AI-enabled non-financial risk management

Discussion paper

EY
Building a better working world

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1. Executive summary

What are non-financial risks (NFRs)?

Non-financial risks (NFRs) refer to a broad category of risks that organizations face, which are distinct from traditional financial risks such as credit risk, market risk, and liquidity risk, etc. These risks encompass a wide range of factors that can impact an organization's performance, reputation, and sustainability.

NFRs are typically not directly related to financial transactions or balance sheet items but can have significant implications for an organization's overall success and long-term viability. NFRs can be classified into various categories, including but not limited to:

OPERATIONAL RISKS

These risks arise from internal processes, systems, or human errors, and they can result in disruptions to business operations, compliance failures, or inefficiencies.

REPUTATIONAL RISKS

Reputational risks pertain to damage or negative perception of an organization's brand, image, or standing in the eyes of customers, stakeholders, or the public.

REGULATORY AND LEGAL RISKS

These risks stem from non-compliance with laws, regulations, or ethical standards, leading to potential legal disputes, fines, or penalties

CYBERSECURITY AND TECHNOLOGY RISKS

These risks arise from threats to an organization's information systems, data breaches, cyber-attacks, and technological vulnerabilities

SOCIAL RISKS

Social risks relate to an organization's impact on society, such as labor practices, employee welfare, community relations, and human rights concerns

ENVIRONMENTAL RISKS

These risks are associated with the impact of an organization's operations on the environment, including pollution, resource depletion, and climate change-related issues

GEOPOLITICAL AND MACRO-ECONOMIC RISKS

These risks are connected to changes in political landscapes, international relations, and macroeconomic factors, which can impact an organization's global operations and supply chains

Challenges in non-financial risk (NFR) management

Addressing NFRs can be a complex task for organizations, and the processes involved in managing these risks can present various challenges:

01 IDENTIFY

Risk taxonomy and identification

- **Interconnected risks:** NFRs often interact and overlap with each other, isolating individual risks from complex web of interconnected risks can be problematic.
- **Data analysis:** Identification of NFRs typically requires processing a vast amount of structured and unstructured data from internal and external sources, which is very challenging and can lead to failure to capture emerging risks.

02 ASSESS

Risk assessment and measurement

- **Subjectivity:** NFRs can be more qualitative than quantitative in nature, making the assessment subjective. Different stakeholders may perceive and evaluate the risks differently, leading to inconsistencies in risk assessments.

03 MITIGATE

Develop and implement mitigation strategies

- **Control redundancies:** A big control repository with redundancies in controls leading to inappropriate reporting of exceptions and duplication in mitigation effort.
- **Cost of mitigation:** NFR mitigation can be costly. Allocating resources to address these risks while maintaining profitability is a significant challenge.

04 MONITOR

Continuous risk monitoring and reporting

- **Timeliness:** NFR can evolve rapidly, and delays in monitoring and reporting can hinder effective risk responses, leading to increased damage.
- **Communicating complexity:** presenting NFR information to stakeholders in a clear and understandable manner can be difficult, given the often-complex nature of these risks

How can AI help manage the NFR?

AI capabilities enable higher **efficiency** and **effectiveness** of NFR management, leading to improved compliance, customer experience, and employee productivity for organizations.

COMPLIANCE

AI automates compliance checks and standardizes risk identification and assessments, ensuring organizations adhere to regulations and avoid penalties.

CUSTOMER EXPERIENCE

AI-driven risk management enables better risk identification and mitigation, leading to tailored services and offerings that meet customer needs more effectively

PRODUCTIVITY

AI automates manual tasks like chat or call summarization or policy search, freeing employees to focus on higher value tasks, thus increasing overall productivity

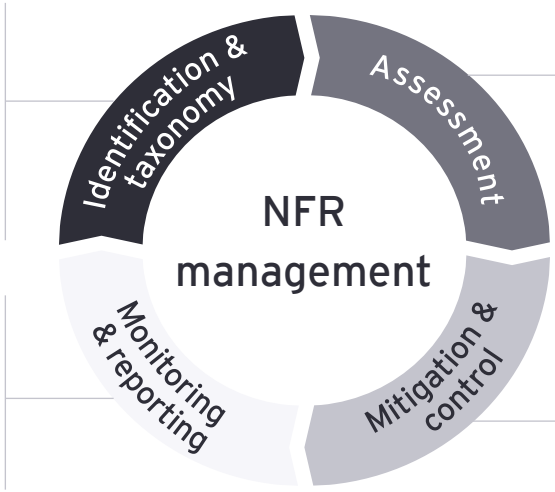
Use Cases Examples

Data analysis and pattern recognition: AI can analyze a vast amount of data from various sources to identify patterns and trends that could indicate potential risks. This includes data from customer feedback, employee behavior, social media, and other unstructured data sources.

***Use case examples*:** Taxonomy prediction, complaint detection *etc.*

Real-time monitoring: AI can be employed to monitor the level of NFR risk exposures in real-time and to support regular risk reporting

***Use case examples*:** Compliance monitoring, online sentiment analysis for reputation monitoring, complaint reports generation (generative AI) *etc.*



Risk assessment and prioritization: AI can help automate the assessment of NFR risks and prioritize the risks based on the severity of its impact or the business requirements.

***Use case examples*:** AI-powered ESG calculation, complaint classification etc.

Mitigation & controls: AI can assist in mitigating NFR risks by minimizing the redundancies in controls, helping identify root cause and automate the processes for resolving risk incidents,

***Use case examples*:** Response generation (complaint handling), root cause analysis, control rationalisation etc.

2. Selected success story: complaint handling

Overview of complaint handling
Common pain points

- With the introduction of C-86 bill, regulators are emphasizing that FIs follow the principle of effectiveness, timeliness and accessibility to complaint handling and to achieve process efficiency and ultimately higher customer satisfaction
- Complaint handling process typically involves five crucial stages: intake, analyze, investigate, resolve, and report. Despite dedicated efforts, there are pain points throughout these stages, impacting customer and employee experience and potential non-compliance with the regulatory requirements.
- FCAC (Financial Consumer Agency of Canada) is placing focus on building its analytical capacity by using analytical models such as NLP & data mining to garner strategic and tactical insights. The GenAI solutions being presented today will help the FIs stay ahead of these advanced analytics requirements.

01	02	03	04	05
INTAKE	**ANALYZE**	**INVESTIGATE**	**RESOLVE**	**REPORT**
Complaint received and documented via call centres, emails, etc.	Complaint classification, prioritization and routing	Root cause analysis and investigation	Response and resolution	Regular monitoring and reporting
PAIN POINTS				
▸ **Misunderstanding** of customer's requests in call ▸ **Failed to resolve** simple requests from customer in call leading to greater complaint backlogs ▸ **Incomplete or unclear** complaint information in manually captured call notes	▸ **Inconsistent** classification criteria ▸ **Misclassification** of complaints resulting in improper prioritization and handling, leading to delays in resolution ▸ **Misrouting** of complaints to the appropriate resolution team	▸ Difficulty in gathering all necessary information via **manually searching** by investigators ▸ Maintaining **objectivity** during investigation	▸ Difficulty in providing **consistent and high-quality** response ▸ **Delayed response** may worsen client engagement and may lead to incompliance with regulatory timeline requirements	▸ **Incomplete or inaccurate** reporting ▸ **Difficulty** in identifying trends or recurring issues

EY response: LLM-enabled complaint handling

LLM-powered solutions can enhance effectiveness and efficiency in complaint handling

Customer calls

Emails

Messages

Other communication channels

1. Real-time call assistant

Providing **real-time call transcription, analysis** and **guidance** to help agent resolve customer requests in call and reduce complaint backlogs

- *Real-time call transcription*
- *Real-time sentiment analysis*
- *Real-time complaints flagging/classification*
- *Real-time compliance monitoring and quality assurance*

2. Post-interaction analytics

Automated post-interaction **insights analysis** with information **retrieval** capability to help resolve complaints and regulatory reporting

- *Call note summarization*
- *Complaints classification*
- *Root cause analysis*
- *Contextual search & retrieval*
- *Concise dashboarding*

Value areas

- **Improved process efficiency:** AI powered solutions improve the efficiency in complaint handling process, which reduces complaint resolution time
- **Augmented internal & external compliance:** AI enables automated real-time compliance checks for quality assurance and timely complaint resolution, ensuring both internal and external compliance requirements are met.
- **Better customer satisfaction:** AI enables effective and efficient complaint resolution, enhancing overall customer satisfaction.
- **Enhanced employee experience:** By automating repetitive tasks and offering intelligent assistance, AI empowers employees to focus on more complex and value-added activities.

LLM-enabled real-time call assistant

Capabilities overview

Real-time transcription

- Accurate **real-time speech to text transcription,** aiding agents in precisely understanding customer's request.
- Real-time transcription empowers agents to **promptly address** simple customer concerns/requests in call, ultimately **reducing backlog.**

Natural language understanding

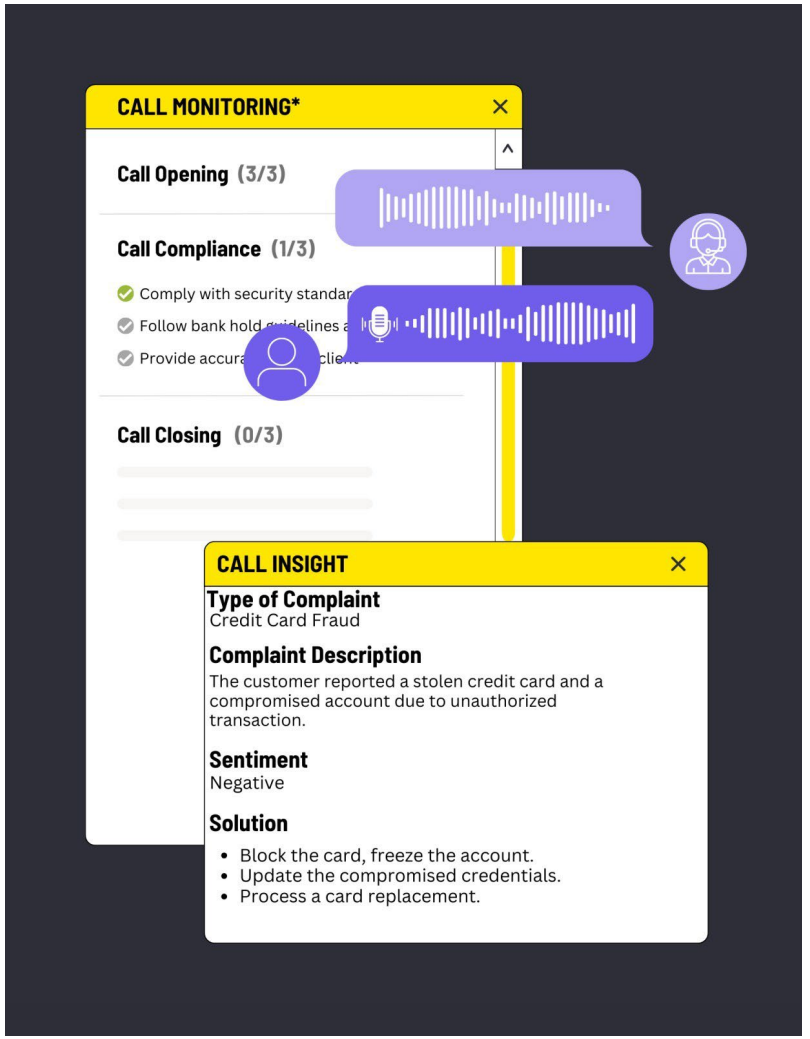
- Understand customers intent, **identify complaints** and provide instant solutions to agents, ultimately **reducing backlogs.**
- Efficiently help in managing a wide range of common inquiries, relieving agents' workload, **boosting work efficiency** and **improving customer satisfaction.**

Real-time quality monitoring

- **Visual checklist** to ensure agents orchestrate the conversation correctly
- Help create a **positive, affirming feeling** for agents as items covered by them get checked off **automatically** by AI in real time, reducing the risk of non-compliance

Real-time sentiment analysis

- Analyze customer tone and context to determine **customer's emotions** to assist agent to better serve the customer.
- Remind agents to **customize their response** based on customer sentiment helping ensure empathetic and appropriate communication in real-time.



LLM-enabled post-interaction analytics

Capabilities overview

High-level analytics

Captures the essential **high-level insights** which provides a broad **view** to the agent based on call transcripts.

Agent training

Generates **high-quality agent interaction** analysis. The insights captured, provide impactful ways to provide **effective agent training.**

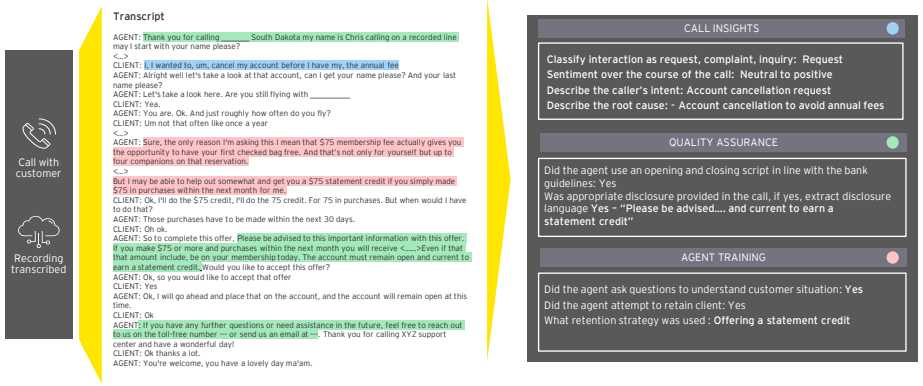
Quality control

Provides **quality control checks** and highlights **key performance criteria** to maintaining **Bank's guidelines & quality standards.**

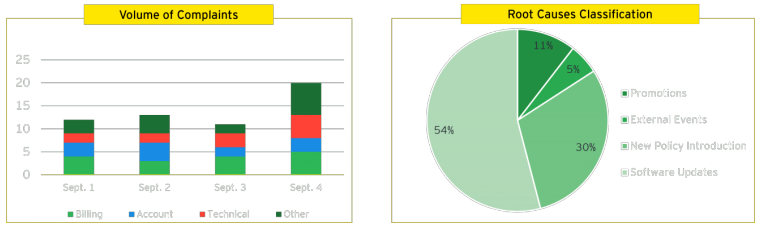
Concise dashboarding

Extract and dashboard key indicators from analysis obtained in call insights, agent training and quality assurance.

Illustrative examples



Illustrative example – insight analysis



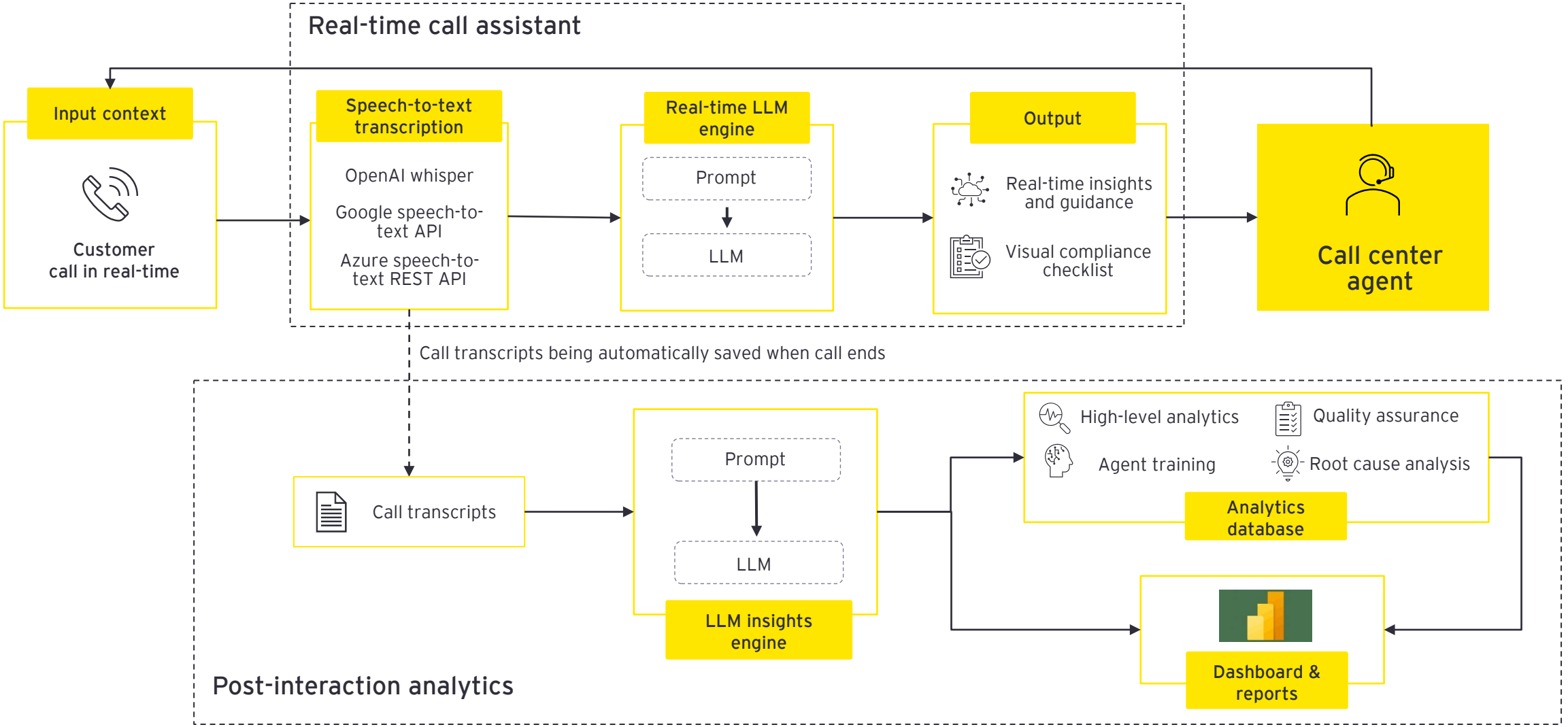
Illustrative examples - root cause analysis and dashboards

Business value

- **Capture interaction insights around 4 dimensions:** These include high-level analytics, agent training, quality assurance, concise dashboarding.
- **Generate high-quality granular insights:** Offer perspectives from complaint call transcripts, extracting granular insights.
- **Provides customization and flexibility:** **Help** empower customization, aligning insights with internal controls effectively.

Solution design overview

LLM-enabled real-time call assistant and post-interaction analytics



3. Additional success stories

Knowledge management and conversation insights

Problem statement

A large wealth management firm is executing a program to integrate OpenAI into core platforms with the intent of (i) improving access to internal content by employees (financial advisors, service associates), (ii) enhance employee productivity, and (iii) improve client experience.

USE CASES

Knowledge management

Improve **access** and **retrievability** of organization's knowledge base to help employees (advisors) find relevant info

- Contextual search
- Metadata generation
- Virtual assistant

Conversation insights

Increase **agent productivity** and **client experience** by automating insights from client interactions

- CRM logging
- Opportunity and risk flagging
- Better workforce training

Value areas

- **Lower effort & higher productivity:** Accessing/ searching for information, tagging content, etc.
- **High quality & consistent content:** New content generated e.g., knowledge - title, keywords, FAQs, notes, etc.
- **Better service & client engagement:** Understanding user needs and experiences (sentiment, etc.)
- **Reusable assets for LLM adoption and scaling:** testing/ evaluation suite and enhanced LRC governance, etc.

EY SUPPORT AREAS

- **Use case design & development**
- **Model testing (testing suite)**
- **Future state bau design**
- **MRM/legal/risk documentation**
- **Overall program support**

Compliance monitoring

Problem statement

Targeted business process

A multinational payments company receives 1M+ calls monthly across all products and services. The compliance monitoring team is responsible to test and track adherence of agent actions against a list of compliance requirements/ questions. The BAU testing process is run by a manual team of FTE dependent on a sampling and lexicon-based search approach.

Current pain points

- High risk of under-capturing compliance violations
- High false positive rates in sampled population
- Large team of FTEs manually test for compliance questions (300+)

EY Solution

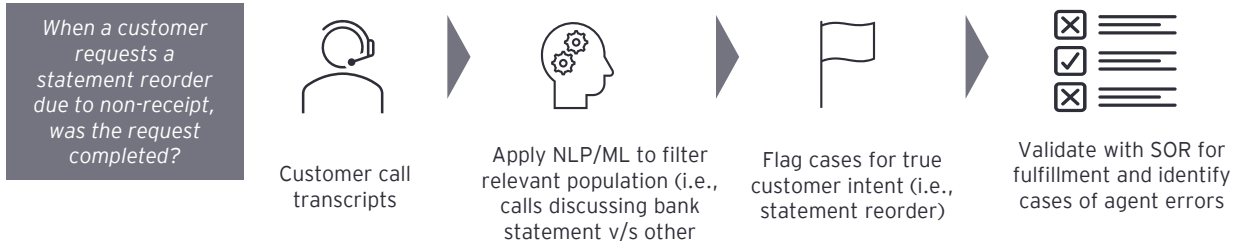
Objective

Automated monitoring of agent actions in servicing environment (e.g., payment or dispute setup, procedural adherence, etc.). The goal is to increase coverage and reduce review volume by leveraging NLP and ML to capture customer/agent intent and compare with agent action to identify cases of compliance violation

Approach

Questions covered represented a variety of question formats and evaluation needs of the broader compliance testing question population

- Procedural Adherence (e.g., standard disclosure, customer handling)
- Agent fulfillment (e.g., statement reorder)
- Information capture and accuracy (e.g., payment verification)



Results & benefits

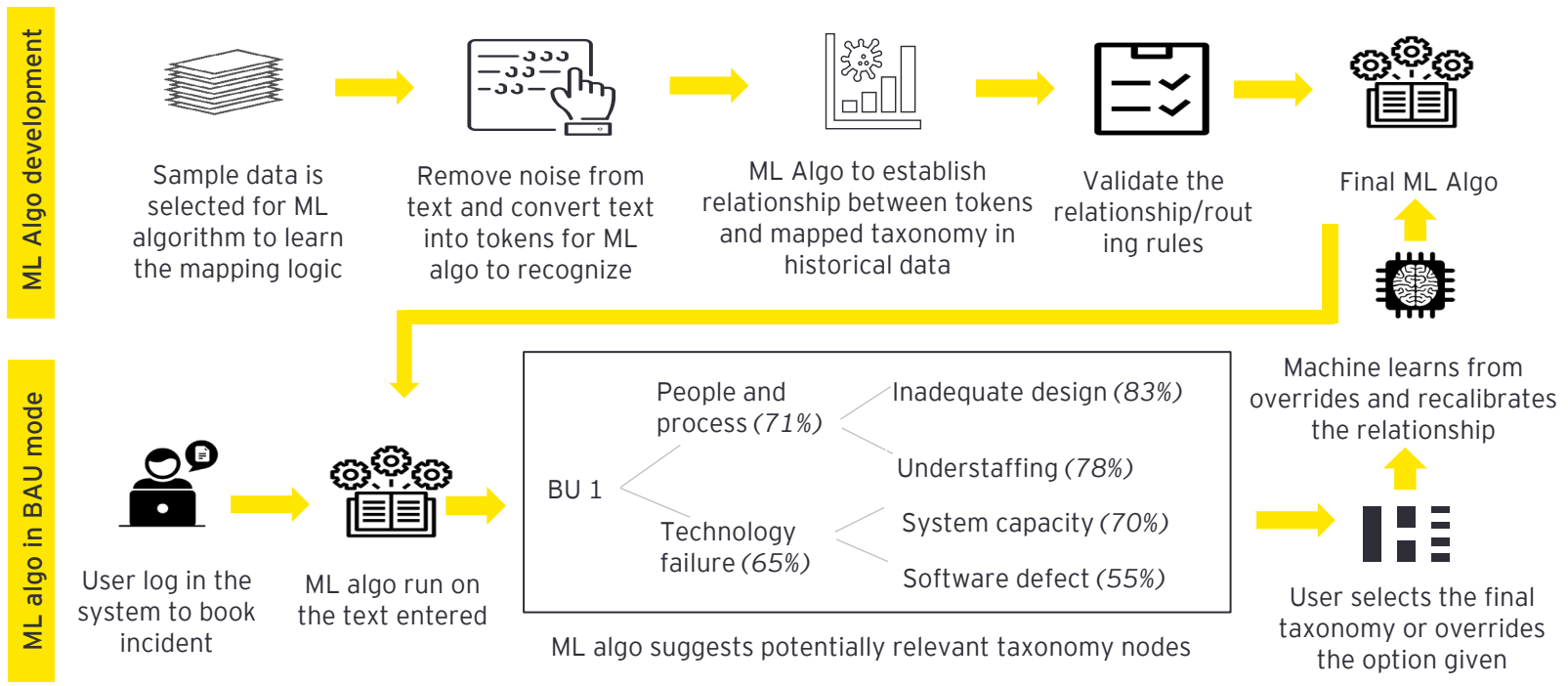
- Achieved 90% capture rates of compliance issues
- Models demonstrated strong results for each of the use cases with material high error detection coverage and low false positives

Taxonomy prediction

Problem statement

1. Inconsistency in mapping of NFR framework elements such as risk, controls, incidents, processes etc. to bank wide taxonomies which results in an inaccurate view of risk profile
2. Taxonomy mapping is cumbersome, judgmental and error prone
3. Business spends a lot of time manually correcting the errors in taxonomy

Functional architecture



Taxonomy mapping to risk, controls, incidents and processes

- Conversion of risk / control / incidents / issues into tokens
- Using **NLP and deep learning techniques** algo to **establish relationship** between taxonomy and tokens from sample data
- Validation, optimisation and implementation
- **Automated prediction of taxonomy** with a confidence percentage populated for all the NFR framework elements
- NLP algo continues to **learn and recalibrate** with the input data selected

Technologies used

- Python
- Pandas
- Machine learning / deep learning libraries used
  - SK learn
  - Keras
  - Tensor flow
  - BERT
- Excel

Control rationalisation and standardisation

Problem statement

1. A big control repository with redundancies in controls leading to inappropriate reporting of exceptions and duplication in mitigation effort
2. Controls description/design does not adequately cover critical control elements such as WHAT, WHY, WHEN, WHO etc.

Functional architecture

ML algo development

Develop **two** NLP based algorithms for:

1. **Rationalisation:** To read the sub-text of the controls to identify duplicate controls and similar controls but worded differently
2. **Standardisation:** To allow use to ask questions around control standards, which will be answered from the control description

Run the 1st algorithm to Identify redundancies
- Duplicate controls repeating
- Similar controls but worded differently

Runs the 2nd algorithm to produce answers to the user defined questions. The controls are marked for review for which algo is not able to answer

Use in BAU

Business experts review duplication and control which produce no answers

Prepare control rationalization and enhancement proposal

Control inventory rationalisation included identification of duplicate and similar controls using ML/DL

- **Defined criteria for identification of duplicates** through various control attributes defined by the bank
- **Defined criteria for identification of similar controls** at 95%, 90% and 85% confidence
- **Leveraged NLP and deep learning techniques to** highlight duplicate and similar control for potential rationalisation
- Recommended **enhancements to control description through BERT and BART** algorithms, to ensure it adheres to control standards defined by the Bank

Technologies used

- Python
- Pandas
- ML / DL libraries used
  - Transformer (BERT & BART)
  - Pytorch
  - Keras
  - Tensor flow

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