INSIDE GENAI

n° 01

GENERATIVE AI
IN THE FINANCE MARKET:

The new frontier in digital transformation.

CRIF
Together to the next level

GENERATIVE AI, WHICH INCLUDES SYSTEMS THAT INTERACT WITH TEXT, IMAGES, AND AUDIO, **IS REDEFINING HOW BUSINESSES ENGAGE WITH CUSTOMERS, MANAGE RISKS, AND OPTIMIZE OPERATIONS.**

Executive summary

In recent years, developments in generative artificial intelligence (GenAI) have had a huge impact on both our personal and professional lives.

Many industries have already started to experiment with these new technologies, integrating activities into their processes supported by platforms using generative AI. Due to the nature of their business and their long-standing propensity for digitalization, **banks and insurance companies were among the first sectors to begin exploring these new technologies** across various areas of their operations.

The current applications of generative AI in banking and insurance demonstrate how this technology will not only improve operational efficiency, but also deliver unprecedented customization of financial services.

A number of studies have shown that adopting generative AI can significantly reduce operating costs by automating processes that traditionally require significant human effort, such as document checks and claims assessments.

A 2024 study by ***Gartner***, while scaling back earlier estimates, states that the adoption of generative AI has "passed the Peak of Inflated Expectations" according to Gartner's Hype Cycle.

It has been shown that generative AI is starting to achieve measurable gains in early applications in the order of a 14% increase in productivity in operational functions (such as call centers), up to peaks of 34% when generative AI is used to support low-skilled operators.

In particular, generative AI linguistic models have made human-computer interaction smoother and more effective, expanding the scope for interaction and simplifying access to complex tools for an ever-increasing number of users.

While the potential of these new technologies is still in its early stages and the possibilities continue to grow month on month, it is essential for businesses to understand the benefits available today.

GENERATIVE AI CAN SIGNIFICANTLY REDUCE OPERATING COSTS BY AUTOMATING PROCESSES.

Organizations should explore how these technologies can complement their existing AI initiatives and assess the opportunities to add value to processes transformed by integration with these technologies.

The time and money invested in generative AI have accelerated experimentation and early proofs of concept, quickly moving beyond the hype phase.

This is allowing increasing focus on those applications that can really benefit from generative AI and an understanding of which areas are supported by existing technologies.

CRIF's commitment to generative AI (GenAI) reflects a forward-thinking approach that balance the urgency of delivering immediate value with the foresight to enable long-term transformation.

The introduction of our **GenAI Factory** in 2023 has set the stage for this journey, establishing a dedicated hub for developing, experimenting, and scaling GenAI solutions across the organization.

Looking ahead, our roadmap reflects a clear and focused strategy: Harnessing GenAI to empower our customers, enhance operational excellence, and deliver superior customer experiences.

WE BELIEVE THAT, IN THE FUTURE, **THE USE OF GENERATIVE AI WILL INCREASINGLY INFLUENCE TRADITIONAL APPROACHES TO LEARNING, CLASSIFICATION, AND FORECASTING ISSUES, BUT IT WILL DO SO BY SUPPLEMENTING EXISTING TECHNIQUES RATHER THAN REPLACING THEM.**

AI or generative AI?

The enormous impact of both the media and mainstream use of generative AI technologies has led to frequent misuse of the terms “generative AI” and “AI”, which are often used interchangeably in some contexts. This confusion stems from the complexity and accelerated evolution of AI technologies, which can lead to a blurring of the terminology for non-specialists.

AI is generally considered as the discipline aimed at developing systems able to carry out tasks considered to require human intelligence.

Generative AI is a branch of artificial intelligence specialized on the creation of novel content.

It should be remembered that AI was widely used in learning, classification, and forecasting applications long before the advent of generative AI. In the financial sector, for example, machine learning algorithms have been used for years in predictive models for credit risk assessment and fraud detection. To better understand the complementary nature of the techniques and to clarify the real benefits of generative AI, it is useful to look at some key aspects of AI and examine in detail the specific features and differences that generative AI brings compared to more traditional AI approaches.

1 Applications

"Traditional" AI algorithms are primarily used to solve vertical analytical tasks such as classifications, forecasts, and clustering by replicating analyses and choices made by humans through data-driven learning.

Generative AI algorithms, on the other hand, are predominantly used to create new content similar to what can be produced by humans, such as generating audio, code, images, text, and videos.

For this reason, we believe that a whole range of applications in the financial sector that are currently served by traditional AI, such as risk estimation models, propensity to buy and churn, customer segmentation, elasticity analysis, etc., will continue to be supported by traditional AI modeling.

2 Data

Traditional AI algorithms mostly use structured data, such as numbers and labels. Generative AI focuses on the use of unstructured data such as text, images, and audio.

This does not mean that prior to the emergence of generative AI, text or images were not used in traditional AI models, but with these new technologies, the accuracy and quality of the results provided have certainly greatly increased in certain fields.

This creates interesting opportunities for traditional AI models to benefit from new information extracted from unstructured data already present in company databases - such as documents, photographs, satellite maps, recordings, or videos - which, through pipelines based on generative AI services, can be processed and transformed into additional data, enhancing the accuracy of existing models.

3 Multifunctionality

Traditional AI models are typically trained for specific tasks, such as classifying junk e-mail, predicting credit risk, and estimating the propensity to buy or churn. To achieve these results, organizations need to collect data that is useful for the task in question and to develop vertical models.

Generative AI models, on the other hand, have different and, by their very nature, more general goals, such as understanding and producing texts, analyzing or generating images, etc., and are trained on huge databases covering a diverse range of topics.

This makes it possible to have models that can provide output for a large number of potentially different tasks, and has also made it easier to provide service-based delivery of GenAI models, with a single service capable of being queried for multiple purposes. This raises an important issue for banking and insurance decision-makers: With traditional AI models, the cost of usage-based services was merely an optional consideration in AI-based business cases; however, the advent of generative AI makes it essential to account for the significant costs associated with using GenAI services.

4 User interaction

Typically, “traditional” AI-based models provide forecasts and numbers as output and, by their nature, operate in the background as part of larger systems that do not interact directly with the end user.

Generative AI, on the other hand, precisely because of the type of data and the purposes it serves, can be very interactive, especially in creative applications where users directly collaborate with the system to modify or direct the generated content (as in the case of marketing content design or software development support).

This shows another interesting crossover with traditional AI, where generative AI can support complex systems by facilitating iterative user interaction on the front end, perhaps using traditional models such as data generators, classifications, and forecasting on the back end to produce user responses that maintain high accuracy and consistency.

5 Risks

Furthermore, while traditional AI poses risks like data bias, lack of model transparency, and issues with output explainability, generative AI introduces additional concerns.

These include the creation of false or manipulated content, implications for intellectual property and copyright, and the complexity of evaluating the quality and accuracy of its output.

On these fronts, there is growing stakeholder awareness and an increasing need to develop services, environments, and processes capable of testing content generated by AI-based systems, and to design processes that can identify and address anomalies, while ensuring human operators remain involved in the most critical stages.

Which business areas will benefit most from generative AI?

The early applications of generative AI-based language models have undoubtedly concentrated on customer relations, both direct and indirect.
We believe this focus is likely driven by the available evidence and widespread use of tools like ChatGPT, which have demonstrated the significant potential of these models in enhancing human-computer interaction.

In this context, we believe that the application of LLM tools on internal document corpora is among the first use cases being explored by banks and insurance companies, where experiments are already advancing beyond the proof-of-concept stage.

The latest techniques for tailoring responses to private document corpora enable the development of services such as product comparison tools to assist customer service teams or directly support customers, interactive search systems for navigating company policies and product catalogs, and ticketing support platforms, among others.

Ultimately, this approach enhances how humans interact with the typically textual documents that banks and insurance companies produce, catalog, and use for their internal processes. Another key area is undoubtedly the use of AI to **support software development and maintenance**. Tools based on LLMs have already achieved a level of maturity that enables the creation of effective support solutions for IT teams, and we are seeing well-established applications with impressive efficiency rates.

There are also areas of significant interest that, in our view, are somewhat less developed in terms of current experimentation, particularly in **risk management and credit/underwriting processes**. Given that these are high-risk processes for banks and insurance companies, we believe that the adoption phase will be longer, with greater oversight.

However, as these processes are still very much based on the analysis and production of text documents by human analysts, we believe that risk, credit, and underwriting can benefit greatly from the introduction of LLMs in their processes.

For example, in risk management, all areas subject to controls (positions, portfolios, procedures, etc.) could benefit from tools that analyze documents relating to individual positions for filtering and pre-analysis, allowing operators to focus on the highest risk cases.
In addition, we are seeing the use of generative AI tools to extract information that can enhance current risk assessment models (both established and emerging risks). Finally, in lending processes, there are interesting proofs of concept relating to the preparation and review of loan approval documents, as well as the application of the chatbot approach to support the analysis of operations carried out by analysts.

In the insurance sector, similar approaches to those in banking are being adopted, leveraging document generation and data extraction capabilities to support underwriting and claims assessment processes.

There is also growing interest in analyzing not only textual data but also images, using GenAI engines that can analyze both types of data to automate and streamline processes such as underwriting, renewals, and claims assessments through the processing of photographs.

BANKING

LENDING

- Generation of loan approval documents
- First line of defense automation
- Data extraction from documents (contracts, certifications, financial reports, etc.)

RISK & COMPLIANCE

- Automation of document and process controls (compliance, validation, etc.)
- Regulatory analysis and benchmarking

BUSINESS DEVELOPMENT

- Customer pitch generation
- Generation of campaign content

CUSTOMER RELATIONS

- Chatbots and virtual assistants (marketing support, onboarding, etc.)

IT

- Automation in software development
- Ticketing & troubleshooting

INSURANCE

POLICY MANAGEMENT

- Automation of the underwriting process
- Automatic generation of insurance documents *(source: Capgemini study 2023)*

UNDERWRITING & RISK

- Creation of consistent risk scenarios by type of phenomenon, perimeter, magnitude, etc.

MARKETING & SALES

- Customization of offerings through customer data analysis
- Generation of policy content and campaigns

CLAIMS MANAGEMENT

- Automated claims analysis

CUSTOMER SERVICE & ONBOARDING

- Chatbots and virtual assistants for customer support (60% of companies use chatbots)
- Automated response systems for common requests

How CRIF is using generative AI

Although multi-modal models (i.e., capable of processing different types of unstructured data such as text, images, and audio) are achieving high-quality output, we believe that applicability in financial and insurance contexts is currently focused on the ability of GenAI models to process textual data.

In this area, CRIF is targeting its developments on three main types of use:

1 Understanding documents

This typically involves extracting valuable information from unstructured text documents. This area, which is part of robotic process automation, is one that CRIF is really invested in.

It is an area where generative AI integrates seamlessly with traditional AI, as generative AI-based processes are used to extract data that will then be integrated into AI-based predictive models. In this sense, therefore, generative AI can boost traditional AI models by increasing the types of information available to predictive models.

2 Production of written documents

Documents are produced by applying generative AI engines to specific contexts, using a document corpus from a certain area and specific data as input to generate documents required for banking or insurance processes.

This type of application is useful for automating parts of the process that currently require significant human involvement in the drafting of texts. Throughout the long process of digital transformation, banking and insurance processes have already seen progressive automation and a reduction in human intervention. We believe that the introduction of generative AI will allow further automation, supporting operators even in parts of the process that until now have been tricky to automate.

3 Conversational interfaces

These combine the previous two aspects mentioned, focusing on supporting interaction processes involving both customers and internal operators.

The main applications include virtual assistants designed to streamline information gathering, compare options, and evaluate specific cases for various users such as customers, online branch operators, managers, and credit managers. While in other applications the operator’s role may primarily involve oversight, in these processes, the human operator remains central, with the GenAI platform playing a supporting role.

Given the level reached by the best models on the market and the rapid evolution of the new versions of available models in terms of accuracy and resistance to hallucinations, we believe that CRIF can provide banks and insurance companies added value by supporting them in selecting the most effective tools (think about confidentiality issues in the use of as-a-service models for the processing of confidential data) and provide advice and operating environments where generative AI services are integrated into solutions that maximize the results and reduce the possibility of errors.

For these reasons, generative AI experiments in CRIF are always accompanied by a series of measures that go beyond the simple design of appropriate prompts:

Application of **specialist case-related knowledge** to develop GenAI services that are able to deliver results with the level of detail required for each case and that enable management of the different situations that may **arise in real-life cases**. Tuning the methods for querying GenAI services and processing of output is a crucial step in ensuring experiments are robust enough to transition to a production environment.

The services are developed within **a framework that natively involves KPIs able to monitor the quality of the output** by facilitating an iterative process of backtesting and tuning, in order to minimize the risks of inaccuracy and hallucination.

Integration of the service into platforms (both with front end and back end) that allow rapid use and integration with banking processes.

Applications

At CRIF, we have initiated research in most of the banking and insurance areas described above.
We have focused on risk and credit in order to be able to exploit specialist skills that help in the design and assessment of outputs, on the one hand, and to use these technologies in CRIF proposals at both a design and product level, on the other.

We have selected some examples of applications where generative AI services are used; these are configured and managed to support specific activities in the risk and credit areas.

SECOND LINE OF DEFENSE SUPPORT

As part of the activities performed by Risk Management functions, the second line of defense includes a set of procedures aimed at ensuring the correct implementation of the risk management process, adherence to operational limits, and compliance with corporate operating rules. Regulatory developments have introduced the monitoring of individual credit exposures (single file review) for each stage of the credit lifecycle.

The single file review process is human-intensive as it involves a comprehensive review of the documentation that makes up each loan file. Given the significant impact of this activity, current single file review processes are based on a sample analysis of loan files, with the risk of excluding files that are not highlighted by the KPIs used for the standard selection of files for review. Often, loan file documents include observations from managers and analysts not captured by automated assessment systems, but which provide useful indicators for selecting and analyzing higher-risk positions. CRIF has reviewed the sampling and analysis process, introducing a single file review platform based on generative AI.

The platform analyzes all the documentation collected for each loan file and selects those with anomalies, analyst or manager observations, developing situations, and a whole series of focus points contained in the documentation or emerging from comparisons between multiple documents from the same loan file.

THIS APPROACH OFFERS MULTIPLE BENEFITS

The ability to provide the analyst with a limited number of files to review, focusing on higher-risk exposures.

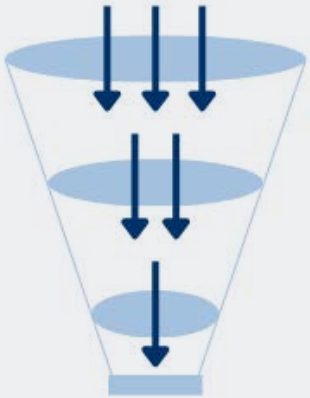
It highlights anomalies, making human-based verification and cross-checks more efficient.

Full use of unstructured information contained in documents, not always captured by automated electronic loan file processes.

Switch from sample control to overall control.

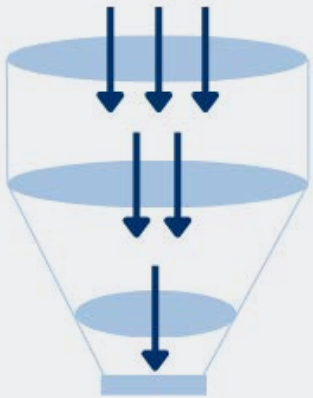
This approach has already been tested by several banks with impressive results: The platform analyzes all electronic loan files and flags a small percentage (around 4%) as potentially anomalous. After cross-checks by analysts, 55% of the flagged cases are confirmed to be genuinely anomalous.

AS IS



- ~200k of electronic loan files produced on an annual basis
- **0.5% undergo second line of defense**
- **~50 files** have **significant anomalies** on an annual basis

GENAI APPROACH

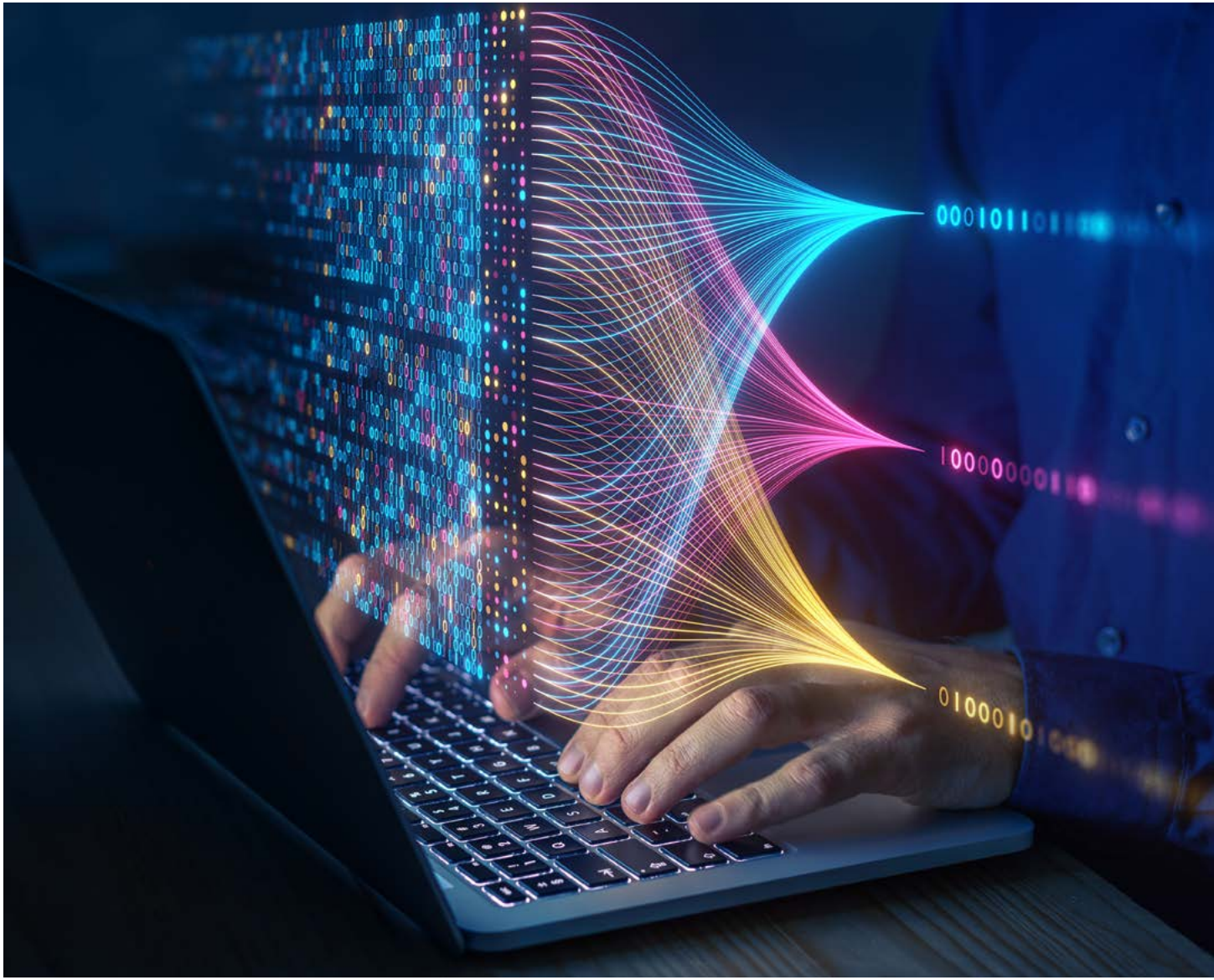


- ~200k of electronic loan files produced on an annual basis
- **100% of electronic loan files analyzed**
- **~4% of the electronic loan files** are flagged as most likely to have **anomalies**
- **~55% of the selected electronic loan files confirmed as abnormal by the analyst**

CORPORATE CREDIT ANALYSIS

Certainly, corporate customer analysis is one of the areas of lending where the banking analyst has the most to do, with a multitude of heterogeneous documents containing information to be cross-referenced and linked to each other.

CRIF has developed a platform designed to store documents relating to a bank's business customers, whether they come from the bank itself (such as loan approvals, reports, etc.) or originating from CRIF's information assets (such as financial statements, press news, company websites, non-financial documents). Using an engine that leverages generative AI, the platform performs a series of comparisons, searches, and analyses based on this document corpus, allowing it to provide specialist insights on specific needs of the lending process. While maintaining a flexible approach, purpose-driven specialization enhances the effectiveness of results and reduces the occurrence of hallucinations.



With this approach, we are now able to address some of the key needs associated with the lending process:

EXTRACTING ALTERNATIVE INFORMATION FOR ESG ASSESSMENTS

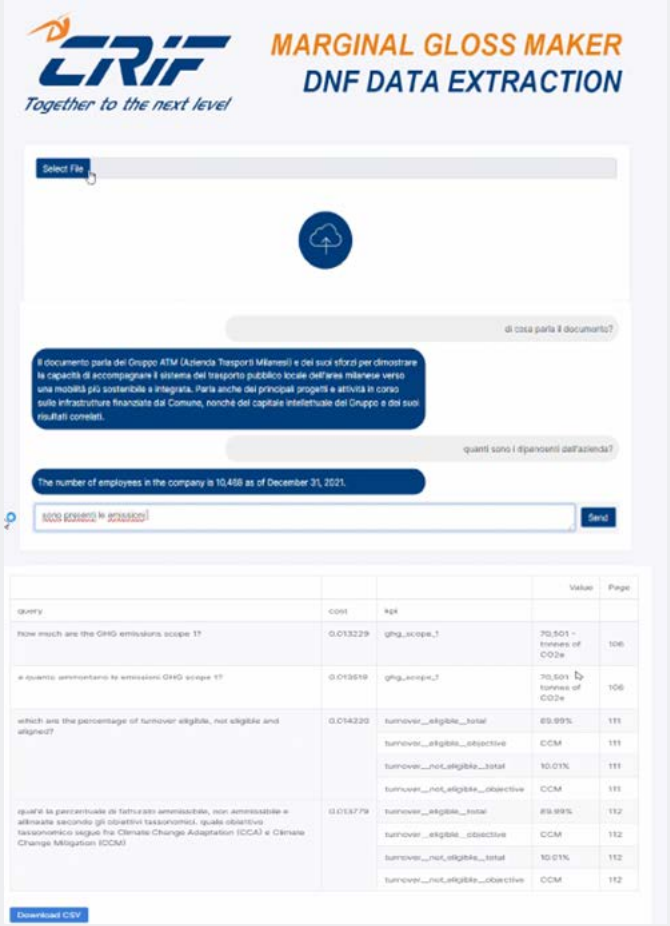
With the banking and insurance system becoming increasingly aware of the risks associated with the green transition, we have focused on extracting key information for an accurate assessment of companies. This information provides valuable input for AI models for evaluating the ESG aspects of Italian companies, confirming the role of generative AI as the ideal tool for enhancing predictive models developed using traditional technologies. The solution is designed to analyze a number of documents such as non-financial statements, press news, and web portals to extract the information required by the regulations for the ESG assessment of companies.

EARLY WARNING

The aim is to supplement portfolio monitoring tools, which primarily rely on numerical data, with alerts generated from the continuous analysis of documents collected or provided by client companies. This approach allows analysts to focus on unstructured information that could be reflected in the deterioration of the numerical KPIs that are normally monitored.

ANALYTICAL REPORTS

Taking advantage of the generative capabilities of GenAI engines that have been trained using the experience of CRIF analysts, the document corpus related to each client company is analyzed and allows an initial version of the financial analysis reports to be drawn up, making the analyst's work of drafting the documentation for the approval processes more efficient.



CHATBOTS TO SUPPORT ELECTRONIC LOAN APPLICATIONS

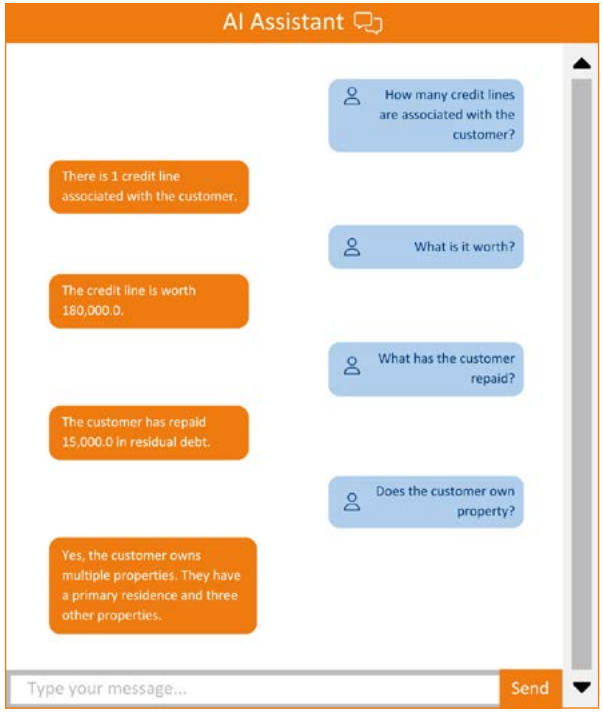
Modern loan approval workflows supported by electronic loan application platforms have contributed to streamlining lending processes by automating most of the document collection and information verification stages.

Responsibility for the overall assessment of the position remains with the analyst, through comparison of the collected information and assessment of its consistency with the loan details.

This activity, however, involves the search for and validation of information to be selected and cross-referenced between different types of documents (e.g., real estate appraisals, income documents, notary reports, etc.), often in different formats for the same type of document.

To streamline this activity, a generative AI-based engine has been designed to integrate with electronic loan application solutions to analyze documents related to the application under consideration, allowing an efficient search of the documents, and providing the analyst with the required information and references to documents, to enable immediate cross-checks.

In this case, the solution uses the conversational capability of GenAI engines, specifically to support the analysis, which must be flexible at this stage of the process. Specialization in the processing of documents relating to the individual loan file provides a precise answer and limits the possibility of hallucinations.



Potential developments

Given the rate at which generative AI technologies and their applications have been developing in recent months, it is difficult to predict future scenarios. We can, however, suggest areas of research where we believe in the coming months and years that further and more intensive trials should be carried out in order to bring the greatest possible benefits from generative AI technology to the world of credit and insurance.

ACCURACY

While impressive, the current level of accuracy in the output is not always acceptable and, most importantly, it does not provide tools to measure the level of reliability of individual responses. However, we believe that the new versions of the main GenAI technology developers will be able to limit inaccuracies and hallucinations.

We do not think this can be completely resolved in the short term, and so there is the potential to develop tools and platforms that can help recognize inaccurate outputs.

MULTI-MODAL APPROACH

In view of the widespread nature of textual documents in banking and insurance processes, we believe that the main applications will focus on the processing of this type of document. However, we are seeing a growing interest in the use of generative AI in the analysis of data such as images and audio. Areas such as damage assessment, estimation of property valuations, analysis of documents photographed by customers, and call center support are all applications where the increased capabilities of multi-modal GenAI models can level up the tools used to date to support operators.

FRAUD

The possibilities offered by generative AI can also be exploited for malicious purposes. We are already seeing a growing interest in technologies that identify content produced by generative AI. We believe that interest in technologies that can help protect credit and insurance processes from new forms of fraud enabled by the use of GenAI will increase, and deserve renewed attention from operators.

EXTENSION OF SCOPE

Looking at the adoption of generative AI in banks and insurance companies, we have seen a process involving a range of areas, starting from those that provide more room for maneuver to areas that are becoming gradually more regulated. While the early tests focused on business and marketing areas, where regulatory constraints are less stringent, we are now seeing greater interest in areas related to risk, credit, and underwriting: Core processes where regulatory and risk assessment margins are more stringent.

Assuming this trend continues, increased awareness among banks and insurance companies of generative AI's potential, combined with the growing precision of these technologies, is likely to expand applications into other areas strongly influenced by unstructured data analysis.

We anticipate that functions such as compliance, legal, and collection will play an increasingly pivotal role in integrating generative AI into their processes.

DESIGNING NEW PROCESSES

Finally, another area we consider important is ***the way*** in which generative AI will be used in banking and insurance processes.
What we are seeing today are steps to improve the efficiency of established processes. The introduction of generative AI involves identifying within the steps of an existing process those areas characterized by repetitive human-based activities that can be automated using generative AI-based tools.

In the not too distant future, we expect a complete transformation of banking and insurance processes, with the widespread presence of conversational interfaces and platforms that give the human-in-the-loop an increasingly supervisory and less operational role.

INSIDE GENAI

CRIF's Artificial Intelligence Journey

CRIF boasts a team of over 300 AI experts, supported by more than 1,500 hardware, software and data architect specialists working in the ICT area. Added to these is a team of more than 100 consultants, including data analysts, credit risk analytics experts, data scientists, data engineers, ML engineers, and prompt engineers, all supporting the adoption and development of AI-based solutions.

EVOLUTION OF CRIF'S AI SKILLS AND SOLUTIONS

CRIF's AI journey began back in the 1990s with the introduction of **credit analytics**, a system that applies regression techniques to traditional databases to analyze and assess credit risk.
In 2010, the focus expanded to include **credit marketing**, with benchmarking solutions and tools for risk-weighted targeting, allowing companies to improve segmentation and risk management.

In 2013, CRIF embraced the potential of **big data** and **machine learning**, implementing advanced models using alternative data and the cloud. In parallel, since 2015, GIS analytics and spatial networks have begun to be integrated into business strategies, providing an additional level of sophistication in decision making.

2016 marked the introduction of **insurance analytics**, with the aim of bringing more innovation and precision to insurance through advanced analytics. Then, in 2017 and 2018, **computer vision** as well as **text mining** and **time series** technologies were introduced into workflows via neural networks, allowing the processing of huge amounts of unstructured data.

In 2019, CRIF further evolved by adopting **deep learning** technologies to refine analytical capabilities across all business sectors, while in 2020, **ESG sustainability** indicators were introduced to facilitate the integration of environmental, social and governance criteria into business decisions.

THE IMPACT OF GENERATIVE AI

Starting in 2023, CRIF established a team dedicated to developing **generative AI**-based solutions. The main objective was to develop plug-ins and advanced tools that integrate generative AI into business platforms and processes, leading to further improvements in efficiency and decision-making capacity.

In 2024, the focus has been on further **internal development**, with a strong focus on **business processes**, **strategic partnerships**, and the adoption of new **business models** that fully leverage the power of AI to scale operations and strengthen CRIF's market leadership.


CRIF
Together to the next level