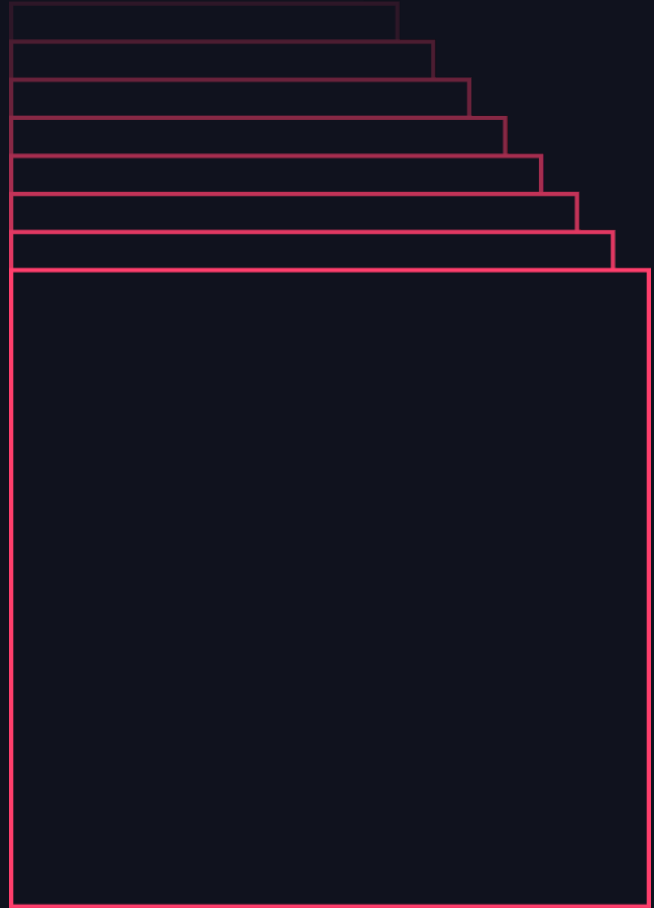# DATA⁺AI SUMMIT
BY databricks

GENERATIVE AI PLATFORM AS A WAY TO DEMOCRATIZE USE AND MAINTAIN GOVERNANCE

Maria Dela Rosa
2024

Maria Eugenia Dela Rosa
Sr. Manager @ Bradesco

Physicist
Master's degree in Biotechnology
Live in São Paulo/Brazil with my wife
Love videogames

LinkedIn

One of the largest financial groups in Latin America

bradesco

80	**38**	**69**	**86,222**
Years of history	(Million) Account Holders	(Million) Saving Accounts	Employees

CONSOLIDATED GROUP

US$
3.28
(Billion)
Recurring Net Income

10.0%
ROE-accumulated

US$
402.2
(Billion)
Total Assets

US$
176.4
(Billion)
Expanded Loan Portfolio

13.2%
Tier 1 Capital

71.1
Million Clients
(38.1 million account holders)

7,388
Branches + Service Centers (PAs/PAEs) + BUs

38,264
Banking Correspondents

INSURANCE OPERATIONS

US$
1.8
(Billion)
Net Income

US$
72.6
(Billion)
Technical Provisions

US$
82.6
(Billion)
Total Assets

US$
12.1
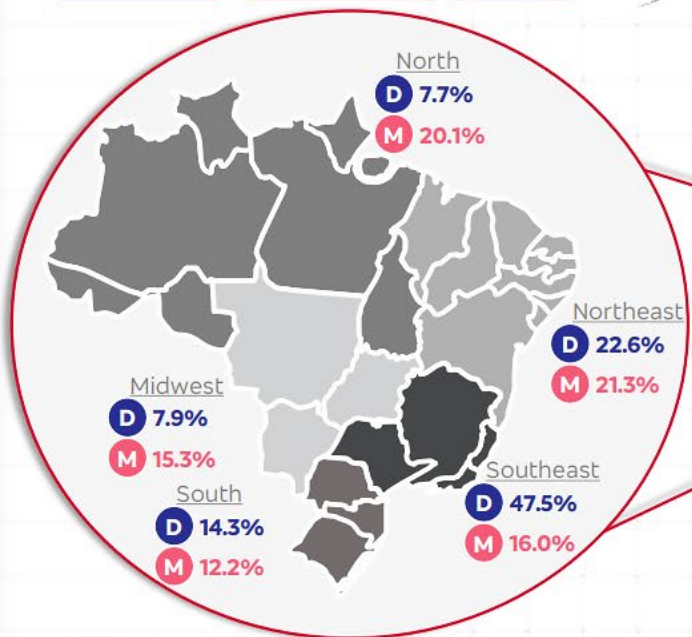(Billion)
Premiums and Contributions

Large distribution network in Brazil and abroad

bradesco

2,695 Branches

4,693 Service Centers

38,264 Bradesco Expresso

North
- **D** 7.7%
- **M** 20.1%

Midwest
- **D** 7.9%
- **M** 15.3%

South
- **D** 14.3%
- **M** 12.2%

Northeast
- **D** 22.6%
- **M** 21.3%

Southeast
- **D** 47.5%
- **M** 16.0%

D % Network Distribution
M % Market share

London
Luxembourg
New York
Miami
Grand Cayman
Mexico
Hong Kong

● Branches   ● Subsidiaries   ● Rep. Office

Physical and digital presence

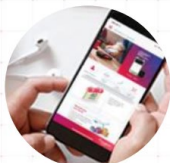# Technological and innovative

SERVICES CHANNELS
Serving customers the way they want

Digital Channels

Internet Banking

Bradesco Apps

98%
of transactions are made through digital channels

Fone Fácil

ATMs

94%
are concentrated in mobile and the internet

In the 2023:
App Individuals + Companies:
3.6 billion
financial transactions

18 million
accesses per day to the App
(23 monthly accesses per client)

INNOVATION
Complete innovattion ecosystem

inovabra

research
AI and other technologies

international
NY & London

lab
Prototyping, PoCs and certification

polos
Strategic innovation

INTERNAL INNOVATION

OPEN INNOVATION

hub
Open innovation portal

startups
Open innovation

habitat
Space for co-innovation

ventures
Investments in startups

Technologies

Artificial Intelligence algorithms | *Big Data* | **Biometrics** | *Blockchain* | API

Broadly diversified portfolio

bradesco

Products and services in all modalities, **with digital journeys** and
artificial intelligence (BIA):

Commercial, Personal and Real Estate Credit

Credit for Investment and Financing
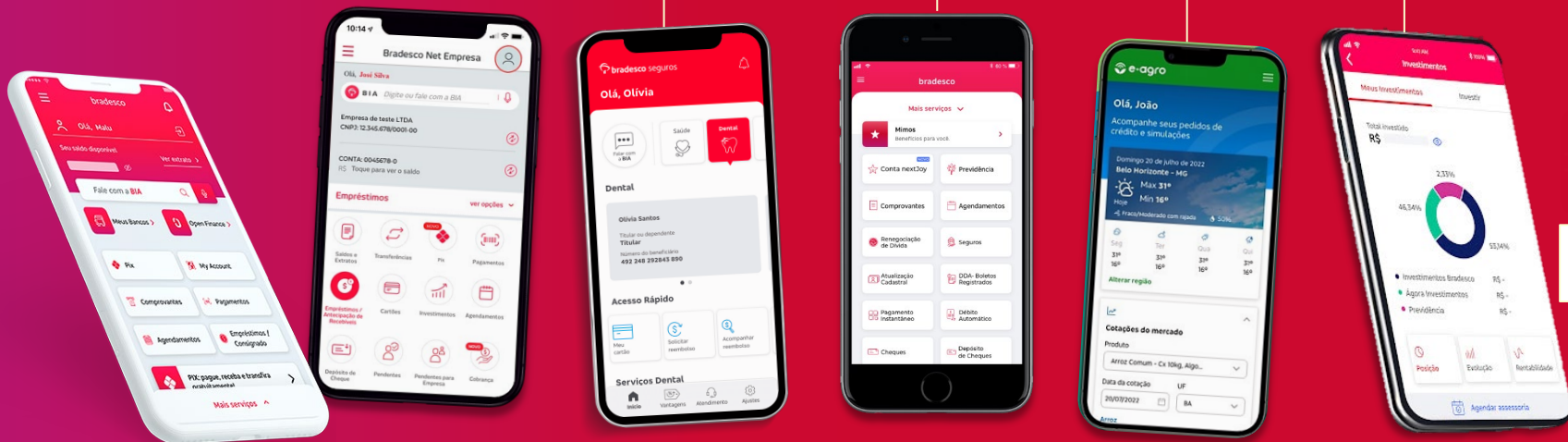
International Account

Leasing

Foreign Exchange and Capital Management

Insurance and Pension

Financial & Non-Financial Services

Agribusines $

Investments

invest+
bradesco

The Banker
INNOVATION IN
DIGITAL BANKING
AWARDS 2023

BIA: Bradesco Artificial Inteligence
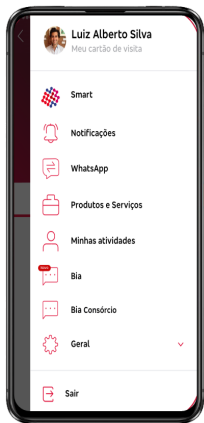
2,3 Bi
Interactions since implementation

87%
Resoluteness Mar/24

15,3 Mi [1T24]
Users in Mobile
+13% s/ 1T23

4,8 Mi [1T24]
Users in WhatsApp
+26% s/ 1T23

+192% [1T24]
Transactions with WhatsApp s/ 1T23

For people

Luiz Alberto Silva
Meu cartão de visita

Smart

Notificações

WhatsApp

Produtos e Serviços

Minhas atividades

Bia

Bia Consórcio

Geral

Sair

Oi! Que bom falar com você. Por aqui, posso tirar suas dúvidas sobre consórcios. É só me perguntar. Estou aprendendo muito e, em breve, vou poder te ajudar a simular e contratar consórcios para os clientes por aqui.

quero simular um consórcio

Claro, qual é o valor que você deseja simular?

For Enterprises

09:45

Bradesco

Olá, Maria.

Vi aqui um Pix pelo Bradesco Celular na sua conta PJ da Empresa X com final 123. Ele ainda está em análise.

Dados da transação
R$ 200,00 para João da Silva, às 11h40 de 22/01/2023.

Você reconhece?

Sim reconheço

Não reconheço

Não sou cliente

BIA do Bradesco
Vi aqui um Pix pelo Bradesco Celular na sua conta PJ da Empresa X com ...

Não reconheço

Warning of Suspected Fraud for Corporate Clients

WHERE TO START OUR GEN AI JOURNEY?

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IDEATHON

paving the organization towards generative AI

PEOPLE

IDEAS

TECHNOLOGY

IDEATHON

63 Ideias

37 Mentored Areas

+60 Training hours

+200 Participants

5 Use Cases

Support in resolving protests

Judicial Demands, obligations and oficial letters

BIA Sales Copilot

Customer Relationship Center

Copilot for issuing advisory opinions

IDEATHON WINNER CASES

Discovering learning, applications and preparing infrastructure

Backoffice	Ombudsman	Consortium	Credit Card	Legal
Judicial Demands, obligations and oficial letters	**Support in resolving protests**	**BIA Sales Copilot**	**Customer Relationship Center**	**Copilot for issuing advisory opinions**
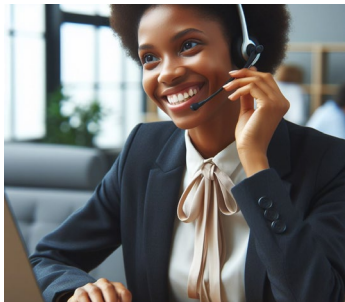
Backoffice	Ombudsman	Consortium	Credit Card	Legal
Sumarization	Sumarization	Q&A	Q&A	Q&A
Classification	Classification	Classification	Upload	Upload
Entity Tabulation	Entity Extraction	Semantic Search	Semantic Search	Semantic Search
OCR	Text Generation	Text Generation	Text Generation	Text Generation

Modularized Use Cases

Specific development by use case

Backoffice: 6, 3, 2

Ombudsman: 6, 3, 2, 4

Sales Copilot: 1, 4, 3

Customer Relationship: 1, 4

Legal: 1, 4

Experiments: 1, 2, 3, 4, 5, 6
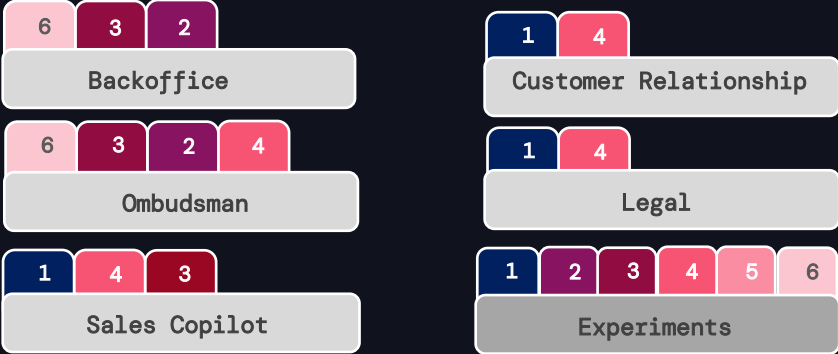
Legend:
- 1 - QA
- 2 - Entity Tabulation
- 3 - Classification
- 4 - Text Generation
- 5 - Image Generation
- 6 - Sumamarization

Platform Motivators
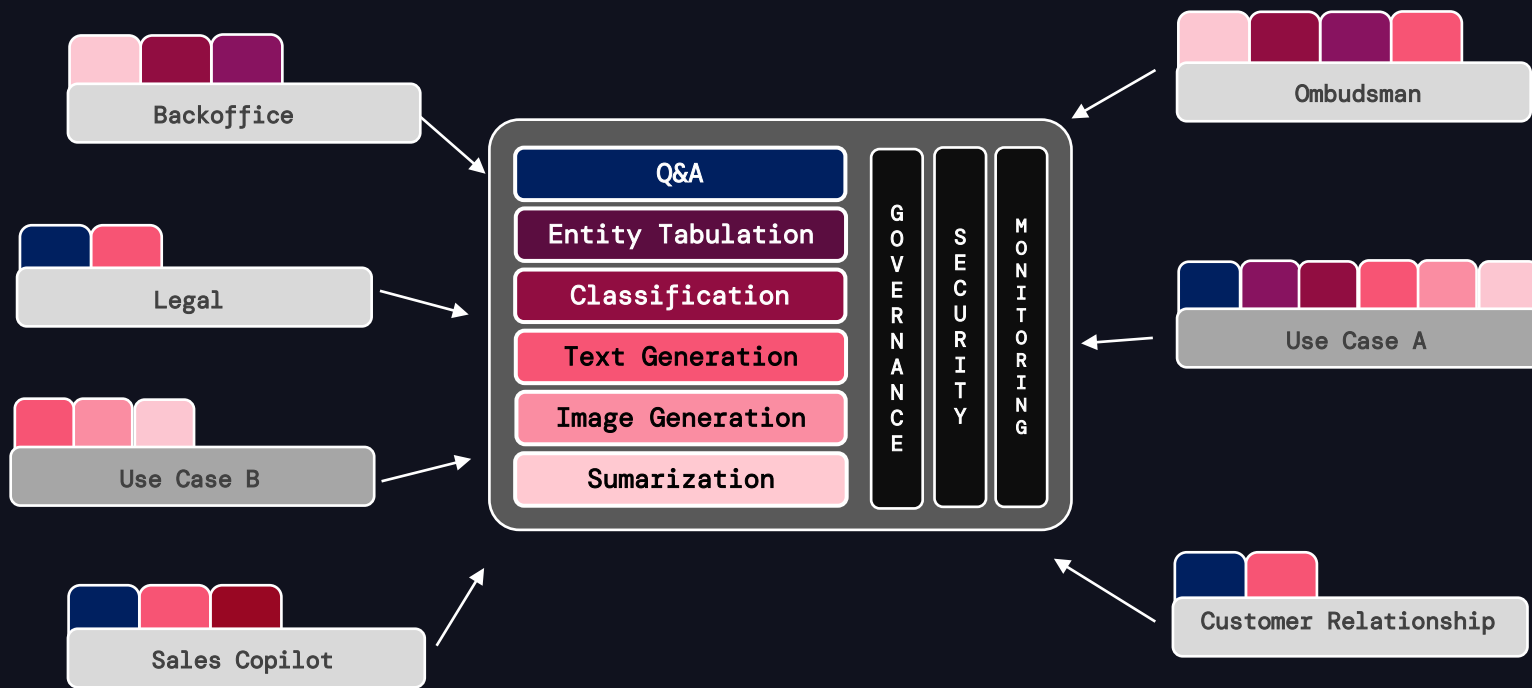

Governance   Security   Monitoring   Best Practices

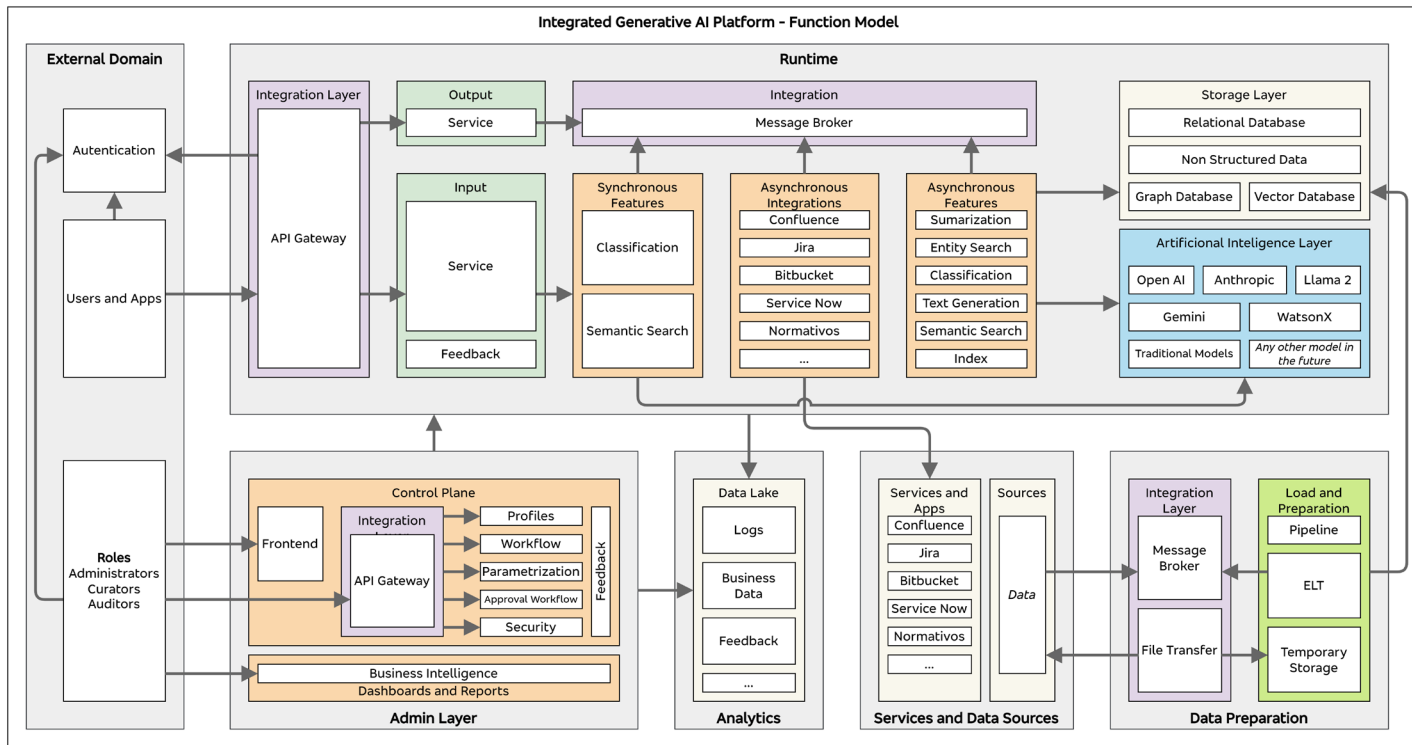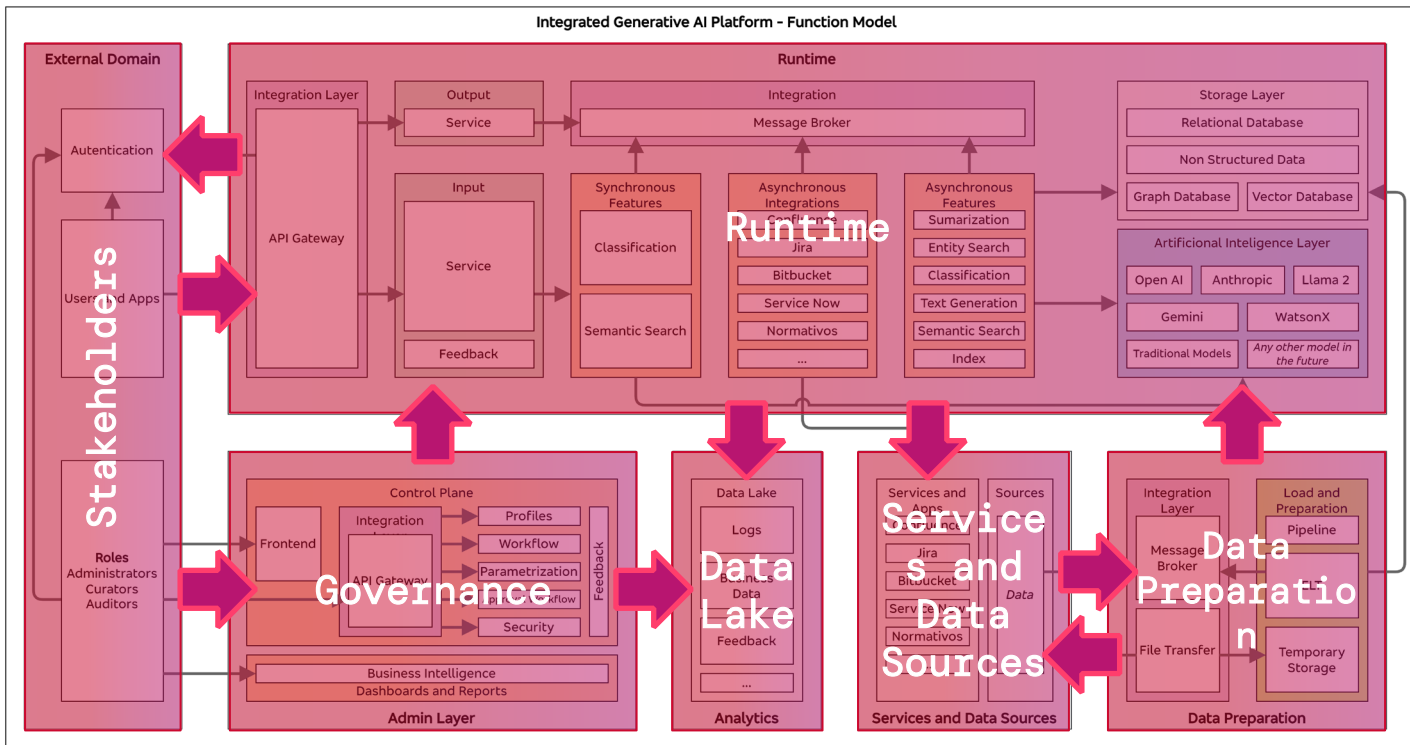# Integrated Generative AI Platform

Use case agnostic

Backoffice

Legal

Use Case B

Sales Copilot

Q&A

Entity Tabulation

Classification

Text Generation

Image Generation

Sumarization

GOVERNANCE

SECURITY

MONITORING

Ombudsman

Use Case A

Customer Relationship

HOW?

Integrated Generative AI Platform

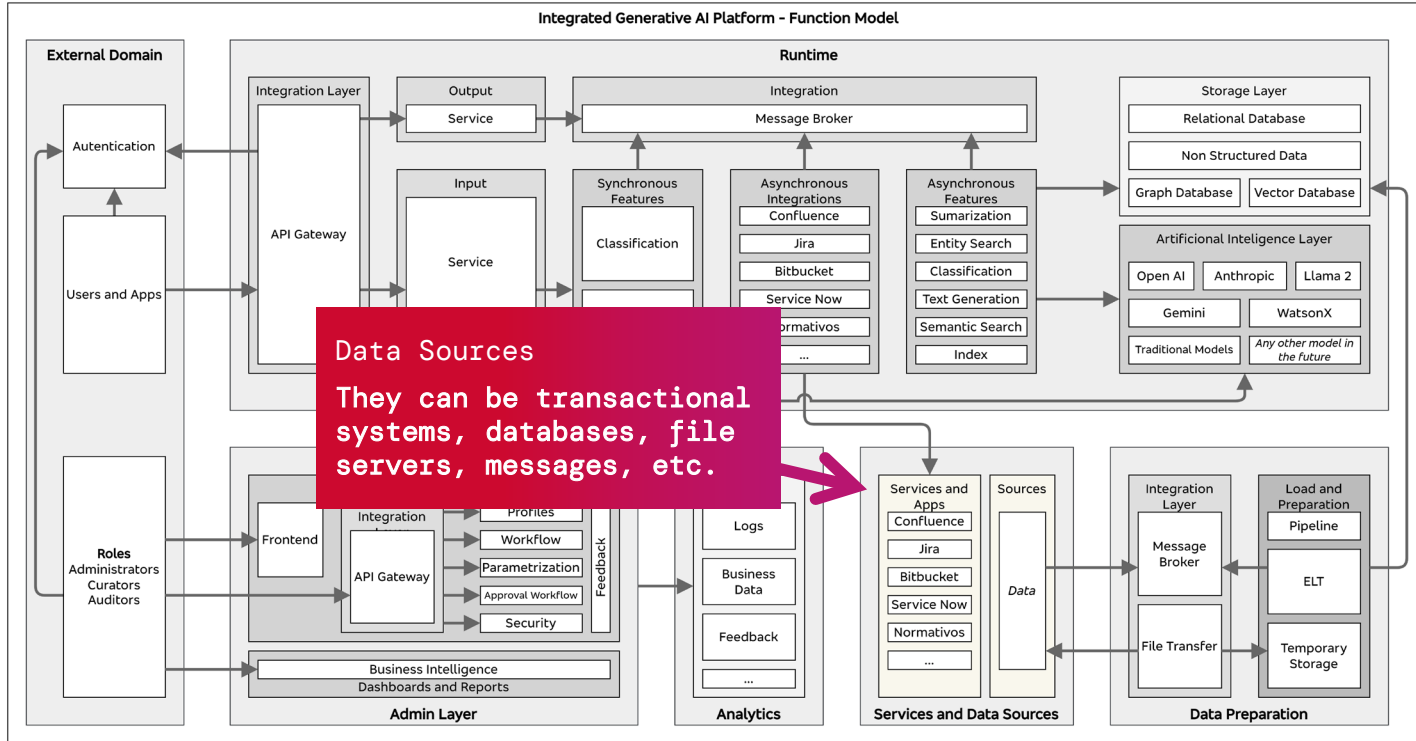## Architecture Overview

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Integrated Generative AI Platform

Architecture Overview

Integrated Generative AI Platform

Data Sources
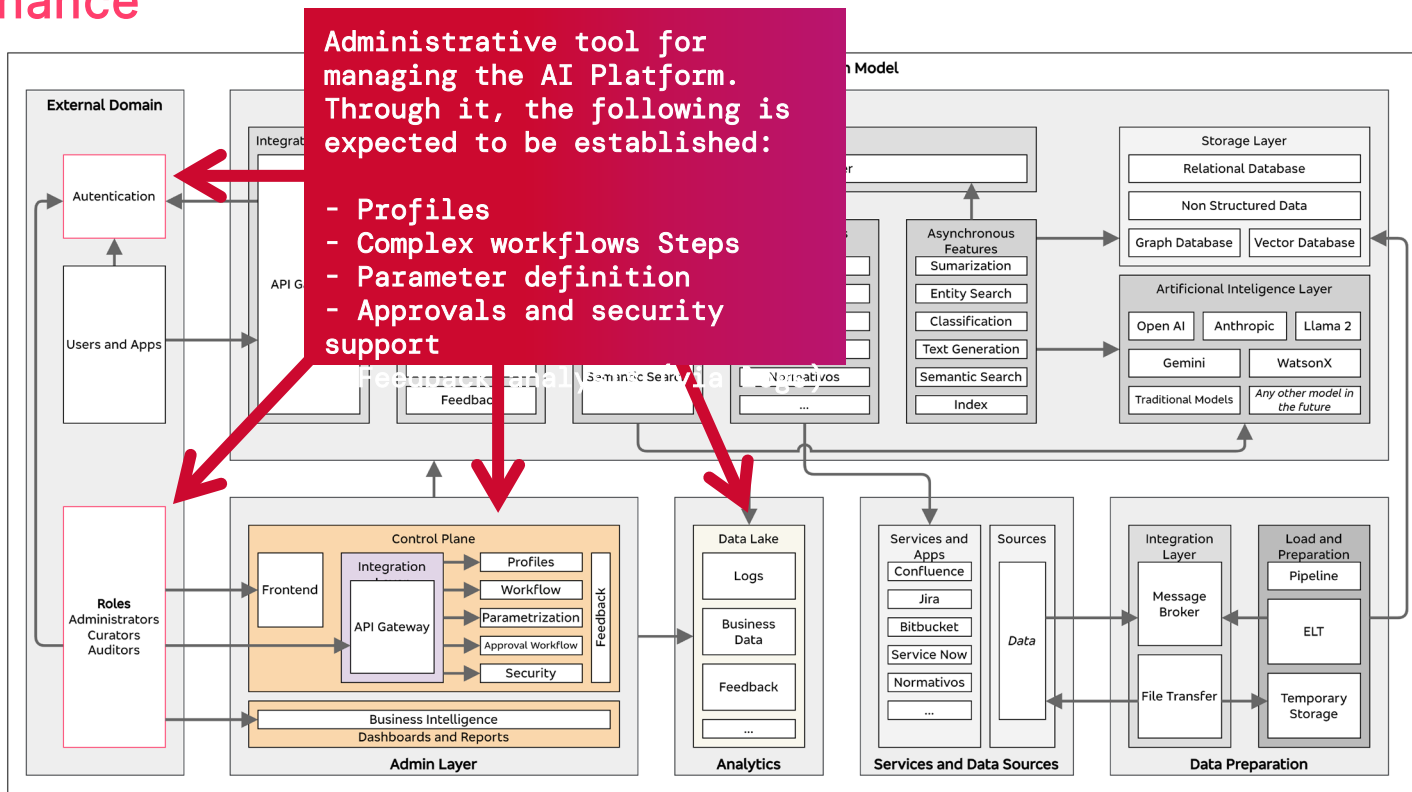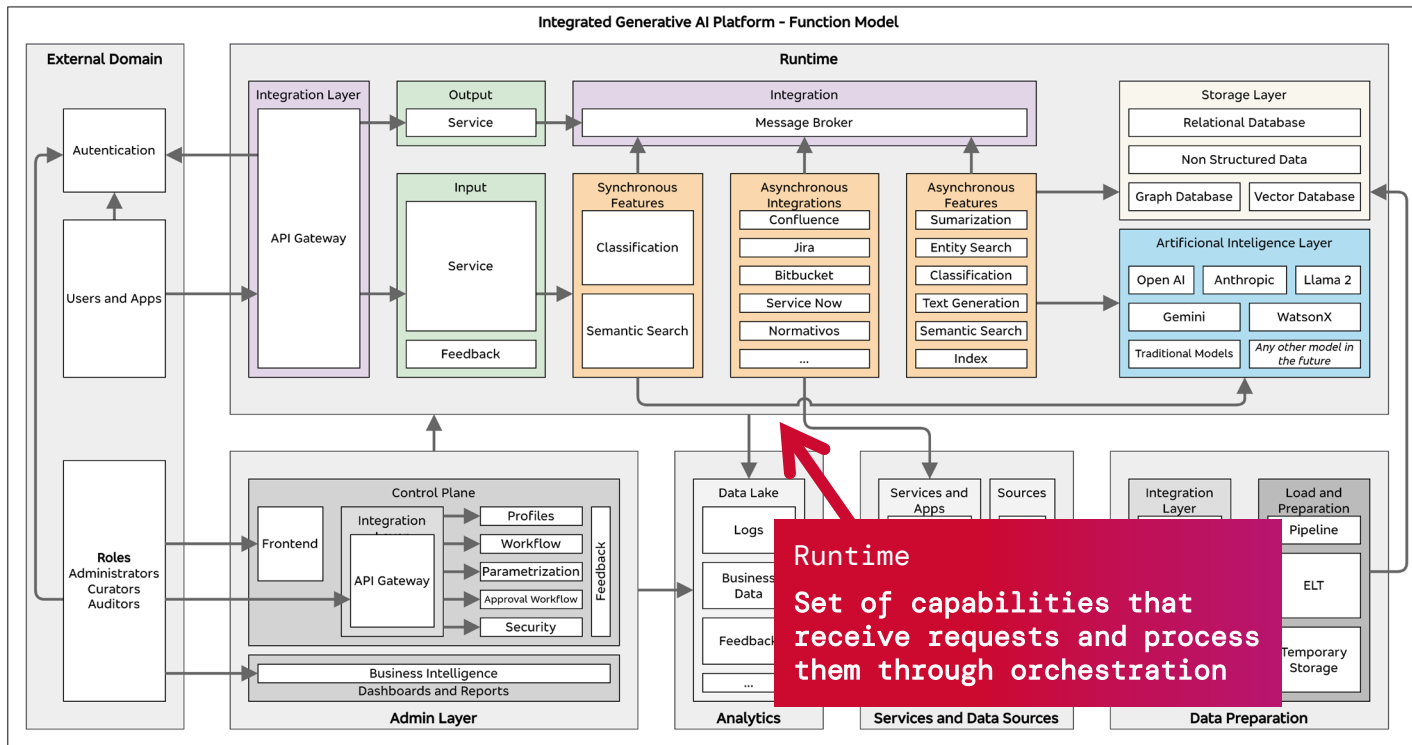
Integrated Generative AI Platform

Data Preparation

3. Storage

Repositories of various types that will be used for training and executing AI Models

2. Processing

Application of strategies for data preparation that will be consumed and used by AI. Example: Sentence or paragraph fragmentations (chunking)

1. Capture

Transmissions and file capture flows

Integrated Generative AI Platform

Governance

Administrative tool for managing the AI Platform. Through it, the following is expected to be established:

- Profiles
- Complex workflows Steps
- Parameter definition
- Approvals and security support

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Integrated Generative AI Platform

Runtime

Integrated Generative AI Platform

API Requests

3. Interface
Exposed via APIs

4. Microservices
Specialized in receiving requests and injecting them in the appropriate format for processing on the platform

2. Security
Domain-based. Organized by groups. To use APIs and access data, authorization within na authorized group is required.

Mandatory for Users and Applications

1. Applications and Users
System integrations for seding requests to pre-trained AI Models

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Integrated Generative AI Platform

Recognition

Integrated Generative AI Platform – Function Model

2. Events

Na event is generated by input services to sequence the processing of the request

1. First Request

Synchronous execution services that utilize AI Models for strategy classification

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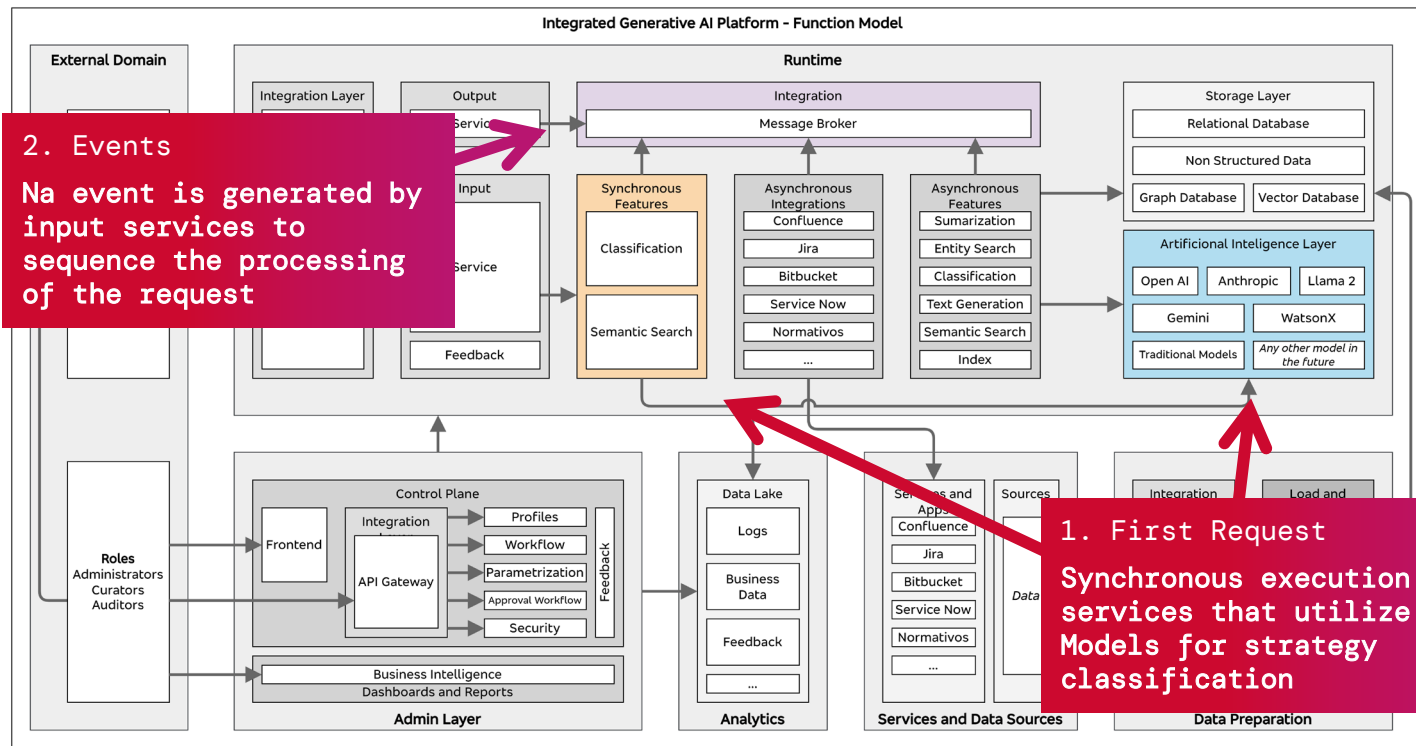
Integrated Generative AI Platform

Alternative Flow

Integrated Generative AI Platform – Function Model

Depending on the scenario, there is a possibility of invoking integration services with transactional systems to obtain information with lower latency for prompt

2. Events

An event is generated for sequencing the processing of the request

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Integrated Generative AI Platform

Generative AI

Integrated Generative AI Platform – Function Model

External Domain
- Autentication
- Users

Runtime

Integration Layer

Output — Service

Integration — Message Broker

Input

Synchronous Features
- Classification
- Semantic Search

Asynchronous Integrations
- Confluence
- Jira
- Bitbucket
- Service Now
- Normativos
- ...

Asynchronous Features
- Sumarization
- Entity Search
- Classification
- Text Generation
- Semantic Search
- Index

Storage Layer
- Relational Database
- Non Structured Data
- Graph Database
- Vector Database

Artificial Inteligence Layer
- Open AI
- Anthropic
- Llama 2
- Gemini
- WatsonX
- Traditional Models
- *Any other model in the future*

Admin Layer
- Business Intelligence
- Dashboards and Reports
- Feedback

1. Specialized AI Services

As per the execution workflow, specialized services are triggered through event consumption:

- **Summarization**
- **Entities**
- **Classification**
- **Text Generation**
- **Semantic Search**
- **Indexing**

2. OpenAI APIs

The specialized services are programmed to consume APIs from AI Services

Currently: Azure OpenAI

3. Prepared Databases

Preprocessed data is structured so that data fragments can be correlated

Tokenization and Embedding

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Integrated Generative AI Platform

Generative AI

Integrated Generative AI Platform – Function Model

1. Results
The outcome obtained after executing the workflow is inserted into the message broker for consumption

2. Return Service
For result retrieval, the return service consumes the outcomes and stores them in a database for later querying by the requesting system.

3. Application and Users
The requesting Application consumes the result by presenting na identifier provided at the beginning of the request.

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Integrated Generative AI Platform

Generative AI

New Features

Supprts additional and customized functionalities

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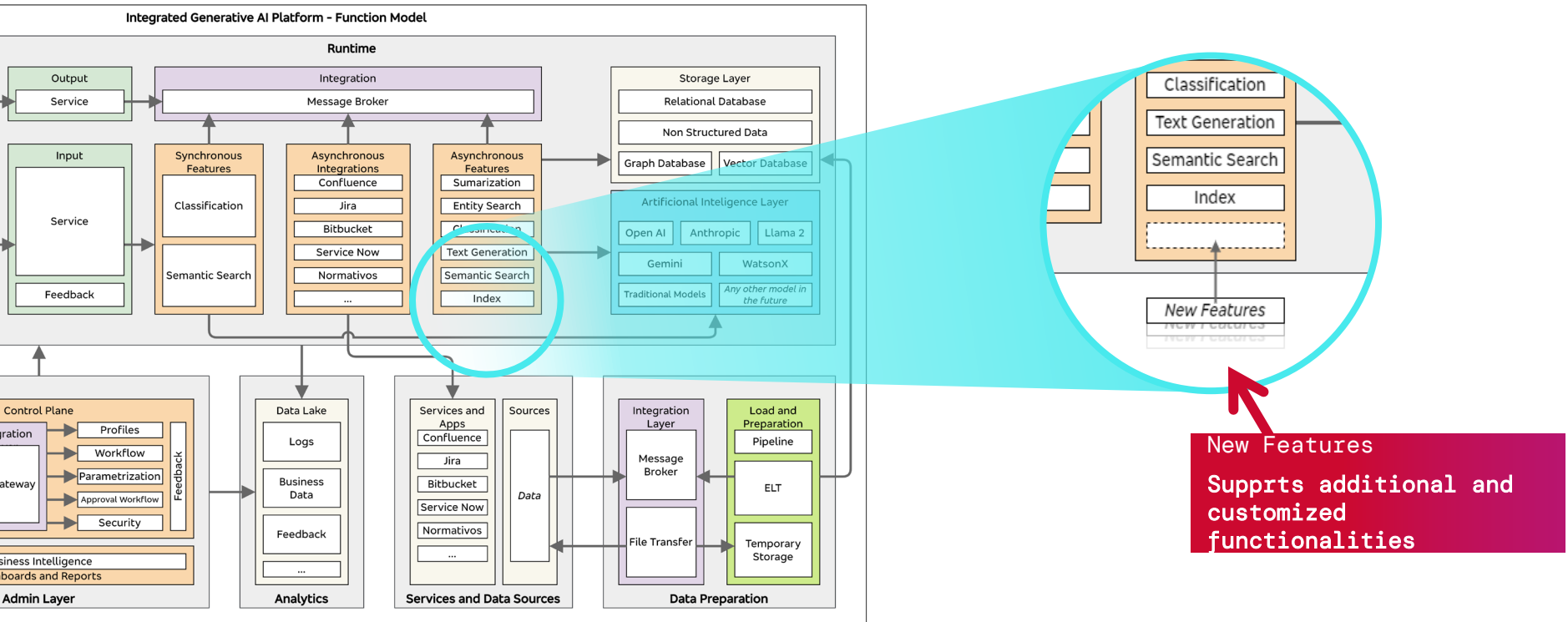
Generative AI requires a change in the dynamics of content governance…

Classic Model

BIA - regular AI

- Document management is done in a **decentralized way**

- Curation team **works on AI training** and creating questions and answers

- Communication between fronts is **not centralized**

- **AI knowledge base out of sync** with corporate regulatory portal

- Curation Team acts in the **governance of knowledge base content**

Internal knowledge database

Q&A reference

Business teams | Governance | Tech squad

CONTENT MANAGEMENT | PERFORMANCE MANAGEMENT | AI MODEL MANAGEMENT
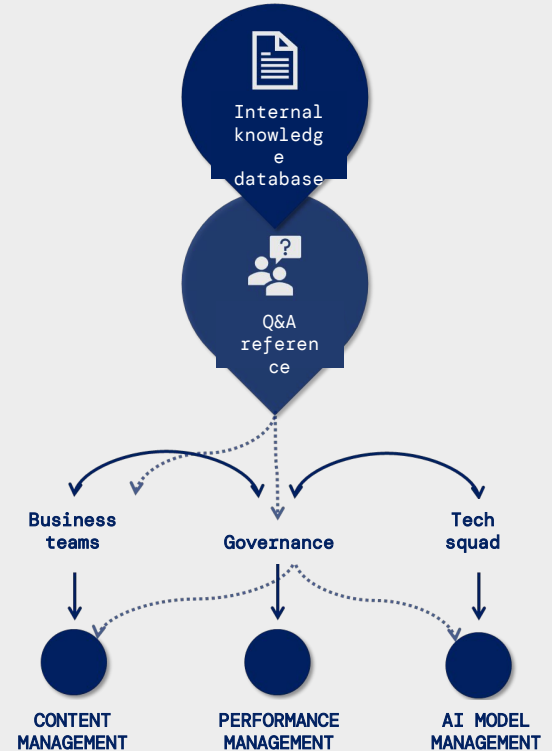
Proposed Model

Generative AI

- Document management focused on **business areas**

- AI training is done **only by the technical squad**

- Governance team focused on **performance management**

- Main governance activity is **AI performance management**

- AI knowledge base **reflects regulatory portal**

- Curation team does not act in document governance
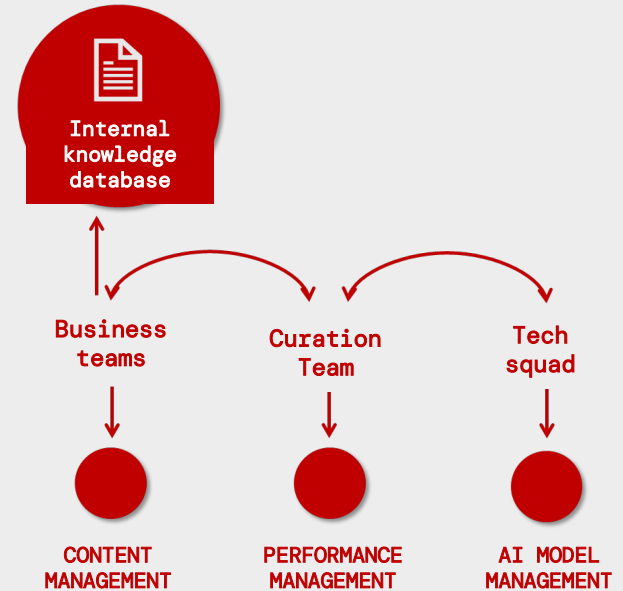
Vulnerabilities - TOP 5 OWASP*

Ensuring secutiry

#	Vulnerability	Description	Bradesco Control
1	PROMPT INJECTION	Untrusted data insertion containing malicious commands	There is an orchestrator layer that controls the actions and commands executed
2	INFORMATION LEAK	Attacks that seek to manipulate or induce systems to exploit confidential information	Access to data follows the policy of each application, containing logs
3	NON-ISULATED ENVIRONMENT	Operate in an environment that allows improper access to applications and system information	The environment used is isolated and the developments have rules to control responses
4	UNAUTHORIZED CODE EXECUTION	Attackers create commands that trigger the execution of malicious code	Orchestrator layer controls executed commands
5	INAPPROPRIATE RESPONSES	Inadequacy of responses relating to human values	Creativity control and response scope restriction via prompt engineer

B R A D E S C O   C O N T R O L

*Open Web Application Security P:

ACHIEVEMENTS

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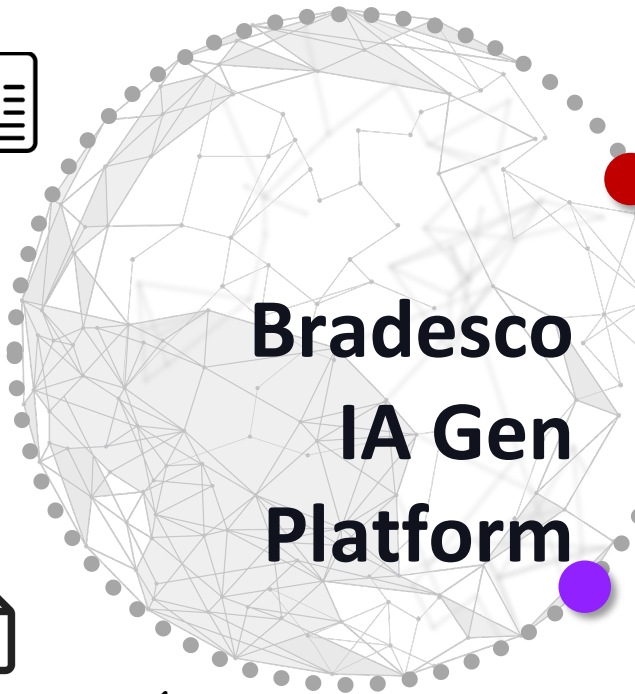
Bradesco IA Gen Platform

- **Governance**
- **Customizable**
- **Unique architecture**
- **Flexible**

Scalability gain

Democratization of AI

Generative AI
Skills

Entity tabulation

Classification

Text Generation

Image

Summarize

Q&A

DATA+AI SUMMIT
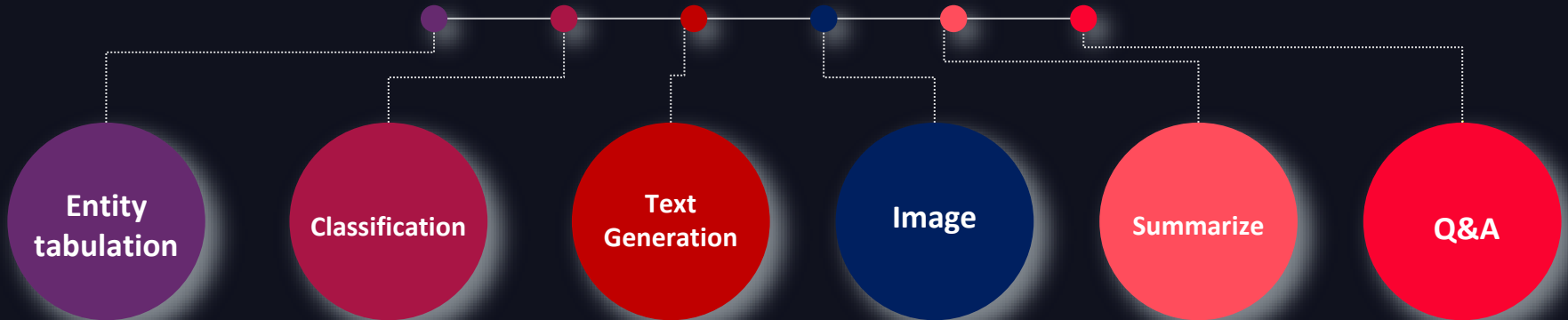
Achievements

Generative AI Applications @ Bradesco

Open Finance Q&A	DevOps Chatbot	Monetary Policy Committee minute meetings
Searches from natural language in databases.	Assistant for developers, based on Bradesco documentation and standards.	Summaries and comparisons of COPOM minutes and announcements.
• Allows the business area to consult information without the intermediary of a specialized analyst • **40% reduction** in data extraction time for analysis	• Agility in consulting documentation and reducing development time	• Hawk-Dove Indicator Chart (Monetary Policy Bias): • Hawks: a more aggressive stance. • Doves: Likely to keep interest rates low.

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Hackathon

Databricks & Bradesco

+50 Participants

+20 Ideas

11 Selected cases

5 Cases approved.

Vision
RAG
Entity tabulation
Sumarization

LLAMA 2
ANTHROP\C

Model Serving

Vector Search

Summarization/description of images for prospecting banking correspondent establishments

Analysis of customer complaints with debit and credit card products and contact via digital channels for resolution

Agribusiness Virtual Assistant

BIG NUMBERS

+90
Mapped Usecases

240%
More speed to reach production

Increase
User satisfaction

How Generative AI improve BIA's response to context

Categories

① **Simple** questions

② **Informal** questions

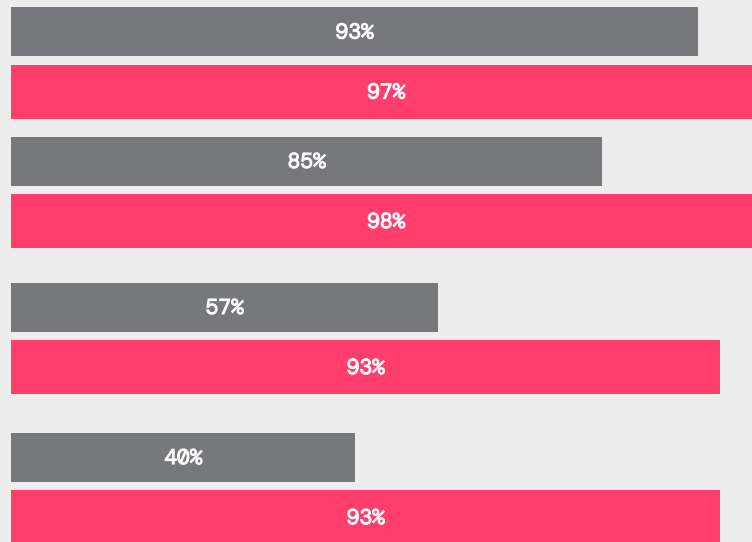③ Question with **typos**

④ **Imprecise** questions

Exemples

How can I find the telephone numbers of Bradesco's advisors?

Hi, can you tell me where I can find the phone numbers for Bradesco's advisors?

how do i find the pone number for bradesco advisor
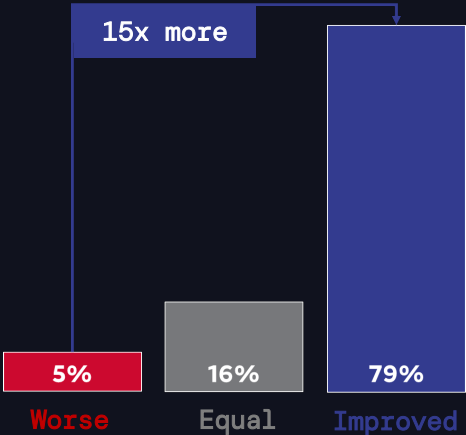
How do I find the phone number for those bank advisors?

Percentage of useful responses to the users

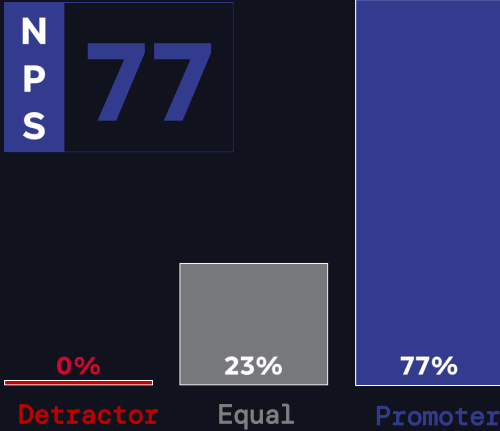|	
93%	
97%	
85%	
98%	
57%	
93%	
40%	
93%	

BIA | Achievements

Compared to the Old BIA, would you say the experience with the new BIA Agencies: (n = 19)

15x more

5%
Worse

16%
Equal

79%
Improved

NPS reached 77 for Nova BIA among relationship managers

On a scale of 0 to 10, how likely are you to recommend the new BIA to a colleague?

NPS 77

0%
Detractor

23%
Equal

77%
Promoter

BIA | Achievements

BIA with Generative AI attacks managers' main pain point and performs better when the degree of complexity increases

Accuracy greater than **90%** **for all difficulty levels**