INFORMATION NOTE
AND NEWS

CIGREF MEMO

AI in business: feedback and best practices

> TAKE ADVANTAGE OF THIS NEW TECHNOLOGY

> DISCOVER THE OPPORTUNITIES OFFERED BY AI

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1 INTRODUCTION

In July 2023, Cigref published its first information and news note titled "Recommendations on generative AI". Six months later, the particularly rapid development of solutions integrating this type of technology, the experiments and implementations within Cigref's member companies and public administrations, as well as the media and commercial dynamics around the topic of generative AI, have led us to present the initial conclusions and positioning of our working group dedicated to this subject.

The purpose of this note is to **share the thoughts of the Cigref "AI & Generative AI" Working Group,** led by Baladji Soussilane, Vice-President Digital & IT of the Air Liquide Group, Cigref Board member, and facilitated by Marine de Sury, Cigref Mission Director. The working group brings together more than fifty of its members to discuss their practices and share their experiences.

This note on generative AI tools is aimed at all employees and citizens. It offers guidelines for using the new opportunities provided by these tools, while maintaining control and being aware of the potential risks and difficulties. This document also shares a structured approach to leverage these new technologies and proposes a series of associated best practices. Finally, a last section lists the AI functions, shares a number of criteria to consider when choosing a generative AI tool and the technological building blocks to set up to benefit from the full potential of these tools.

2 SUPPORTING THE GROWTH

2.1 THE IMPORTANCE OF ACCULTURATING ALL CITIZENS TO DATA AND ARTIFICIAL INTELLIGENCE TOOLS

Artificial intelligence research has been progressing for a long time now with documented studies and foreseeable consequences. However, the revolution created by the recent availability of generative AI tools with a user-friendly interface, such as ChatGPT, and the massive and rapid adoption of these tools by the general public, have shaken up citizens and businesses alike. Since then, AI has aroused keen interest and strong emotions, awakening hopes, fears and risks that need to be taken into consideration.

As a result, it is of the utmost importance to **train** and **acculturate all citizens** to these technologies, so that they **take ownership of the opportunities** rather than being subjected to them, and finally because their use requires an understanding of all their potential as well as their limits. The state of thinking in companies and public administrations on the best practices to be put in place for this collective acculturation will be presented in the next Cigref memo on generative AI, to be published this year. This common culture of generative AI must be widely shared and disseminated within society, to avoid the risk of anthropomorphising the tools. Indeed, some users tend to confuse them with a form of human intelligence, a resemblance that is deliberately programmed to improve the user experience. Appropriating these tools will help to keep them in their place as machines and technological processes. It is important to have a clear understanding of the technical mechanisms and their limitations, and not to overestimate their capabilities or minimise the acceleration of their potential, given the enormous efforts required in terms of computing and storage power. Let's not forget that these tools have no memory, they store data; they have no self-awareness or intention; they have no creative intelligence as such but operate through statistical calculations.

This is why, from Cigref's perspective, humans must retain control in at least three areas:

1. The quality of incoming data;
2. The nature of what is required from the tool (decision support rather than the decision itself);
3. Control of what the tool produces.

And these elements fall under the human responsibility of every AI user, as well as of every AI system producer. The creator of the generative AI tool must indeed inform the user of the field of relevance of its use. It is important that the obligations to comply with regulations do not "absolve" the stakeholders in IA from their responsibilities (both users or producers). While transparency is undoubtedly useful, it must not relieve the system creator of its responsibility.

2.2 THINKING ABOUT AI IN A MULTIDIMENSIONAL WAY

Cigref members propose to frame any reflection on the technological development of AI and its uses along four dimensions.

1. The normative and regulatory dimension, in an extremely dynamic global landscape. Users of generative AI solutions want a control and certification service that validates generative AI tools before they enter in the market, in the same way as is done before medicines, cars or aeroplanes are marketed.
2. The environmental and energy dimension, which involves thinking about artificial intelligence systems in terms of efficiency, sobriety and environmental and carbon footprints.
3. The societal dimension, to take account of the consequences for society as a whole and its impact, particularly on the most vulnerable.
4. Finally, the skills dimension, which is probably the most important, because there will be no future for an intelligence economy based on AI without a surge in training and skills generation in all areas and all training streams, particularly in scientific, technological, digital and technical education.

Finally, these four dimensions must be underpinned by a constant concern for safety and risk control, and by the development of an ethical sense of responsibility by the entire industry and by the professional users who make these tools available to society and its economy. In the memo on "recommendations on the subject of generative AI" published in July 2023, we formulated 7 behavioural recommendations and inventoried the associated risks to be taken into account.

2.3 CIGREF'S VIEW ON AI REGULATIONS

Cigref has welcomed Europe's regulatory approach to artificial intelligence with interest. While Cigref supports this ambition, it expresses some reservations about the overly broad definition of AI systems. Indeed, this definition may turn out to be very encompassing and concern a significant number of optimisation systems that have existed for many years in our companies.

We share the French position that we need to **regulate products**, not technologies, and that we need to regulate by risk, which is the approach taken in the *AI Act*. **Regulation must remain flexible, proactive and reactive**: indeed, no one can predict today what the medium- and long-term effects of AI technologies will be, once they become widespread. Some articles have highlighted the impact on human cognitive capacity. This is the whole issue of the "agentivity" of technologies. It seems to us more than ambitious to attempt to provide "*ex ante*" comprehensive regulation of a field that we are only just beginning to explore and that is constantly evolving.

This is why Cigref recommends the establishment of an independent European administrative body, or failing that, the creation of a network of national entities. This body or these entities would be responsible for carrying out essential missions, in particular observation, support, reactive regulation, as well as carrying out tests on products in real conditions. This regulatory authority would also draw up recommendations and support the AI industry, while progressively acquiring control and even sanction capabilities. Initially, it would focus primarily on providing advice and support.

With regard to so-called high-risk systems (autonomous driving, medical diagnosis, CV sorting, credit allocation, etc.), it is appropriate that these systems come with obligations for audits and transparency, but this does not exhaust the question of responsibilities or the way in which they may be used.

Regarding foundation models[1], it seems reasonable that those who use them in high-risk systems should have access to information on how the models work and on the type of data used to train them. On the other hand, we have reservations about the fact that certain obligations are not imposed on open-source AI systems, on the grounds that the code is accessible. Indeed, the purpose of an LLM (Large Language Model), which is made up of the algorithm code and the training, does not allow transparency on the resulting executable. The *zero-day* vulnerability exploited in Log4Shell at the end of 2021 shows that the accessibility of code in no way guarantees its quality. Passing on all responsibility to the users of open-source systems, on the grounds that the code is accessible, would imply that the latter acquire the same skills as the designers of these systems, which is unattainable; or it would limit the use of open source developed by publishers, to the benefit of community open source in which the users themselves participate.

We believe that Europe's AI capabilities depend on access to massive computing capacity. This debate is therefore not independent of the rise of European cloud players, equipped with the best processors (GPUs) to run AI tools, as well as a clean, environmentally-friendly electricity production infrastructure.

[1] A foundation model is the result of a basic model whose drive has been supplemented by a series of fine-tuning mechanisms (adapters). The result is a model that can be adapted to a wide range of applications. A foundation model is a large machine learning model trained on a very large quantity of unlabelled data using a Transformer algorithm (a Deep Learning model, based on a neural network, which has the particularity of using only the attention mechanism and no recurrent or convolutional network).

3 A STRUCTURED APPROACH FOR A NEW TECHNOLOGY

As with any emerging technology, the hype is intense, the market is volatile, and the promises are more numerous than the results. Generative AI is arousing considerable excitement, but its real development in operational applications is still in its early stages.

3.1 ESTABLISH A STRUCTURED APPROACH, IDENTIFY BENEFITS AND RISKS

There are many solution providers, ranging from large, well-known suppliers to niche players offering solutions that are specific to a business area and have the potential to create value. Currently, providers communicate a lot about the potential of their products, but little about feedback. Truly new and disruptive use cases for generative AI in production remain rare.

Looking at the real business stakes is essential, given the sometimes considerable costs involved. We therefore need to be very cautious and realistic when **analysing the added value, versus the development, management and operation of a new tool** in a range of tools already provided within companies.

The participants in the working group highlight the importance of building the AI strategy of the company or public administration in **a global and coherent way, by integrating all AI solutions** and carefully analysing the market. Indeed, AI solutions cannot be reduced to generative AI tools alone, which are only the latest family of tools put forward by vendors.

The management of AI projects is not very different from the management of other enterprise projects or subjects that have already been widely explored, such as data. First of all, AI management includes product management, which is carried out by the business with the IT support. One new element is linked to the unparalleled potential for acceleration and technological innovation offered by generative AI tools. In order to identify use cases offering a major competitive advantage, companies and public authorities are educating all the teams concerned about these tools, and then organising ideation sessions. The involvement of specialists in the ideation of new use cases provides an outside perspective and stimulates a "sideways step" leading to breakthrough innovation. For each use case, we need to find a satisfactory business model by working closely with the business units. Then, generative AI tools, when managed in-house, need to be put into production in accordance with the principles of MLOps, and approved in accordance with the principles of the AI Act.

AI project management involves making choices about solution and architecture. The specific risks to generative AI must be integrated into the project. The availability and quality of data are key elements; moreover, the qualification of the algorithms used and their statistical results are often non-reproducible. In other words, the same scenario will provide different results with each iteration, hence the need to refine the prediction model, and in particular the quality of the data used. In order to properly feed and train generative AI tools, organisations need to work to ensure data quality, availability and accessibility, and share management rules with a structured data management approach managed by business and IT.

The implemented models must also take account of ethical issues and the environmental footprint. As with any new technology, change management and HR management of the skills ecosystem will be key elements.

We also believe it is important to have a clear understanding of the future roadmaps for software packages on the market, to avoid the risk of developing in-house solutions that would be provided natively in existing tools.

When building a solution, it is essential to think about the impact in terms of RUN: RUN costs including software licences, maintenance costs and future upgrades. Providers' pricing models are sometimes complex, and the reality of costs can only be seen in actual production. For example, in terms of effort on the RUN side, in the case of a RAG-type model[2], it is necessary to set up knowledge management in the vector bases, which is a new point that has not necessarily been mastered to date and which depends on IT and business skills.

3.2 DRAW UP A CLEAR LIST OF USE CASES TO BE TESTED WITH AN ASSOCIATED BUSINESS CASE

The organisations taking part in the Cigref working group have clearly understood that the use of AI tools only makes sense if they **address strategic and business challenges**, or in the case of **public administrations, to their service offerings**. This is why several companies have launched calls for projects using generative AI tools internally. They found that several use cases provided real value, even if they did not require generative AI solutions as such, but rather automation. It is clear that generative AI tools do not replace the traditional AI tools already in place, but rather complement them.

Drawing up a business case for a use case is not always easy, but this effort to formalise the cost drivers and associated benefits, which involves the business, IT, finance, legal and management control teams, helps collectively build competence.

Companies and public administrations talk more about prototyping rather than PoC before industrialising, because their challenge is to set up the conditions for use rather than industrialisation. Indeed, before moving on to the industrialisation phase, the organisation needs to have validated the business model, the system including the AI tool and the architecture components required for it to function properly. It must also stabilise the results by drastically reducing hallucinations and checking

[2] RAG is Retrieval Augmented Generation. Retrieval-based models excel at extracting information from pre-existing online sources or even internal databases. However, these models cannot produce original or unique answers. Generative models, on the other hand, can generate answers that are original and adapted to the context of the question being asked, but they can struggle to be very accurate. The RAG model has been developed to combine the respective strengths of existing models and minimise their drawbacks in order to overcome these relative weaknesses. In a RAG AI system, the extraction model finds relevant information in existing information sources, while the generative model takes the extracted information, synthesises all the data and transforms it into a coherent answer adapted to the context.

their acceptability. Since generative AI uses probabilistic mathematical tools, it needs to be validated by prototyping, which goes further than POCs in resolving real pain points.

3.3 IDENTIFY AI SOLUTIONS AND THEIR ASSOCIATED ROADMAPS

Hundreds of generative AI tools exist and need to be categorized according to specific need. It is important to look not only at what the big key players in the market have to offer, but also at more targeted, often more frugal solutions. There are many open-source options worth investigating. However, the AI and generative AI software ecosystem is changing, and it is important to remain vigilant about the long-term viability of the choices made; consolidation of players is likely in the short or medium term due to significant required investments. Furthermore, the operating cost of generative AI is fairly difficult to predict, as pricing practices are still largely unknown. The result depends on the prompt[3] , since it is the question asked through the prompt that induces the response. Then, the cost and duration of R&D to develop specific models are significant. Finally, there are limitations in solving complex problems.

When renewing a contract with a given supplier, the participants of the Working Group (WG) recommended **negotiating the full scope of the technologies** in which the supplier operates.

The functionalities set out in the suppliers' roadmaps are no indication of the performance that will be delivered. They simply indicate their intentions and positioning. It is also important to understand the roadmap of software providers, who are starting to propose upgrades to their solutions incorporating generative AI. This means we don't have to waste time reinventing what is going to happen to the standard functionalities.

[3] *Prompt is* a short instruction/question specially formulated in natural language to a generative AI model to indicate the context and/or content to be generated and obtain the best possible response.

4 BEST PRACTICES

The participants shared several best practices:

From an operational point of view, it is important to "**start small" before "thinking big**".

As with any project, the basic rules apply: **work with partners you know and trust**, who are ready to cooperate and learn together, for example, Digital Services Companies integrated into your organisation's processes.

Isolating, compartmentalising and prototyping in non-critical areas allows us to build up skills and expertise in generative AI solutions, in terms of infrastructure, architecture and model training.

Generative AI tools do not provide the answer to all problems: it is essential to **choose the simplest tools that** meet the need and that are known to work well.

Research the robustness of generative AI solutions using the following criteria:

- **Scope of validity**: the algorithm does what it has to do, everything it has to do and only what it has to do;
- **Explicability and transparency**: while it is easy to specify generative AI tools, it is more difficult to predict their behaviour, since they never give exactly the same answer to the same question twice;
- **Safety and reliability, predictability, resilience to errors, consistency**;
- **Regulatory compliance, confidentiality, standardisation, ethics**.

Assessing the environmental footprint of generative AI tools is also important, whether in terms of energy efficiency, decarbonation, water and abiotic resources, or the circular economy. Organisations are well aware that training a LLM model and running it requires hundreds of servers, a significant consumption of electricity and cooling water.

5 GENERATIVE AI USE CASES

This section lists the AI functions, especially those of generative AI, which can be broken down into 3 main types of use case. The choice of a generative AI tool or system depends on several criteria to be taken into consideration. To benefit from the full capabilities of the AI system selected, it is also important to have implemented the necessary technological building blocks beforehand.

5.1 IDENTIFICATION OF TYPICAL AI FUNCTIONS

AI tools fulfil several types of function:

- Automate: AI automates execution when the system has all the necessary information to make a decision;
- Decide: AI helps to make decisions, but execution is handled by skilled personnel within the organization;
- Recommend: When AI doesn't have enough context to make a decision, it can make recommendations to help in the decision-making process;
- Inspire: AI provides insights and reflections based on available data, which human resources use to innovate, anticipate and produce;
- Evaluate: AI evaluates scenarios formulated by teams;
- Generate: AI generates different types of content;
- Teaching and progress: AI can be used to identify errors in entries, correct them and see what training can be used to suggest exercises so that these errors are no longer made.

5.2 TYPOLOGY OF USE CASES

5.2.1 USE CASES FOR EMPLOYEES - "EMPOWERMENT"

These are the usual use cases for all the company's internal processes to improve productivity and make life easier for employees. They are commodities (smart workspace services, report synthesis, document management, content classification, real-time translation, code generation assistance for developers).

5.2.2 OPERATIONAL USE CASES IN THE ORGANISATION'S VALUE CHAIN

This type of use case automates business processes, manages stocks or requests, handles the supply chain or call centres, provides sales assistance, and improves the customer experience to create a sectoral competitive advantage (chatbot, personalised customer experience). The aim is to achieve radical efficiency gains in an operational process of the company.

5.2.3 BUSINESS USE CASES REINVENTING OR TRANSFORMING FUNCTIONS

This type of use case, the holy grail sought by every company, creates a major competitive advantage that sets it apart. These are the "golden use cases", which create value but require greater effort and investment, similar to an enterprise programme.

5.3 CRITERIA USED TO CHOOSE THE TYPE OF GENERATIVE AI SOLUTION

Generative AI solutions are currently evolving rapidly, and it is important to understand their general functioning to leverage them effectively with confidence. Generative AI models differ from other AI models in their ability to generate new content from a natural language prompt. To deliver convincing results, the models are pre-trained on vast volumes of textual data that are specific to each model (such as Wikipedia, Common Crawl, GitHub, etc.). Model performance and compliance are strongly correlated with the content used.

When organisations need generative AI tools for convenience then, they choose one of the LLM type pre-trained foundation models by generating adapted prompts.

Other more technical elements also influence model performance, such as the embedding method[4] , the type of transformers[5] , reinforcement learning, etc. Therefore, the choice of foundation model (GPT, Claude, Gemini, PaLM, Mistral, LlaMA, etc.) is important and depends on the project requirements. In addition, some specific projects require the foundation models to be adjusted to the company's data using fine-tuning techniques[6].

A generative AI project requires the selection of:

- The LLM model;
- Settings;
- Any adjustments made using data specific to the project: RAG, fine-tuning, etc.
- Model performance tests and checks.

The choice of storage and deployment (API, cloud, local, etc.) depends on the nature of the data handled or the use case, the model, the costs and the skills available.

When a company or public authority chooses to train the model with a learning database, it must first consider the following points:

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[4] The embedding method in IAG involves transforming complex data into numerical vectors to enable generative AI algorithms to understand and work with this data more efficiently.

[5] Transformers are a class of deep neural network architectures that have revolutionised the field of General Artificial Intelligence, particularly in the area of Natural Language Processing (NLP).

[6] Fine-tuning is a process in machine learning where a pre-trained model, usually on a broad, generic task, is adjusted or "fine tuned" to perform a specific task. Fine-tuning starts with a pre-existing model and refines its parameters to suit the target task. This saves time and resources, because the base model has already learned useful features from the data, and it only needs to be further specialised for the particular task, which can often give very good performance with less training data.

- The quality of the data used as the learning base;
- The volume of data available;
- The regular generation of data sets to feed the learning process;
- The data security.

Today, such model training is still rare in large companies and public administrations. In fact, organisations have identified few, if any, use cases involving fine-tuning of LLMs (Large Language Models). The members of the working group who have done so focus on small models, to meet specific needs with particular security or response time issues, or even, for the most mature, to replace a paying LLM for a specific proven case. The overwhelming majority of use cases in production or under development in organisations today rely on API-based LLMs.

When companies use specialised, pre-trained models that address strategic issues, these models are trained with an additional dataset that corresponds to the company's specific needs. As with traditional AI and machine learning, data quality is a key factor. The results obtained must be verified to ensure their relevance. This requires data science skills.

The participants in the Cigref working group identified **several criteria to consider when choosing a generative AI tool:**

- Data used;
- Characteristics of expected results;
- Model features;
- Value generated or result generated & ROI (return on investment);
- User experience;
- Infrastructure required for optimal operation of the AI tool;
- Learning database data.

5.3.1 DATA USED

There are number of factors to consider when choosing a tool relating to the data used:

- The level of confidentiality of the data used as input. When data confidentiality is a requirement, then the organisation should not choose convenience AI solutions. These offer no guarantee of data confidentiality or security;
- The right to use the data and its confidentiality. We must ensure that we comply with regulatory principles. For example, patient data, whether pharmaceutical or personal, requires human control to ensure the consistency of the response;
- The ability to access the data used as input;
- The data reliability;
- The data quality.

5.3.2 CHARACTERISTICS OF THE RESULTS

The choice of the category of generative AI tools depends on the expected characteristics of the results:

- The reliability of answers;
- The use of the results provided: are they public or used internally only? If the results are public, then the legal and intellectual property risks need to be managed;
- The human control time required to validate the content generated;
- The confidentiality of the results and learning process.

5.3.3 MODEL FEATURES

The choice of the type of generative AI tools depends on the expected characteristics of the model:

- The LLM's ability to perform the expected tasks, which involves evaluating the model's performance based on identified criteria;
- The possibility of implementing learning bases in an integrated/embedded way on the AI model;
- The degree of integration with the organisation's current IT systems;
- The possibility of adapting the chosen model to the field of activity;
- Actions required to comply with AI Act regulations;
- Intellectual property of the data generated;
- Uses of prompts: are textual and/or visual prompts used to feed the training base of the generative AI platform?
- Level of sharing: are the images generated from the prompts shared on the platform's public channels? If so, this means that they can be accessed and reused by other users;
- Need for a specific document base: for example, in the case of a public LLM solution with RAG to answer questions in the company context;
- Sharing the data sources used to train the model;
- Use of an off-the-shelf market solution versus an adapted or specifically trained solution;
- Confidentiality of results and learning process.

5.3.4 VALUE OR RESULTS GENERATED & ROI

The choice of the type of generative AI tools depends on the result generated value and the expected ROI. There are several points to be evaluated:

- Value delta between a traditional AI solution and a generative AI solution;
- Time spent on the generative AI tool (operational implementation and use) compared to the generated gain. In this way, we can compare the use of a large LLM in SaaS mode, which is more expensive but does not require any fine-tuning by the business layers, with the use of a

smaller open source LLM on a dedicated infrastructure requiring specific fine-tuning by the business layers adjustments or specific training (fine-tuning);

- Cost of the generative AI tool and hardware infrastructure to be implemented in relation to the gain generated;
- Ability to negotiate later: for the same functionality offered by generative AI, choose the supplier taking this criteria into account. It is important to have an **overall strategy for the purchase of digital services in** order to retain room for manoeuvre during negotiations, and therefore not to put all your eggs in one basket;
- Risk of bias, ethical risk or misinformation;
- Estimated productivity gains: which low-value documents do you produce / which processes are repeated regularly? The answers given by the business to these questions help to identify the value that generative AI tools can bring;
- Value generated in relation to the environmental impact.

5.3.5 USER EXPERIENCE

The choice of type of generative AI tools depends on the level of users' maturity.

- Ease of use of the tool and quality of the customer experience;
- New or familiar tool;
- Time needed for users to become familiar with the tool.

5.3.6 INFRASTRUCTURE

Finally, the choice of generative AI solution depends on the following architecture points:

- Computing power required (data centre/cloud);
- Criticality of the data used: does it need to be compartmentalised?

5.4 TECHNOLOGICAL BUILDING BLOCKS FOR DEPLOYING GENERATIVE AI TOOLS

There are two time periods in the implementation of generative AI solutions. In the short term, the focus is on addressing initial identified use cases internally: experimenting, appropriating and organising industrialisation. Several technological building blocks need to be deployed before AI use cases can be implemented. However, the participants in the WG also recommend thinking in the long term, consolidating a roadmap for the fundamental subjects of generative AI tools, and being able to deal with the more ambitious use cases in terms of resources.

Solutions evolve quickly, which means that technological choices have to be regularly questioned, which in turn requires a high degree of flexibility when it comes to integrating a new solution into the IT.

5.4.1 BASICS BUILDING BLOCKS TO SET UP BEFORE DEPLOYING GENERATIVE AI TOOLS

All the participants in the WG advocate the introduction of rigorous yet flexible **governance** to manage the **data**, **AI tools** in general and the **prioritisation of use cases**. Governance puts in place an organisation to evaluate use cases in order to prioritise them, after analysing their value chain and associated risks. It is important to identify skills requirements and ensure the availability of technological building blocks, as well as estimating all the costs associated with the use cases. This leads to a decision on whether the solution should be implemented in-house or outsourced (make or buy). For these various actions, companies apply the existing internal framework and regulations (ethical code, IT charter, etc.) and follow the guidelines, such as those concerning security, compliance, intellectual property and certifications.

Some companies and public administrations have set up a cross-functional, multi-disciplinary committee dedicated to generative AI (IT, Data, Cyber, Legal, HR, Innovation, Business) to monitor solutions, provide a global vision, raise alerts and support teams. This committee studies and references generative AI solutions, analyses how they work and assesses their benefits and risks. Its role is also to share best practices, including the development of guidelines for the use of generative AI (do's and don'ts for using public generative AI), and to acculturate business teams by offering training courses and presentations of uses.

The role and concept of **data** governance were developed in the Cigref reports "Elaborating and implementing a data strategy" and "Data-driven business management: extracting value from data across the enterprise". Governance means knowing what data is used, by whom and how. It establishes clearly defined cyber rules at corporate or public authority level. For each of the AI tools selected, users must be able to provide feedback on the quality of user interfaces and the relevance of responses, as well as the number of queries and the quality of data sets. The data must be structured, and players who have already structured their data are best equipped to take advantage of generative AI. For example, it is important to have collections of vector stores, vector databases[7] , available and validated in terms of architecture, cyber aspects and contractual aspects.

The architecture must be designed to connect to existing foundation algorithms as they stand, according to the principles defined in governance. The architecture must avoid being locked into a single provider and be able to connect to integrated, secure cloud solutions operated in the company's environment, such as LLMaaS (Large Language Model as a service).

Several companies recommend establishing easy access to GPUs or to data catalogues internal or external to the organisation, vector databases or a data platform with services offering data catalogues.

Finally, some companies are setting up sandboxes to allow employees to experiment and learn in a secure environment. This sandbox testing phase helps to identify the potential but also the limits of these tools and the cost of using them.

5.4.2 BLOCKS FOR USING EXISTING FOUNDATION MODELS AS IT IS

Several companies have begun their experimentation and learning with generative AI using existing foundation models. An initial selection from this type of model is often made at the level of the organisation in order to avoid spreading tests too thinly. All organisations are convinced of the importance of experimenting and testing models according with rules, codes of conduct and ethics that they have clearly defined.

5.4.3 BRICKS TO TRAIN DRIVING A FOUNDATION MODEL (FINE-TUNING)

In this scenario, the construction of the datasets that will form the basis for learning the model is a key stage. Indeed, a foundation model, no matter how good, will always depend on the preparation and quality of the data. The data must be visible, addressable[8] , documented, reliable, interoperable[9] and secure.

Secondly, generative AI tools require much more than just AI: they also require the retention of human experience, judgement, common sense and contextualisation, all of which are essential if customers, colleagues, partners, suppliers and organisational assets are not to be put at risk.

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[7] A vector database is a type of database that specialises in storing and retrieving high-dimensional digital vectors. Vector shops are designed to efficiently manage and index these vectors, enabling rapid searches by similarity.

[8] In other words, they are located at a single, permanent address that guarantees their continued use by consumer domains, regardless of how they change over time and in accordance with the access policy.

[9] In other words, data based on common standards, making it easier to make available, re-use and cross-reference.

Finally, the participants recommended that objective criteria for measuring the "quality" of responses should be identified at the start of the project, particularly in certain cases, in relation to what a chatbot would do.

5.4.4 BUILDING A CUSTOM MODEL

The participants in the working group have not yet opted for this option, as they feel it is too expensive, too time-consuming in the light of current market trends, and above all offers no guaranteed added value.

6 CONCLUSION

AI technologies, even though they are generating a great deal of well-justified excitement, must be approached as the evolution of any new technology. We need to experiment with them and study the business stakes by analysing the value they bring, versus the development, management and operation of a new tool in a panoply already provided within companies and public administrations.

For several years now, many companies and public administrations have begun their data transformation, putting data at the heart of their processes and decisions to meet their strategic objectives. The arrival of generative AI tools does not change the governance and organisation put in place for data innovation and transformation all that much. Organisations are adding good usage practices and safeguards against the new risks posed by generative AI, not forgetting the European regulations to apply. Build and run also need to be adapted. Finally, companies and public authorities, aware of the potential for acceleration and major technological innovation offered by these solutions, are acculturating their staff and organising ideation sessions with specialists to **stimulate breakthrough innovation from an outside perspective**.

Today, there are two main types of use for generative AI solutions. A large proportion of organisations are experimenting with them to find value and gain maturity with products such as *Microsoft Copilot*, *OpenAI Enterprise,* etc., or specialised Business software for each team, such as legal, finance and marketing. A smaller number of organisations use LLMs to test or deploy their use cases, which requires skills within the R&D development teams.

The data transformation is giving rise to the emergence of new data professions. Several of these have been agreed and are described in the "IT Job Profiles Nomenclature", while others are in the process of being defined. It is likely, however, that a new kind of talent will emerge in the context of generative AI technologies, but at this stage it is difficult to establish a real need for skills that are different from what we already know.

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ABOUT CIGREF

Cigref is a network of major French companies and public administrations whose mission is to develop its members' capacity to integrate and master digital technologies. Through the quality of its thinking and the representativeness of its members, it is a unifying force in the digital society. Cigref was founded in 1970 as a not-for-profit association under the law of 1901.

To achieve its mission, Cigref relies on three areas of expertise that make it unique.

Membership
Cigref embodies the collective voice of France's major companies and public authorities on digital issues. Its members share their experiences of using technologies within working groups to bring out the best practices.

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Cigref participates in collective discussions on the economic and societal challenges of information technologies. Founded nearly 50 years ago, Cigref is one of the oldest digital associations in France, and draws its legitimacy from both its history and its mastery of technical issues, the foundation of skills and know-how that underpin digital technology.

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Cigref promotes and respects the legitimate interests of its member companies. As an independent forum for exchange and production between practitioners and stakeholders, it is a benchmark recognised by its entire ecosystem.

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