) and Hugo Lassiège, with Alexandre Fretti as co-CEO. **Malt is now Europe's leading freelancing platform** and includes a **community of over 700,000 freelance talents** offering their skills and expertise on its marketplace to organizations looking for external talent. Malt is now **the European leader freelance marketplace**, and already has over 70,000 customers, from SMEs to major corporations. Since the acquisition of Comach in 2022 and the launch of Malt Strategy, Malt also offers the expertise of its network of independent consultants and interim managers. Malt is present in 9 geographical areas (Belgium, France, Germany, the Netherlands, Scandinavia, Spain, Switzerland, the United Arab Emirates and the United Kingdom).

There are many potential benefits and possibilities for using generative AI within the HR department. What specific opportunities do you see for Malt and, more broadly, for the HR department?

At Malt, AI has been integral to our product for years. With over 700,000 members on our platform, we rely on machine learning to recommend the most relevant talents across Europe. Over the past year, **we've enhanced our matching performance by implementing a vector database and leveraging language models**. Semantics are crucial for us, given the extensive text in profiles (such as descriptions and past experiences) and mission descriptions. For instance, the terms "data science" and "machine learning" are considered very similar, despite not sharing the same etymological roots. This allows us to project freelancers into a "space" of members and to project the missions posted on Malt into this same space, enabling us to measure the distance between the talents and missions.

At the same time, AI is helping us improve the efficiency and work experience of our employees. To do this, we integrated with Dust to build an "AI as a service". **This platform enables all Malt teams to create their own generative AI agents completely autonomously**. These include assistants for engineering team documentation, internal product knowledge, HR support for managers, content creation assistants for designers, etc. The performance (rate of correct answers) of each assistant is monitored. Adoption is very good and natural, even though we haven't yet done any general communication on the subject!

As a key player in the field of human resources, what major trends have you observed since the emergence of generative AI?

It's clear that all companies are considering AI, including SMEs! We receive a lot of requests for educational missions, identification of AI opportunities, and strategy support – even from small businesses. There were lots of projects of this kind in 2023. **For 2024, companies are more focused on executing and deploying solutions.** Some companies have a very good vision of things and a strong skill set in strategy and technical skills, while others remain mostly confined to the internal chatbot, don't yet have the data investments needed for AI, or suffer from a lack of AI engineering expertise.

How are these trends transforming the job market and the expectations of employers and freelancers?

At Malt, we are not currently seeing a drop in demand for talent. The studies released in 2023 in the USA on this subject seem to me to be premature, and seem to attribute the impact of the macroeconomic context and tighter funding to ChatGPT. That said, we can see that **many non-tech profiles are starting to add generative AI skills to their CVs**, skills that represent a competitive advantage in their market. Rather than the tools themselves, it's the designer who is an expert in generative AI tools who will replace the designer who doesn't master these tools.

IS GENERATIVE AI ALREADY A PROFOUND CATALYST FOR TRANSFORMATIONS IN BANKING AND INSURANCE?



Ahmed Besbes
Chief Data Officer



As Direct Assurance's CDO, can you tell us about your main long-term missions?

I have three main missions:

- the development of **data governance and the protection of personal data**,
- the deployment and maintenance of **IT platforms for data use cases**,
- developing data science and AI expertise and contributing to the **company's innovation drive**.

As you can imagine, generative AI impacts each of these missions.

Internally, how do actuaries perceive the potential paradigm shift brought about by generative AI?

At Direct Assurance, data science practices have long been an integral part of our actuaries' work. In a way, our actuaries are also data scientists, and our data scientists are already actuaries. So these two profiles are already working **hand in hand**.

Actuaries are enthusiastic about generative AI, as they are about AI in general. They want to understand and test the opportunities that this technology brings. Our mission is to provide them with the tools, support, and AI expertise that they need to achieve this goal.

Direct Assurance is a subsidiary within the Axa Group. In your opinion, which issues should be dealt with at Group level, and which are more appropriately handled directly by the subsidiaries?

There are **fairly strong synergies between the subsidiaries** and the projects they carry out, which are easier to identify at Group level. We're creating a community of AI practitioners, within which each subsidiary can initiate initial use cases and obtain feedback that will be useful for all.

Some topics are common to several subsidiaries, so we prefer to **coordinate together to address them more effectively**. Examples include SecureGPT, deployed by Axa throughout the Group, and call center issues, which concern most subsidiaries. The group enables the **scaling of inherently cross-functional topics or high-value local use cases**, and the Group provides its IT infrastructure to the subsidiaries.

What do you see as the main challenges and opportunities associated with generative AI for the insurance industry? Would you say that generative AI is bringing about a profound transformation of this sector?

Generative AI is very promising and brings a wealth of opportunities. Let's take a few examples:

- Generative AI can help structure data collected from **call centers**. Call centers are a significant cost for us, and generate a lot of data (text and voice), that **generative AI will help us structure**;
- Generative AI can help with **claims management** where there are major challenges in terms of document and image processing

I don't think generative AI will replace jobs. Instead, it will act as **a tool for employees to boost their productivity**. Therefore, there is a major challenge for us in training and supporting the entire staff of Direct Assurance. I also believe that generative AI isn't sufficiently mature to be used in direct interactions with customers, and currently, we aren't considering it as a direction for our customer experience. It's less frequently mentioned, but generative AI also represents a challenge for us due to **its potential misuse by malicious third parties, particularly in terms of fraud and cybersecurity**. Hence, it's essential for us to stay informed about advancements in generative AI to address these emerging risks.

What key skills do you believe insurance companies need to develop to fully integrate generative AI?

We are organizing skills development on two levels:

- firstly, **training and integration for all our employees**,
- secondly, we are developing **our in-house expertise on these subjects** (how the models work, their limitations, their cost models, possible IT architectures), to enable my department to make the right technical choices. Generative AI is evolving very fast, so there's constant monitoring to be done.

To deploy generative AI in a thoroughly controlled manner, we must also have a **comprehensive understanding of regulatory considerations**.

The insurance sector is highly regulated, with data management playing a crucial role. What role should regulators and governments play in regulating the use of AI in the financial sectors?

It is important to **establish a framework for respecting privacy**, and to some extent, this framework is already established by **the GDPR and the AI Act**. Generally, I advocate for a risk-based approach that holds actors accountable, to maintain the freedom to test and innovate while being mindful of potential impacts on individuals' privacy.

Do you think the sector is ready for generative AI? How do you think generative AI will change the sector?

The industry is just beginning to experience the transformations brought about by generative AI. There are many ideas circulating at the moment, and I sense **a strong enthusiasm from stakeholders of this industry**. The challenge is to seize the initial use cases that will have a real impact on the business.



Maxime Havez
Chief Data Officer

Could you tell us about the Crédit Mutuel Arkéa group, and the main missions of its data office?

The Crédit Mutuel Arkéa group is a **mutual bancassurance group**. Its forty or so subsidiaries enable it to cover the full range of banking and insurance businesses, including **retail banking** (with the Crédit Mutuel de Bretagne and Crédit Mutuel du Sud-Ouest federations), **online banking** (with Fortuneo), **corporate banking, property & casualty insurance, and life insurance**.

Crédit Mutuel Arkéa's data office, which I'm in charge of, works across the board for all the group's entities through 5 main missions:

- **Leading the AI factory, which identifies and develops use cases** linked to the exploitation of AI to serve the group's various businesses. We set up a task force on the subject a year ago, which has identified more than 70 use cases linked to the exploitation of Generative AI;
- **Developing the data & IA platform** and making it available to our entities;
- **Coordinating innovation at Group level**, in particular steering the general management committee dedicated to innovation;
- Co-leading a program to **collect extra-financial data**;
- **Leading an initiative aimed at disseminating a responsible Data & AI approach** – in this context, we have also received the IA de confiance certification awarded by the LNE.

In addition to use cases, you have stated that you are observing a paradigm shift linked to the arrival of generative AI. Can you tell us more about this?

Until now, it was organizations like **AI Factory-type or data labs** that were taking the initiative to catalyze the use of AI in large companies by setting up integration sessions, ideation workshops, etc. From this relatively "top-down" process, the goal was to identify high value-added use cases for the business.

Generative AI has arrived suddenly, with **user-friendly tools that are easy to handle**, like ChatGPT. This has made it easier for our employees across business units to see the opportunities that generative AI could unlock in their day-to-day missions. The relationship between these business and operational teams and our AI Factory has been reversed: they are now the ones waiting for us to develop these use cases to meet their daily challenges.

Ultimately, this is the great virtue of generative AI: it has **enabled us to further motivate and engage operators towards AI transformation** by providing them with a general-purpose use case (the chatbot) at their fingertips. Moreover, sometimes our teams request new use cases based on generative AI, which can ultimately be addressed with more traditional AI.

What do you see as the main challenge or issue regarding generative AI?

I think it's a question of **successfully defining the vision** that the organization wishes to give to the adoption of AI.

We've had to position ourselves, choosing between massive group-wide deployments or more controlled deployments, in line with our identity as a mission-driven company.

Our belief is that we want to **develop a controlled, efficient, and as sovereign as possible AI**, and this, of course, impacts the way AI will be deployed at scale. This involves undertaking specific R&D projects, such as fine-tuning an LLM to lower our energy consumption—a model that we have [made available on HuggingFace](#).

As I mentioned earlier, the landscape has changed, and the adoption and use of generative AIs are no longer reserved solely for experts. Therefore, it is crucial that **this vision** (and the decision-making elements regarding the preferred models) **is well understood by everyone within the group. Achieving a clear definition of these decision elements and widely disseminating them** will already be a significant victory.

In this regard, the requirement for efficiency, stemming from Crédit Mutuel Arkéa's identity as a mission-driven company, has very concrete consequences. Indeed, the "off-the-shelf" solutions from GAMAM are sometimes cheaper than open-source models or fine-tuned models, as the costs associated with hosting models deployed on-premise are significant. **Nevertheless, the impact in terms of efficiency of these solutions is not equal and should not be overlooked.** We must at least raise awareness among our teams on these issues, particularly those responsible for choosing the models we will use.

HOW TO ENSURE ROBUSTNESS AND COMPLIANCE OF GENERATIVE AI?



Jean-Marie John-Mathews
CAI Ethics Researcher & Co-founder



What is the robustness of an AI system, and how does it differ from that of another computer system? In terms of generative AI, what are the specific issues?

In traditional ML, before the arrival of generative AI, a model is considered **robust if a small change in the model's input does not result in a significant change in the model's output**. Ensuring an appropriate level of robustness is necessary for the adoption of models in a business setting. We recently worked with a retail company on a pricing algorithm. The team knew that by changing one of the input variables, such as product quality, the price should increase.

Furthermore, in some cases, robustness can be **linked to discrimination prevention**. For example, in credit scoring, we have to check that a person's gender has no influence on the granting of credit. This issue lies at the frontier of non-discrimination and AI robustness.

In the case of generative AI, robustness in the strict sense of the term is far more complex to grasp, as the textual and qualitative nature of the inputs and outputs is not well suited to simple measures. The tests carried out against the generative AI are thus **more complex, more "human"**, and include paraphrasing questions to the AI model to ensure answers remain consistent. There are a variety of tests of this nature, with each test becoming increasingly complex. We can then use generative AI to test the robustness of a generative AI model.

Isn't it risky to test a LLM with another LLM?

This is indeed a frequent cause for concern. That said, the LLMs used for testing are very specific and often designed for this task. Open source models can be **tested with the top, most powerful, and most expensive proprietary models**, such as GPT-4. The model used for testing is not the same as the model being tested. This method, known as **LLM as a judge**, is currently the standard for testing model robustness.

How can we control the risk of hallucinations? What is the source of these hallucinations?

Firstly, **hallucinations are intrinsic to generative AI models**. These models are trained by LHF (Learning from Human Feedback). The model is asked to calibrate itself based on human feedback, even if it means encouraging it to produce responses that go beyond the model's initial scope. This is what makes generative AI models powerful, but it also explains why these hallucinations occur.

Generally, to reduce the risks of hallucination, we use an **external information base as a reference** to quantify the model's tendency to produce these hallucinations. These bases can be an API with Google, a calculator for calculations, another LLM, or RAGs.

There are many different types of hallucination, with their own specific tests. At Giskard, we test for **sycophancy, a type of hallucination in which the LLM tries to please the user** (a form of LLM demagoguery), even if it means lying. In this case, the test method consists of asking the model questions, putting forward inaccurate facts, and observing whether the model will "take our word for it".

How can we take a systemic approach to hallucination control?

To provide you with some observed statistics, it is currently estimated that **5 to 10% of raw model responses are hallucinatory** – a substantial number. By implementing a series of tests and corrective actions, it is possible to **bring this figure down to 2%**. To achieve this, when a test is inconclusive, we modify and encapsulate the initial prompt, drawing the LLM's attention to the error it might be making, while ensuring that the model's overall performance is not degraded. This highly iterative process greatly reduces the hallucinatory risk.

Is the robustness of generative AI models sufficient for companies to integrate them into the core of customer interactions?

Currently, the main applications of generative AI models are **product recommendations and FAQ interactions**. Companies are well aware of the **reputational risks that customer-facing chatbots pose**, which is why they employ third parties like Giskard to help mitigate these risks.

At Giskard, **we evaluate the models**, assigning a score based on several criteria. If the score is too low, we can work out a resolution plan with the customer. On several occasions, we have even stopped projects altogether that were too risky.

We've just explored the issues surrounding the robustness of generative AIs, which require the implementation of controls. In recent years, Europe has decided to regulate the use of AI. But in your opinion, what does it mean to regulate AI?

First, it can involve implementing standardization processes such as **using standards like ISO-42001**. We can also standardize the models, as is increasingly seen with the European AI Act. In this case, the question is: do we regulate just the model, or the entire learning cycle that produced it?

Then there's the question of the **model "supply chain"**: who is responsible for what in the AI value chain? Currently, it's very difficult to come up with a consensus standard.

Is the EU right to regulate AI? And do you think regulation is a good response to the problem of robustness?

I think it is. It's true that regulation is often feared, as it can be seen as an obstacle to innovation. That said, we must not forget that in many sectors, such as banking, insurance and healthcare, **players are used to regulation** and are not afraid of the AI Act.

Article 50 of the Act, which lays down **transparency obligations**, will require some form of documentation, particularly in the case of model robustness. Nevertheless, this obligation will be declarative; robustness tests will still be conducted by the model developers themselves.

You've released some of your code as open source. What role does open source play in your strategy?

The principal focus of Giskard is developing **a vast and diverse set of quality tests**. Consequently, open source is crucial for us, as it enables us to gain new contributions that broaden our test coverage.

However, one might question whether showcasing our way of testing models allows model developers the ability to bypass and evade our tests. But I'm not too worried about that, and I'm convinced that open source is **a key element in building our long-term reliability**. Let's take the famous example Linux, which is open-source, and which all IT Departments now use, particularly for its security.

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Emerton Data is the digital, data & AI specialist for the industrial sector.

We help companies define their data & AI strategy, we provide model and custom tool development services, and we incubate AI SaaS solutions, thanks to our start-up studio, Kaukana Ventures.



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Our mission is to enable large corporations to understand and anticipate the current and future trends, to engage with the most innovative players, and to accelerate their growth and business ambitions.

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