APPLYING DATA AND AI:
OUR FLAGSHIP USE CASES

Data and Artificial Intelligence are more than just technologies, they are transformational opportunities revolutionising the financial sector with a major impact on customer experience, service delivery and operational efficiency.

As this movement gains momentum, at Societe Generale we are accelerating the change. We are using the best elements of these advances to take our bank still further into the digital age.

To make Societe Generale a more accessible, seamless and more personalised bank.

Within the Group, these tools are already being adopted and applied by our customers and our staff. They are a formidable source of value creation as they allow us to better serve our customers with even more personalised products and advice, to better understand their expectations, to respond rapidly and to develop our activities and improve operational efficiency.

As of 2022, the Group's portfolio has around 340 Data and AI Use Cases (UCs) in production, of which 170 are AI-based, all working to best apply our strategy with an expected value creation of €500 million.

This publication gives you the opportunity to discover 16 of our most emblematic UCs. Our aim is to continue to accelerate the deployment of Data and AI within the Group, capitalising on our expertise for the benefit of our 25 million customers around the world.

We hope you enjoy discovering these UCs.

CONTENTS

A MORE ACCESSIBLE BANK

Offer a comprehensive and efficient digital service; ensure greater availability through new modes of interaction; improve access to all our services, from the simplest to the most innovative.

All of these challenges are part of the same commitment: adapt ourselves to the rhythms of our customers, and not the other way around.

So many challenges that we can answer with effective and customised solutions by using the full potential of Data and Artificial Intelligence.

In this chapter, you will find all the Data and AI Use Cases currently helping to make Societe Generale a more accessible bank.

ELIOTT
A CALLBOT PROVIDING EVEN GREATER SUPPORT TO OUR CUSTOMERS

Launched in 2019 as a Chatbot, extended to voice processing in 2020, the conversational engine Eliott manages 4 million client conversations per year and over half of the conversations between the French online bank Boursorama and its 3 million clients. This Chatbot plays a central role in client interactions, allowing greater efficiency and freeing up client advisors for more added-value expert advice and assistance.

INITIAL ANALYSIS

• Clients of an online bank expect to be **autonomous and benefit from services available 24/7.**
• The time required for **qualifying clients' requests or treating simple questions is a source of inefficiency.**
• The increasing volume of customer calls, in the context of a growing client base and further enhanced by customer habits from the Covid crisis would lead to overloading existing call centres.

INITIAL OBJECTIVES

• Provide a seamless customer experience with services available 24/7 and convince prospective clients.
• Reduce inbound call flows by **automatically processing the lowest added-value conversations.**
• Faster referral of clients to expert services.

THE DATA AND AI SOLUTION USED

Natural Language Understanding (NLU) combining Natural Language Processing (NLP) techniques with Machine Learning.

Added value:
• Fully and correctly interpret client requests.
• **Understand the intention of the sentence** before the sentence is completed to enhance the Chatbot's performance.

CHALLENGES FACED

• **Technical challenge**: the conversational engine is based on **3 different technical solutions** (NLU and Speech to Text and Text to Speech). Each of the components must be maintained at state-of-the-art level by following all technical evolutions.
• **Human challenge**: setting up a **new commercial team organisation** due to the new inbound call flow processing **while also managing the customer base increase** (over 800,000 new customers in 2021) as well as the contact rate per customer.

WHAT NEXT

• Continue strengthening the rise in customer interactions with conversational AI.
• **Increase the number of the automatically-processed requests** end-to-end by the Callbot from 22% up to 35% by 2022.
• Enrich the intentions analysed by the Callbot.

IN **BRIEF** ....

What
A Chatbot, a vocal assistant

Business area
Boursorama

Added value
• Client service available 24/7
• Free up client advisors from repetitive and time-consuming tasks to concentrate on more added-value requests

5 KEY **FIGURES** ....

1 // **4 million** client conversations per year

2 // **180,000 calls** per month with an 80% response rate

3 // **33% of calls handled** outside of opening hours

4 // **22 % of requests** processed automatically end-to-end by the Callbot

5 // **Callbot interpretation capability** (what was detected is what the customer wanted) of over 90%

SOBOT
A VIRTUAL ASSISTANT ENSURING ENHANCED INTERACTIVITY

Initially launched in 2018 as a simplified version, today the Chatbot SoBot applies a database of over 1,000 information sets, replying to client questions on banking and insurance topics, navigating banking operations and helping customers complete their end-to-end transactions. SoBot manages over 4,000 conversations per day for retail banking and professional customers.

INITIAL ANALYSIS

• **Customer expectations are evolving fast regarding the experience offered on our digital channels** leading us to **constantly improve the customer journey**, notably by reducing the number of clicks and providing a high-quality chat interface.

• **Navigation of an app or web interface sometimes considered complex** when searching for a specific functionality, document or product, **leading to client dissatisfaction.**

INITIAL OBJECTIVES

• **Simplify and improve the customer experience.**

• Gain time for our customers, especially on everyday banking operations.

• **Support 24/7 all customers** using digital channels (apps and web interfaces) outside the bank's normal opening hours.

THE DATA AND AI SOLUTION USED

• **AI used:** Natural Language Processing (NLP).

• **Added value:** Capacity of NLP to understand natural language to identify the user's intention and link the question to the multitude and diversity of formulations and words present in the Chatbot's database information sets.

CHALLENGES FACED

• **Significant amount of human work** to identify and cover all the different possible formulations to include in the database information sets.

• Ensure **continuous improvement** of the Chatbot's ability to understand user questions.

• A **solid infrastructure and powerful tools** to manage the Chatbot and improve its quality and increase use.

WHAT NEXT

• **Continue to improve client service** through the availability of new operations offered under its guidance.

• Extend the scope of the Chatbot's action by progressively integrating transactions-processing capability.

• Propose **new end-to-end operations.**

> " I've had an appropriate answer every time and help is always available. "
>
> **Sofia,** *professional client of SG, Retail Banking in France*

> " I very easily settled an opposition to my credit card by following the instructions given, very simple and very precise. "
>
> **Fatoumata,** *individual client of SG, Retail Banking in France*

IN **BRIEF**

What
A Chatbot, an intelligent virtual assistant

Business area
SG, Retail Banking in France

Added value
• Instant reply 24/7 to customers' banking and insurance questions
• Assist customers with the navigation of their banking operations
• Support customers with the end-to-end treatment of their operations

4 KEY **FIGURES**

1 // Over 4,000 conversations per day

2 // 95% response rate (direct and reformulation)

3 // 3.1 interactions on average per conversation

4 // 1,000 knowledge sets covering all banking and insurance subjects to ensure the high level of appropriate replies by the Chatbot

A MORE SEAMLESS BANK

Offer a seamless experience to all our customers; provide those who want them the right tools to ensure greater autonomy; combine simplicity and transparency through integrated and efficient processes.

All these challenges are part of the same commitment: simplify customer relations to offer an ever more efficient experience with greater pertinence and enhanced security.

So many challenges that we can answer with effective and customised solutions by using the full potential of Data and Artificial Intelligence.

In this chapter, you will find all the Data and AI Use Cases currently helping to make Societe Generale a more seamless bank.

CAST
A UNIQUE SOLUTION TO ENSURE REGULATORY COMPLIANCE

Cast automates the analysis of audio and electronic communications by regulated persons in order to detect potential regulatory misconduct. Deployed in 16 countries and used within Global Internal Audit, Compliance and the General Secretariat, Cast applies best-of-breed modular components (Speech-To-Text, Optical Character Recognition, translation services in 26 languages) used within the Group to perform cognitive communications analysis.

INITIAL ANALYSIS

- To ensure transparency and accountability in the capital markets, global regulations by financial authorities (MiFID II, MAR, etc.) **require the communication surveillance of regulated persons. Failure to properly comply with these regulations** exposes the bank and its regulated staff to heavy sanctions and measures and could seriously damage the Group's reputation.
- **High volumes of data to analyse and monitor** (millions of hours of audio recordings and hundreds of millions in electronic communications).
- **Random sampling methods and human checks augment the risks** of failure to detect and prevent potential misconduct.

INITIAL OBJECTIVES

- **Proactively detect breaches or fraud** to raise alerts on noncompliant activities thanks to the automation of the analysis and reporting of alerts.
- **Reduce search time and manual errors.**
- **Move from a random sampling manual-based analysis to a holistic AI-driven communications surveillance process** to better meet regulatory requirements.

THE DATA AND AI SOLUTION USED

- **AI used:** Natural Language Processing (NLP), Machine Learning, Natural Language Understanding (NLU), sentimental analysis.

- **Added value:**
  - **Automate transcription and analysis of communications** and transformation of images into text.
  - **Decrease the number of false positive alerts** using NLP and Machine Learning.
  - Help decision-making and provide **forward-looking intelligence** for each communication flow.

CHALLENGES FACED

- **Strong pressure from regulators** with no external solution available on the market, leading to the in-house creation of CAST in only 3 years.
- **Transcribe numerous languages** in a specific context (banking/trading) and in multi-language conversations.
- **Broaden the range of communication channels and devices under surveillance** (a range of 30 communication channels, including mobile phone calls, instant messaging and social media), notably in the context of working from home related to the Covid crisis.

WHAT NEXT

- The cognitive services built for the solution have been made available through a service offer at Group level and are now used by the majority of the Group's Business Units and Service Units (SG, Retail Banking in France, Societe Generale Insurance, etc.) to perform many use cases (speech analysis, process automation, document analysis, etc.).

> " Cast gives the user the ability to perform surveillance on all audio and electronic communications through a unified platform. Cast has deployed a fully reconciled end-to-end surveillance tool, which is critical given the number and volume of communications and channels. "

Ian, *Project Head, Conformity department*

IN **BRIEF**

What
A platform to automatically analyse the audio and electronic communications of regulated persons

Business area
Global Internal Audit, Compliance and the General Secretariat

Added value
- Global analysis of communications by regulated persons
- Alerts on noncompliant activities
- Move from random analysis to a holistic surveillance process

4 KEY **FIGURES**

1 // **14 Po** of data analysed

2 // **2.5 million hours** of audio communications analysed annually (compared to 9,000 before Cast)

3 // **16 countries** covered

4 // **26 languages** managed

CHANGE LIÉ
BUILDING NET BANKING INCOME

Launched in 2017 to deal with the erosion of gains on Foreign Exchange-linked payments and in response to competition by new Payment Service Providers (PSPs), Change Lié has evolved into a powerful new customer development solution leading to strong growth in Net Banking Income. Change Lié is used by 850 users within client-facing teams across SG, Retail Banking in France and the Bank's Global Market activities.

INITIAL ANALYSIS

- **Fragmented data** between numerous non-communicating IT systems and large volumes of difficult-to-use data coming from various entities within the Group.
- **Difficulty in proposing accurately targeted offers** to clients due to perfectible customer knowledge.
- **Multiplicity of new entrants** as a result of the opening of the Payment Service Providers (PSPs) market due to the new DSP2 European regulation. Traditional banks' offers were challenged on Foreign Exchange-linked payments.

INITIAL OBJECTIVES

- Create and use **common Golden Source data** between SG, Retail Banking in France and Global Market activities.
- Better **detect customers' needs to respond more accurately and increase satisfaction** levels thanks to new client tiering based on client behaviour analysis.
- Adopt a **global approach** based on client data:
- Defensive mode: **detect as early as possible those clients testing new Fintech solutions** (PSPs) before adoption in order to contact them as a priority;
- Offensive mode: **new client development through the comparison of already active clients** to identify a list of interested prospects.

THE DATA AND AI SOLUTION USED

- **AI used:** Natural Language Processing (NLP) and Machine Learning.
- **Added value:**
  - Analyse client transactions to detect as early as possible those clients interested in Fintech offers;
  - Identify the clients to be approached in priority;
  - Behavioural analysis to build a tiering of Foreign Exchange clients.

CHALLENGES FACED

- Create a Golden Source of data: adoption of a **data product management approach** with a transversal organisation at each step of the project from targeting to Data Science modelling and product testing.
- Change management: engage the client-facing teams by appointing a **Data Correspondent in each commercial team** to ensure co-building of the final product.

WHAT NEXT

- Continue to improve client knowledge through the use of tools such as NLP or Machine Learning and so extend the project to other areas of business (detect new investment solutions for clients of other business lines for example) and be more relevant in our product offer to **enable further Net Banking Income growth and increase client satisfaction.**
- Reuse the project organisation built around a transversal team dedicated to data to improve efficiency and reduce access time to the data.

> " The use of data has significantly changed and enriched our view on the customer spectrum, which has enabled us to significantly improve our commercial organisation based on the identification of several categories of customers according to their commercial potential. "
>
> **Isabelle,** *Product Manager Change Lié*

IN **BRIEF**

What
A new customer development solution

Business area
SG, Retail Banking in France and Global Market activities

Added value
- Creation of common Golden Source data between the two different business areas
- Enhanced detection of customers' needs
- Application of a global client approach

5 KEY **FIGURES**

1 // **72,000** clients

2 // **10,000** corporates

3 // **340,000** operations per year

4 // **850** end-users across the two business areas

5 // **10%** new client development during the campaign launch

DANIE
AN INNOVATIVE PLATFORM TO IMPROVE THE QUALITY OF CLIENT DATA

Bringing together a consortium of banks and data providers, Danie is an innovative industry solution leveraging on Privacy Enhancing Technologies (PET) to securely and anonymously improve data quality, reduce costs and drive data standardisation, critical for trade processing, risk management and regulatory reporting.

INITIAL ANALYSIS

- **Client data is one of the major challenges facing financial institutions**, whether in terms of new client onboarding or the maintenance of data quality over time. Indeed, any error triggers a cascade of operational problems requiring time-consuming manual intervention and can even result in fines from regulators.
- On average, banks spend **€100 million per year buying client data** from **Data Vendors, which may sometimes contain errors. Data Vendors are nonetheless in a monopoly situation that is hard to challenge.**

INITIAL OBJECTIVES

- Measure with our peers the **quality of our client data, whilst keeping it strictly anonymous**, and our client relationships through an innovation platform, based on PET.
- To **reduce internal maintenance costs** and work to eliminate the "Data Debt" through greater data standardisation.

THE DATA AND AI SOLUTION USED

- **AI used:** The platform uses confidential computing, a combination of the four pillars of PET.
- **Added value:** Encrypted, anonymised, reconciled and secured data sharing.

CHALLENGES FACED

- **Involve a sufficient number of banks at the same time** to ensure accurate comparisons and obtain a more efficient analysis.
- Expertise on new technologies and onboarding times for each new participant in the consortium (involving representatives from Legal, Compliance, IT, etc.).
- **Legal policy and regulatory issue**, especially data sharing across multiple jurisdictions.

WHAT NEXT

New applications under discussion:
- Know Your Client/Anti-Money Laundering projects;
- Legal: discovery and litigation, secure migration to the Public Cloud, Credit Rating Management;
- Market data: Post Trade use cases;
- Discussion with SWIFT and DTCC for a partnership to offer Danie as an additional service for their clients.

> " Danie will enable us to quickly start generating operational benefits in the short term while building a platform that will have many applications across our businesses in the coming years. "

Cécile, *former COO of Societe Generale Global Banking & Investor Solutions.*

IN **BRIEF**

What
Danie is a consortium of banks and data providers working together to compare their data anonymously through a decentralised platform

Business area
Proof of Concept (POC) with 5 banks and 3 data providers

Added value
- Measure the quality of customer data by comparing it anonymously with peer companies
- Accelerate the standardisation of critical data
- Reduce costs

6 KEY **FIGURES**

1 // **75% to 80% in time saving** on data review

2 // **1.3 million in data per minute processed** using 2-3 servers only

3 // **A few seconds to 1 minute to get a report** on data quality

4 // **2022: 5 new banks joined the consortium** (legal structures)

5 // **Eco-friendly solution:** system minimising the number of servers required

INSTANT-KYC
OPTIMISED CUSTOMER KNOWLEDGE THROUGH THE AUTOMATION OF DOCUMENTARY CHECKS

Initially developed in 2016 to perform the Know Your Client (KYC) remediation of 8 million individual clients of SG, Retail Banking in France in a very short timeframe, Instant-KYC is now used as part of these banks' automated KYC review processes. It has also been used for Global Banking and Investor Solutions' KYC remediation and scaled up to perform new client KYC onboarding. The solution has been further extended to other use cases with reusable off-the-shelf modules available.

INITIAL ANALYSIS

• An **expensive and complex KYC remediation** required by the French regulator (ACPR) in 2016, difficult to achieve manually in the required timeframe (high volumes of data and various document formats).
• Moreover, carrying out regular **KYC reviews** to update customer data is a **challenging task** as documents are not standardised and data quality reduces over time.

INITIAL OBJECTIVES

• **Access the "ground truth" document samples** held by the businesses to train the AI models.
• Ensure the use of Instant-KYC is considered during any opportunity/scoping studies for KYC automatisation and analysis.

THE DATA AND AI SOLUTION USED

• **AI used:** Natural Language Processing (NLP).
• **Added value:** Ensure a high accuracy rate in document treatment (document type recognition, automated document tagging and content extraction).

CHALLENGES FACED

• **Reduce the cost and complexity** of KYC remediation and meet the regulator's deadline.
• **Normalise and automate processes** to better perform ongoing KYC checks (reviews, quality control, etc.).
• **Better Time-to-Market** for KYC new client onboarding thanks to controls in quasi real-time.
• **A Self-Care user experience** designed to enable remote onboarding.

WHAT NEXT

• Instant-KYC is a digital solution based on **reusable off-the-shelf modules**. With a catalogue of over 160 types of documents, the solution is a powerful tool to help accelerate the digitalisation of the Group's Business Units and Service Units.
• Examples of potential reuse scenarios:
  - Customer document handling modules can be applied to other value chains within the Bank (for example, client scoring by the Group's Risk department);
  - Different modules of the solution can be reused for Business-as-a-Service;
  - Data quality checks for fund documents.
  - A new document model can be created free of charge within 1-3 weeks.
• **Next steps:** expand the solution to other markets and other brands.

" The solution performs classification, data extraction and controls on documents with a minimum of 95% accuracy on standard documents (for example, ID cards). Although the solution is designed to work in a man/machine environment, only 40% of treated cases are approved by Compliance analysts, the remaining 60% do not require human intervention. "

Amal, *KYC Manager*

IN **BRIEF**

What
The automatic treatment of client documents

Business area
SG, Retail Banking in France, Global Banking and Investor Solutions

Added value
• Automate the KYC controls in real-time
• Accelerate the digitalisation of the Group's Business Units and Service Units
• Improve data quality thanks to simple regular check-ups

4 KEY **FIGURES**

1 // **½ to 1 hour per file** in time savings on KYC remediation (vs. 1 to 2 second per file required for Instant-KYC treatment), time reallocated to customer relation management and the analysis of more complex files

2 // **Over 500,000 customer files** remediated per month for SG, Retail Banking in France with Instant KYC

3 // **Over 95% data accuracy in 2020** on standard documents (for example, ID cards, official documents, addresses etc.)

4 // **Over 160 types** of documents treated

LEGAL ASSISTANT
ACCELERATED TIME-TO-MARKET THROUGH THE IMPROVED REVIEW OF LEGAL DOCUMENTS

Initially designed to ease the processing of Loan Agreements, Legal Assistant has since been reused and extended to include the review of Non-Disclosure Agreements, Master Agreements and Collateral Agreements, reducing costs and development cycles.

Today, it is used by 300 users within the General Secretariat, Global Banking and Advisory, Global Markets and the Global Business Service Unit to process 3,300 legal documents. Legal Assistant continues to grow stronger.

INITIAL ANALYSIS

- Many Wholesale Banking transactions need legal documentation (Non-Disclosure Agreements, Loan Agreements, Master Agreements, etc.).
- **Reviewing the clauses of these contracts is time consuming** for the Front Office, Legal and Back Office teams, which can significantly slow down Time-to-Market and be a source of errors.

INITIAL OBJECTIVES

- Improve operational efficiency with **better allocation of scarce resources.**
- **Better Time-to-Market.**
- Lower operational risks as a result of **increased data quality.**

THE DATA AND AI SOLUTION USED

- **AI used:** Natural Language Processing (NLP).
- **Added value:** Detect and extract legal clauses, even those with different wording and positioning within the document.

CHALLENGES FACED

- **Strong user involvement required** to train the model and ensure an effective user experience.
- **Progressive and exponential performance and value creation.**

WHAT NEXT

- Fully reusable by other businesses and countries as well as for the processing of new legal documents.
- Solution as-a-Service enables any process owners to start training the NLP model on their own specific legal documents.

> **"**The speed with which we can review certain contracts such as the Non-Disclosure Agreements that precede the negotiations and signing of a deal is key. This not only helps to begin discussions with the client smoothly and demonstrate our operational efficiency, but it is also beneficial to the deal itself as the Front Office saves time which they can instead devote to the heart of their activity: the commercial relationship. **"**

Stéphanie, *Sponsor of Legal Assistant*

IN **BRIEF**

What
The automatic review of legal documents

Business area
Global Markets, Wholesale Banking, General Secretariat, Global Banking and Investor Solutions

Added value
- Reduce time-consuming and source-of-error tasks for the Front Office, Legal and Back Office teams
- Improve data quality
- Accelerate Time-to-Market

4 KEY **FIGURES**

1 // **300 users**

2 // **4 different types of contracts covered**

3 // **99% data accuracy**

4 // Time saved per contract: **1 to 3 hours**

MOSAIC
FIGHTING EXTERNAL FRAUD

Mosaic consists of several in-house applications developed in a multi-market, multi-brand and multi-device configuration using innovative Data & AI techniques. Launched in 2015 as a Proof of Concept (POC), it was quickly industrialised and progressively deployed within SG, Retail Banking in France, Global Transaction Payment Services and Societe Generale Private Banking in France.

INITIAL ANALYSIS

- Phishing, identity fraud, payment fraud… **external fraud** on banking transactions is **a constantly evolving domain.**
- According to the Bank of France's Observatory for the Security of Payments Methods, in 2019 payment fraud reached over €1 billion.
- Fraud affects various client segments, including Retail Banking (individuals, professionals, enterprises) as well as Wholesale Banking (corporates).

INITIAL OBJECTIVES

- **Help detect and reduce fraud to protect our clients and the Bank**, reduce financial costs and prevent reputational risk.

THE DATA AND AI SOLUTION USED

- **AI used:** An AI system based on **Machine Learning algorithms and behaviour modelling to identify patterns of fraud.**
- **Added value:** the identification of different types of fraud.

CHALLENGES FACED

- Detection of **new fraud scenarios** and the new capacities of fraudsters.
- Exploitation of **multiple raw data sources.**
- High level of **availability** (24h/24 and 7days/7).

WHAT NEXT

- The solution is based on an **Application Programming Interface** (API) and **Microservices Architecture** allowing for agility and flexibility.
- **The next steps** are to expand to other markets, other brands.

> "
> The capabilities of Artificial Intelligence allow us to use behavioural analysis to detect complex frauds and rapidly adjust the solution to new fraud scenarios. "
>
> **Jeremy,** *Data Science Leader*

IN **BRIEF** ....

What
Detection system for different types of fraud

Business area
SG, Retail Banking in France, Global Transaction Payment Services and Societe Generale Private Banking in France

Added value
- Help detect and reduce fraud to protect our clients and the Bank
- Reduce financial costs
- Limit reputational risk

5 KEY **FIGURES** ....

1 // **Less than half a second** to detect a fraud on an instant payment

2 // **More than 80%** of frauds automatically blocked and avoided on instant payment

3 // **100%** of SG, Retail Banking in France customers covered by the solution

4 // **An anti-fraud approach** for enhanced and proactive detection used within SG, Retail Banking in France with 9 application domains (instant payment, the Paylib service, DSP2 APIs, mass payment, etc.)

NACRE
AN AUGMENTED ADVISOR FOR BETTER CUSTOMER SERVICE

Nacre enables enhanced customer service and autonomy while supporting the work of financial advisers based in bank branches by automating simple and time-consuming tasks. Largely deployed within SG, Retail Banking in France, the solution processes more than 40,000 transactions daily, saving up to 40 minutes per day for the financial advisers, who can then focus on more added-value services for their clients.

INITIAL ANALYSIS

Transactions exceeding authorised overdrafts represent more than 40,000 transactions per day. As part of the service offered to our individual clients, checks on these overruns was part of the daily routine of financial advisers in the branches:

- A **manual and fastidious task** that could take up to 40 minutes **and could be a source of human error;**
- Depending on the situation of their client, branch financial advisers could be required to contact clients directly to regularise the situation.

INITIAL OBJECTIVES

A complete review and digitalisation of the overdraft overruns process with the objective to **better serve clients, facilitate the work of the branch-based financial advisers and better manage risk** through:

- Automatic payment of transactions with a high probability of regularisation, thus reducing unrequired contact with clients;
- Autonomy with warnings via SMS and suspension for 72 hours for transactions showing an overrun and systematic control of provisions;
- Automatic rejection for some operations after 72 hours of suspension.

THE DATA AND AI SOLUTION USED

- **AI used:** A system based on a complex Decision Tree Method (Gradient Boosting Machine) amplifying the impact of the digitalisation of the overall process.
- **Added value:** An improved client experience, greater operational efficiency and a reduction in risks.

CHALLENGES FACED

- **Daily data quality controls** of the inputs and outputs of the model.
- **Daily monitoring of the performance** of the model according to different axis of analysis to detect any drift and improve decision-making.
- Transparency of the model: auditable and interpretable.

IN **BRIEF** ....

What
Automatisation of time-consuming tasks concerning the treatment of authorised overdraft overruns

Business area
SG, Retail Banking in France

Added value
- Improved client service
- Better management of risks
- Increased autonomy for financial advisers in bank branches

4 KEY **FIGURES** ....

1 // **Over 80% of transactions processed** by AI without the intervention of the branch financial advisers, nearly 15% of transactions paid automatically

2 // **Risk management:** Less than 5% of transactions incorrectly accepted vs. 22% in the old system

3 // **Time savings of up to 40 minutes** per day for the branch financial advisers

4 // **Scope extension since December 2020:** professional clients' personal operations and cheque processing

SG MARKETS – MY CASES
ENHANCED DATA MANAGEMENT
FOR GREATER CLIENT SATISFACTION

Launched in 2016 to ease the processing of requests and incidents for Wholesale client, SG Markets – My Cases provides case management capabilities and automation to organise processes, structure communications and data as well as pilot some resolution workflows. Data are aggregated to offer powerful dashboarding capabilities via the SG Markets Dashboard tool. The solution is used by 2,400 people and plugged into some 650 email boxes within Global Banking and Investor Solutions, Societe Generale Securities Services (SGSS) and Global Transaction Payment Services.

INITIAL ANALYSIS

- Email is still an important communication channel used by clients to contact the bank (over 1 million emails were sent by Global Banking and Investor Solutions clients on Post-Trade operations in 2019).
- **Necessity to prioritise work and identify critical cases to manage**, especially for Tier 1 clients.
- **Unstructured communication chains** with clients require a **high degree of manual processing time and are not easily exploitable.**
- The Group's **Know Your Client integration process** is slow compared to Fintech and Insurtech processes.

INITIAL OBJECTIVES

- Improve the client experience and satisfaction levels by **better processing of issues and incidents** to reduce response time.
- Improve case management by **centralising emails in one single request** for greater efficiency when dealing with customer cases.
- Optimise the workflow organisation of specific teams and automate task allocation according to specific rules (classification, monitoring).

THE DATA AND AI SOLUTION USED

- **AI used:** Natural Language Processing (NLP).
- **Added value:** categorisation of cases, client intention detection, data extraction to automate processes and reduce non-added-value manual actions (example: copy/paste of data).

CHALLENGES FACED

- **Change management** to support the case management approach and ensure user buy-in and acceptance of the data-driven pilotage.
- Technical challenges related to data preparation (treatment of emails to consider only the functional content, e.g. removal of HTML, signatures, disclaimers, etc.).

WHAT NEXT

- Case management features are all **standardised and re-usable.**
- NLP models are developed on demand depending on the value chain (margin calls, settlement prematching, etc.).
- **Next steps**
  - Extend NLP capabilities for case categorisation per business activity.
  - Workflow module to help answer simple client requests with minimum human intervention.
  - Extend to other communication channels.
  - SGSS to open the tool to clients and enhance self-care in 2022.

> " On certain operations (Over the Counter or Collateral for example), SG Markets - My Cases has revolutionised the management of our clients' workflows for all our counterparties managed out of market standards/ platform standardisation, assignment, tiering, interoperability (vertical workflow vs. collateral system, monitoring, etc.) to allow us to serve better our clients. "
>
> **Edouard,** *Product Owner OTC Collateral*

IN BRIEF

What
Automatic treatment of client requests

Business area
Global Banking and Investor Solutions, Societe Generale Securities Services (SGSS) and Global Transaction Payment Services

Added value
- Automates and accelerate the treatment of customer requests
- Optimise the work of the teams
- Improve overall customer satisfaction levels

KEY FIGURES

1 // **2,400 users**

2 // **650 mailboxes connected**

3 // **230,000 emails processed per week**

4 // **32 widgets** following the activity

5 // Improvement of "Margin call" request processing time (x2 faster, 1,500 – 2,000 cases treated per month)

6 // **85% reduction of time** required to create SG Markets platform credentials on Post-Trade services (down from 70 to 10 minutes)

SMART ANALYTICS ENSURE THE EFFICIENCY OF OUR PROCESSES

Launched in 2018, Smart Analytics is used by 100 process and value chain owners and operational managers of Capital Market Post-Trade chains to monitor and manage process efficiency: trade capture, event management, confirmation, settlement and collateral. Applying Key Performance Indicators and performance measurements analytics, the solution manages over 10 million trades and events per month for Global Banking and Investor Solutions business lines.

INITIAL ANALYSIS

- **A manual and silo-based approach** for monitoring, generating costs and limiting service quality.
- **The need for facts-based monitoring and management** of the processing chains in a context of fragmented and complex applications.
- **Missing and inconsistent views across value chains,** preventing the ready identification of routes towards process improvements.

INITIAL OBJECTIVES

- **Industrialisation and automation** of reporting to reduce costs and improve service quality to better meet the strategic objectives of Global Banking and Investor Solutions business lines.
- **Monitor and improve performance of Post-Trade** value chains by identifying bottlenecks and breaks in real-time through the use of dashboards with key metrics.
- **Identify process improvement areas and engage resolutions** with the teams based on facts and data and the benefit of automation.

THE DATA AND AI SOLUTION USED

- **Data benefit:** industrialisation of data processing (capture and standardisation).
- **Added value:** Data capture and normalisation building the Post-Trade lifecycle data landscape as a common data asset.
- Dashboarding, KPI overview and the ability to drill-down in detail.

- Leverage other usages (for example, using the automatic completion tool NEPHELAI to improve data quality).

CHALLENGES FACED

- Align the ambition with the available means to optimise the roadmap.
- **Maintain the transversal taxonomy and methodology** to have consistent indicators across the different value chains (over 20 applications and data sources).

WHAT NEXT

- **The solution is transversal across multiple value chains**, benefiting from common definitions, a standardised data model and set of indicators.
- **The data landscape is currently leveraged** to enrich monitoring and management capabilities using Process Mining technology and, more importantly, to produce a client-based view of Post-Trade service quality.
- **The "spirit" of Smart Analytics is replicable** each time there is a need to enhance a value chain's efficiency (e.g. Structured Finance Processing chain).
- Ready-to-use Application Programming Interfaces and widgets available in SG Markets Dashboard or in a more advanced usage with the support of the Datamart cube.

> " Smart Analytics is at the corner stone of our industrial management capabilities, used both to track performance and guide decision-making. "
>
> **Cécile,** *former COO of Societe Generale Global Banking & Investor*

IN **BRIEF**

What
A monitoring and management solution for Post-Trade processes

Business area
Global Banking and Investor Solutions business lines

Added value
- Reduce reporting costs
- Identify process improvement areas and implement their resolution
- Improve service quality

5 KEY **FIGURES**

1 // 100 users (process and value chain owners and operational managers of Capital Market Post-Trade value chains)

2 // Management of over **10 million** trades and events per month

3 // Overview of **15 value chains**

4 // Ability to analyse and build ad hoc analysis using Power BI or Excel 5

5 // **Improved ways for value chain managers** to identify areas for optimisation and driving their operational objectives/objectives and key results

TRADING ASSISTANT
A CHATBOT TO ANSWER CLIENT REQUESTS ON DERIVATIVE MARKETS

Designed in 2017 to process Request for Quotations with low probability of execution sent to Front Officers (Commercial team and Traders) in the Europe Equity desk, the Trading Assistant Chatbot has been reused and scaled to work on different asset classes (Commodities, Fixed income, Foreign Exchange etc.) and geographies (America and Asia) allowing for improved client service and generating further revenues. Already used by 35 clients/Brokers on the America Swap & Equity desks, new developments are underway to offer a voice recognition capacity.

INITIAL ANALYSIS

• Capital Markets use a lot of chat and phone trading workflows on the Derivative markets. Front Officers have to input the information into Societe Generale's systems for operational (pricing) and compliance (reporting) reasons before execution.
• **Manually entering the requests in the various IT systems is slow and time consuming**. As a result, requests with low probability of execution are never inputted into the system.

INITIAL OBJECTIVES

• **Improve the customer experience** of the Group's Capital Markets activity by answering a greater amount of client requests and collecting more market data on trading activities.
• **Enhance operational efficiency** by assisting the Capital Markets Commercial team and Traders enter requests into the Group's IT systems.
• **Greater responsibility** by using this data for the Fundamental Review of the Trading Book observed price database and informing Compliance communication surveillance tools.

THE DATA AND AI SOLUTION USED

• **AI used:** financial markets specific Natural Language Processing and Machine Learning algorithms.
• **Added value:** algorithms trained to recognise the various types of Request for Quotations.

CHALLENGES FACED

• **Voice recognition capacity**: A double challenge as this requires user involvement to register their voice as well as a User Interface to make it happen.
• **Scarce resources**: very few skilled resources available to take part in the conceptualisation as a hybrid profile of Trader and Data Scientist is required.

WHAT NEXT

• Scaling up voice recognition capacity.
• Continue the application of the Chatbot to other asset classes/desks.
• Continuous improvement for greater robustness.
• Handling specific cases.

IN **BRIEF**

What
A Chatbot, a virtual assistant

Business area
Capital Markets in France, America and Asia

Added value
• Increase operational efficiency by assisting with the entry of requests
• Improve customer service by responding faster to requests
• Generate revenue and process more requests

5 KEY **FIGURES**

1 // 10 Capital Markets desks in France, America and Asia

2 // 50 Brokers and 40 Traders across Paris, New York, London and Hong Kong

3 // 2,000 Request for Quotations per day

4 // Used by 35 clients/Brokers on the America Swap & Equity desks

5 // Accelerated Time-to-Market (from 10 to 1 min) and client satisfaction thanks to reduced processing and execution time

6 // 2 -3 months to customise voice recognition for a new product

A MORE PERSONALISED BANK

Anticipate needs; offer tailor-made services; strengthen and improve satisfaction levels by creating closer relationships with our existing customers and attracting new ones.

All these challenges are part of the same commitment: ensure a truly client-centric approach with a more personalised, consistent and comprehensive value proposition.

So many challenges that we can answer with effective and customised solutions by using the full potential of Data and Artificial Intelligence.

In this chapter, you will find all the Data and AI Use Cases currently helping to make Societe Generale a more personalised bank.

ACE
IMPROVED CAREER DEVELOPMENT

With a focus on skill-set data management, ACE offers a wide range of services including job matching, internal mobility and skills mapping for both operational and Strategic Workforce Planning purposes. Launched in 2017, ACE is currently deployed in 69 entities, over 21 countries and covers 44,000 members of staff.

INITIAL ANALYSIS

- **Staff seek to highlight and share their skills and competencies** with their colleagues and managers.
- **Managers need to quickly identify staff** with the relevant skill sets within their teams and beyond for staffing purposes.
- **Human Resources** need to have a global overview of staff skills and competencies to develop their careers and encourage internal mobility.

INITIAL OBJECTIVES

- **For staff:** to list their skills in under 5 minutes in their own words, to give their skills greater visibility within the Group and to benefit from personalised career development offers.
- **For managers:** to have an overview of the skills available within their teams and be able to rapidly identify the right profiles for their staffing needs/vacancies.
- **For Strategic Workforce Planning:** to be able to manage skill set data with dynamic referencing.

THE DATA AND AI SOLUTION USED

- **AI used:** Natural Language Processing (NLP) and Machine Learning to move from static referencing to dynamic referencing.
- **Added value:**
- **NLP capabilities** crossed with French/English language algorithms enable the enrichment of profiles with external data sources (LinkedIn etc.).
- **Machine Learning capabilities enhance job/profile matching features** and thus staff satisfaction thanks to more appropriate suggestions.

CHALLENGES FACED

- Promotion of the solution to those entities currently not using it and assist them with the deployment (regulatory and technical issues and requirements).
- Provide continuous change management to help solution adoption and the completion of profiles within those entities using ACE.
- Enrich SWP functionalities.
- Optimise data management to maintain service relevance.

WHAT NEXT

- **Develop Strategic Workforce Planning use cases** based on existing and upcoming functionalities.
- **Support further deployment**, notably in several entities around the world, SG, Retail Banking in France.

> " As head of a department, ACE helps me in my decision-making for work allocation as well as skills development. "

Patrick, *Department Head, Societe Generale*

> " It's now much easier to review and apply for internal vacancies through ACE. "

Audrey, *staff member, SG, Retail Banking in France*

IN **BRIEF**

What
A Human Resources service based on staff skill set data

Business area
Human Resources

Added value
- Increase the visibility of staff skills
- Aid the identification of appropriate staff profiles by managers
- Provide Strategic Workforce Planning with dynamic skill set referencing

3 KEY **FIGURES**

1 / **25,000** skill sets listed in ACE

2 / **Over 10,000 skill set searches** per month

3 / **Over 2,500 job positions consulted** by staff members per month

INVESTOR APPETITE
A PREDICTIVE MODEL FOR AN ENHANCED ISSUANCE JOURNEY

Initially designed to predict market appetite for new bonds issuance and provide quicker and more accurate advice to issuers, the Investor Appetite prediction model has been available on the SG Markets platform to offer a first-class issuer experience. It has also been applied to credit recommendations in the secondary market (Capital Markets) and is currently being tested for syndicated Loans and Bond buybacks with an objective of 150 users.

INITIAL ANALYSIS

- The **quality of the advice** provided to issuers is a **key differentiator** in the competitive debt capital market. Staying on top of any changes in investor behaviour provides further added value for clients.
- Origination teams need to **manually analyse** thousands of past orderbooks to anticipate market appetite. **This is time consuming and open to optimisation.**

INITIAL OBJECTIVES

- **Improve the customer experience and satisfaction levels** with high-value advice.
- Enhance our image as a Best-in-Class bank with a first-class service offering available on the SG Markets - My Capital Markets platform.
- **Increase Net Banking Income for the bank** through more precise recommendations.
- **Greater operational efficiency** with less time spent on manual tasks such as simulations and recommendations.

THE DATA AND AI SOLUTION USED

- **AI used:** Machine Learning
- **Added value: A recommendation system trained to analyse** past bonds issuances data and predict the probability of each investor participating in a bond issue.

CHALLENGES FACED

- Obtain accurate and relevant recommendations.
- A readily understood explanation of the model to ensure adoption by the Front Office.
- Capture more data to cover investors' evolving expectations.

WHAT NEXT

- The model is designed for application to other asset classes. It has already inspired two other use cases within the Global Banking & Advisory entity.
- **Bond buyback**, to predict a buyback success rate (the proportion of investors participating in the operation) and enhance its structuring.
- **Syndicated loans**, to anticipate investor appetite for new syndicated loans.
- The model has also been reused within Global Banking & Advisory to offer recommendations of those clients most likely to be interested in the credit market with the Credit Recommender solution.
- An AI framework built with standard building blocks (Application Programming Interfaces), code and a production process which can inspire re-use in other contexts.

> " With the Investor Appetite solution, the projections provided to investors are much more precise, and much quicker to produce. "

Cécile, *ex-sponsor of Investor Appetite*

IN **BRIEF**

What
A prediction model for faster and more accurate advice

Business area
Wholesale banking and Market activities

Added value
- Strengthen the Group's image
- Improve the customer experience and satisfaction levels
- Enhance operational efficiency

3 KEY **FIGURES**

1 // Over 85% recommendation accuracy rate

2 // 50 users – objective of 150 users

3 // 200/300 issuers served by Investor Appetite

STELLA
STRENGTHEN THE TREATMENT OF CREDIT ANALYSIS

Designed in 2020 for major corporate clients within the Group's Global Banking & Advisory activity to relieve analysts from manual low value-added tasks, Stella digitalises the credit analysis process by transforming non-structured data extracted from annual reports into structured, reliable and ready-to-use data for Analysts. Thanks to this new data-oriented approach, Analysts are free to spend more time on more in-depth analyses rather than simple data manipulation.

INITIAL ANALYSIS

- **300 to 500 pages of Annual Reports** to be manually imported into Excel by Credit Analysts limiting the ability to reuse and share data.
- **Credit analysis is a very manual process and represents around 35% of the Analysts' time.**
- Credit Analysts are in particular demand at times of crisis and are under **growing regulatory requirements.**

INITIAL OBJECTIVES

- **Provide ready-to-use and easily shared data** by extracting, structuring and rendering data from corporate Annual Reports.
- **Free Credit Analysts from low value-added and time-consuming tasks** to strengthen their role as business partners for Front Office and Coverage activities.
- **Build a data patrimony and unlock new analysis capacities** (peer comparison, change detection, non-financial data, etc.).

THE DATA AND AI SOLUTION USED

- **AI used:** A succession of algorithms and a solution to visualise the data, called Data Viz.
- **Added value:** Structuring, transforming and normalising raw data into organised and ready-to-use data.
- A data model approach to ensure scalability, consistency and accuracy of the Stella model.
- Data Viz to provide digitalised, accurate reports.

CHALLENGES FACED

- **Build a new Data Engineering team** to break the silos between the business and the IT teams.
- **Involve Analysts to guarantee the take up of the new data-driven approach.**
- Define standardised processes within the Credit Analysis team of Global Banking & Advisory.
- **Ensure auditability and traceability** to meet regulatory requirements.

WHAT NEXT

- Publicly available financial statements, structured as per the Societe Generale data model, can be shared within the Group.
- **A data acquisition and analysis pipeline to be used for other data, such as ESG.**

In 2020
- Extend the solution to business lines within Global Banking & Advisory as well as to other Business Units and Service Units across the Group (for example, the Risk department or the Service Units of Global Banking and Investor Solutions).
- Enhance analyses with new features such as alerting, projections, automation and new use cases such as Leverage Lending Ratio or Early Warning Signals.

" This project is a quantum leap towards digitalisation within the Credit team, not only does it bring greater efficiency but above all it opens up new opportunities and perspectives on Credit Analysis. It's day one. "

Médéric, *Project Manager, Global Banking & Advisory*

IN **BRIEF**

What
An innovative platform to improve the quality of client data

Business area
Global Banking & Advisory

Added value
- Structure data extracted from Annual Reports
- Deliver reliable, ready-to-use, shareable data
- Reduce time-consuming tasks for Credit Analysts to spend more time on in-depth analysis

4 KEY **FIGURES**

1 // 176 Analysts for nearly 1,600 clients

2 // Between 8 to 16 hours to produce ready-to-use data

3 // Between 2 to 20 hours of analysis ensuring an average gain of around 50%

4 // 100% data accuracy