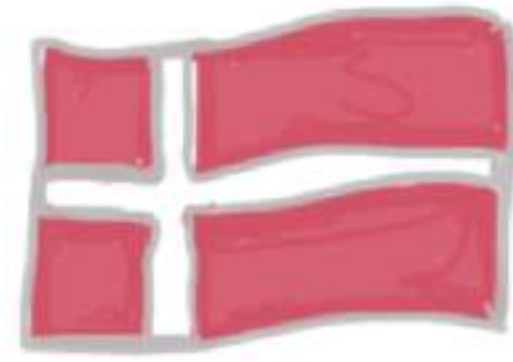


# Human-Centered AI

*From principles to practice*

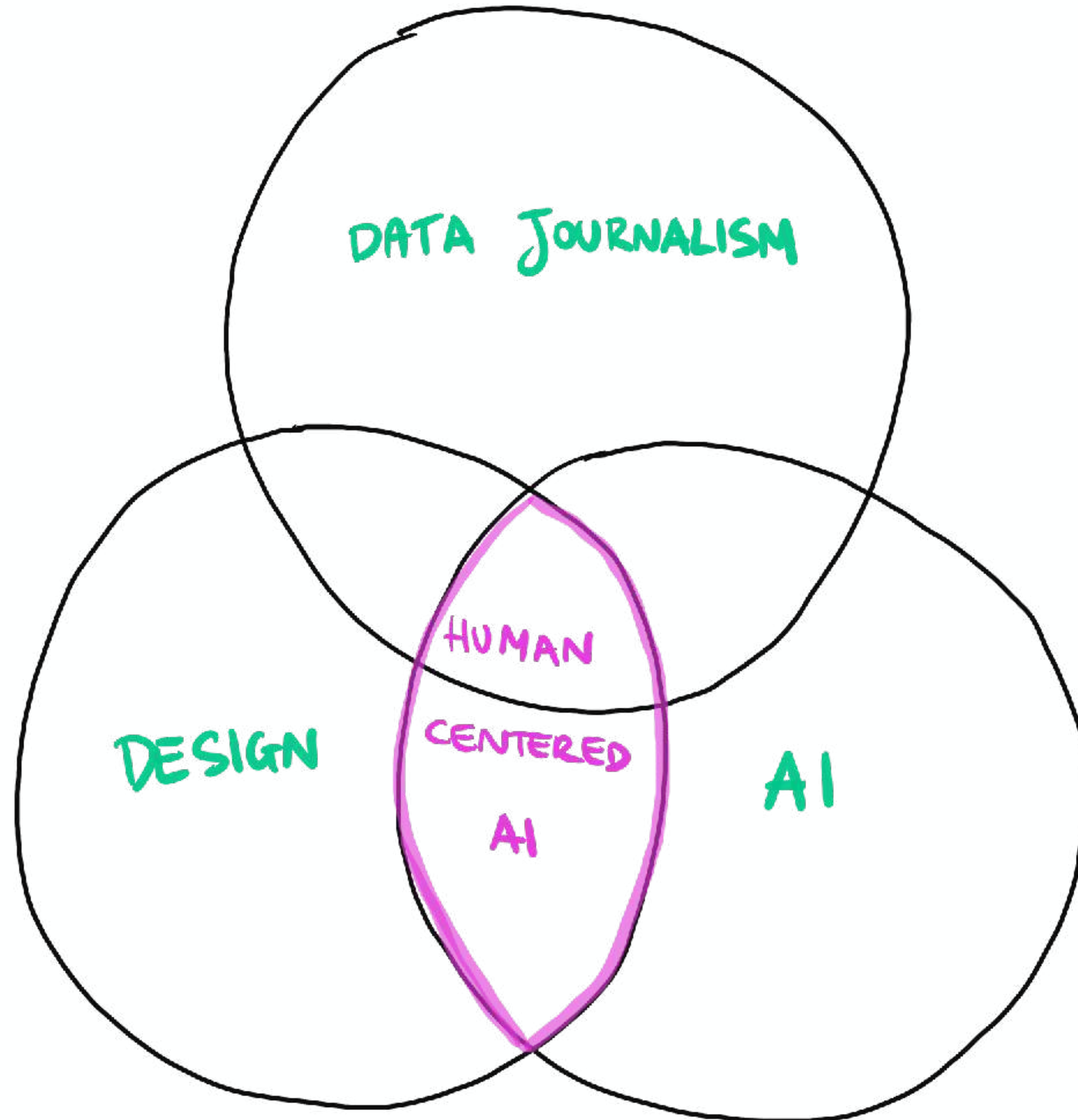
Mara Pometti, Associate Design Director  
McKinsey & Company



CIAO DM23!



**NO PRESSURE**

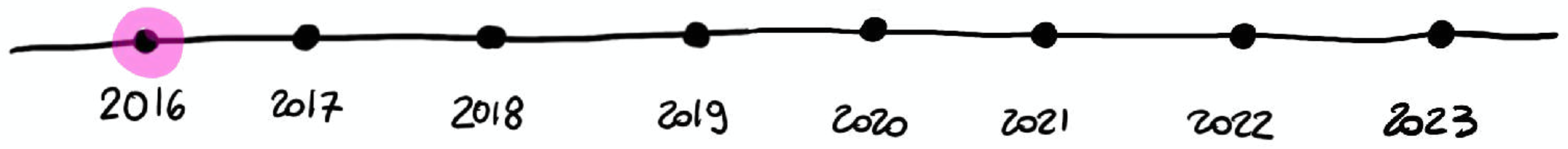


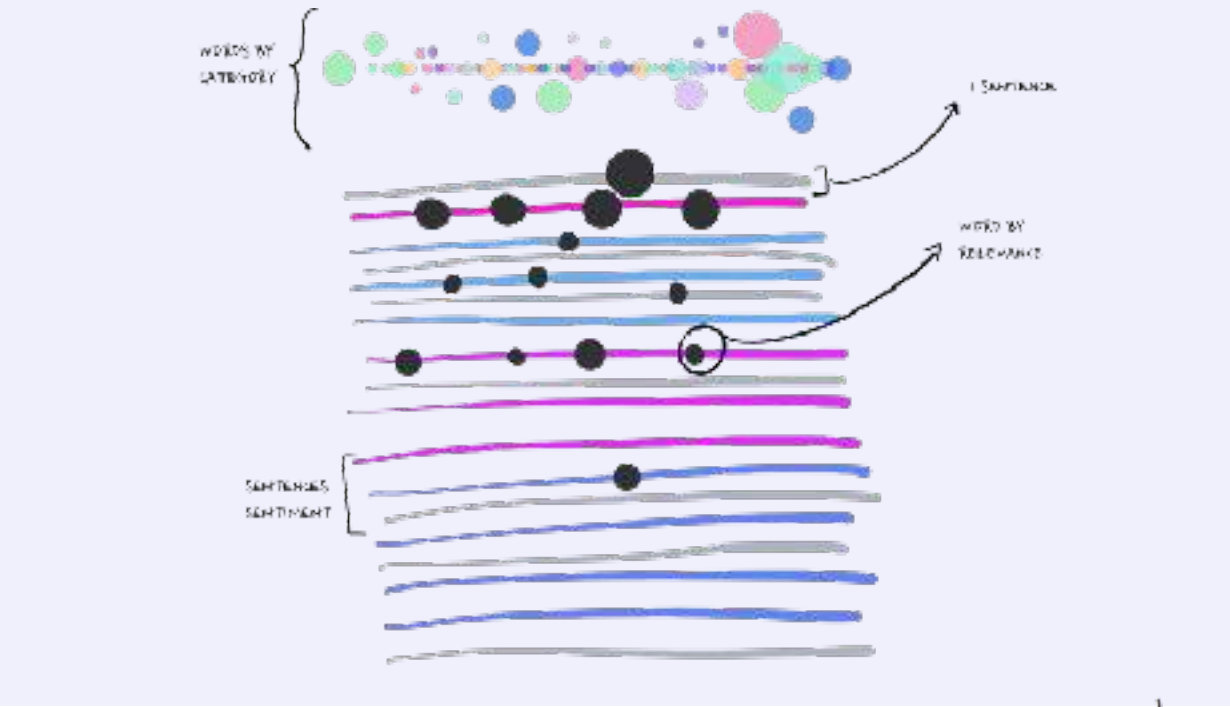
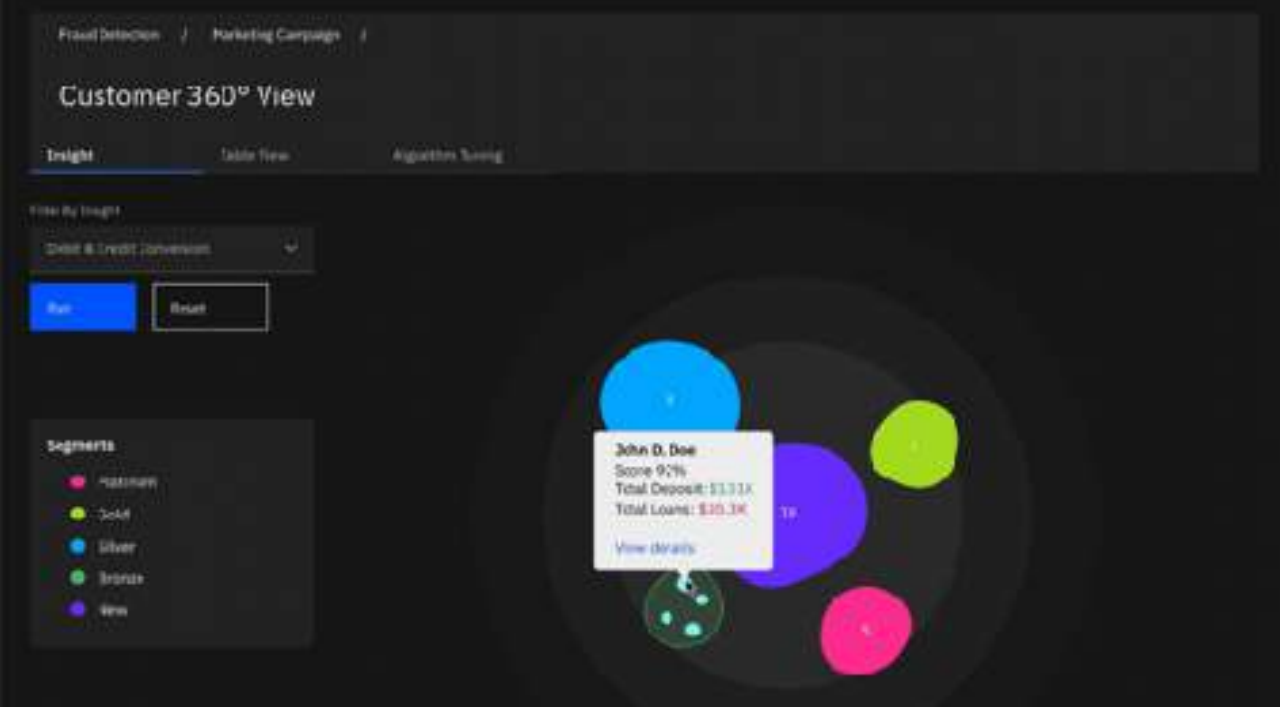
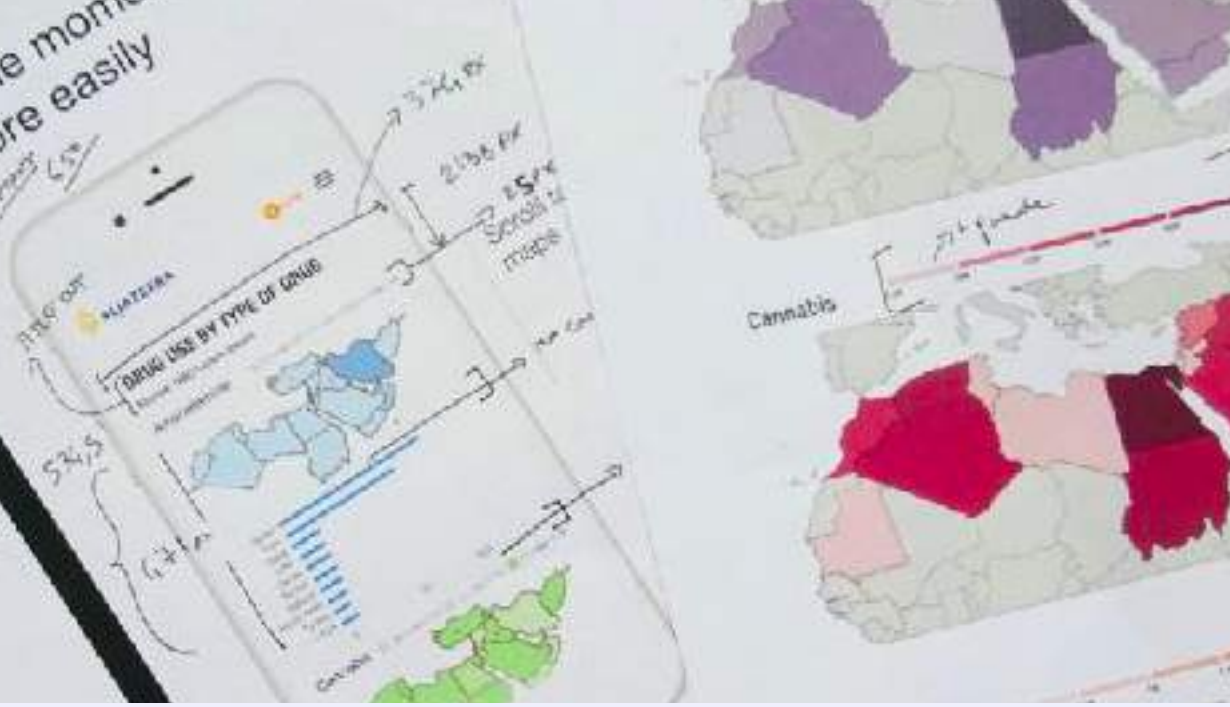
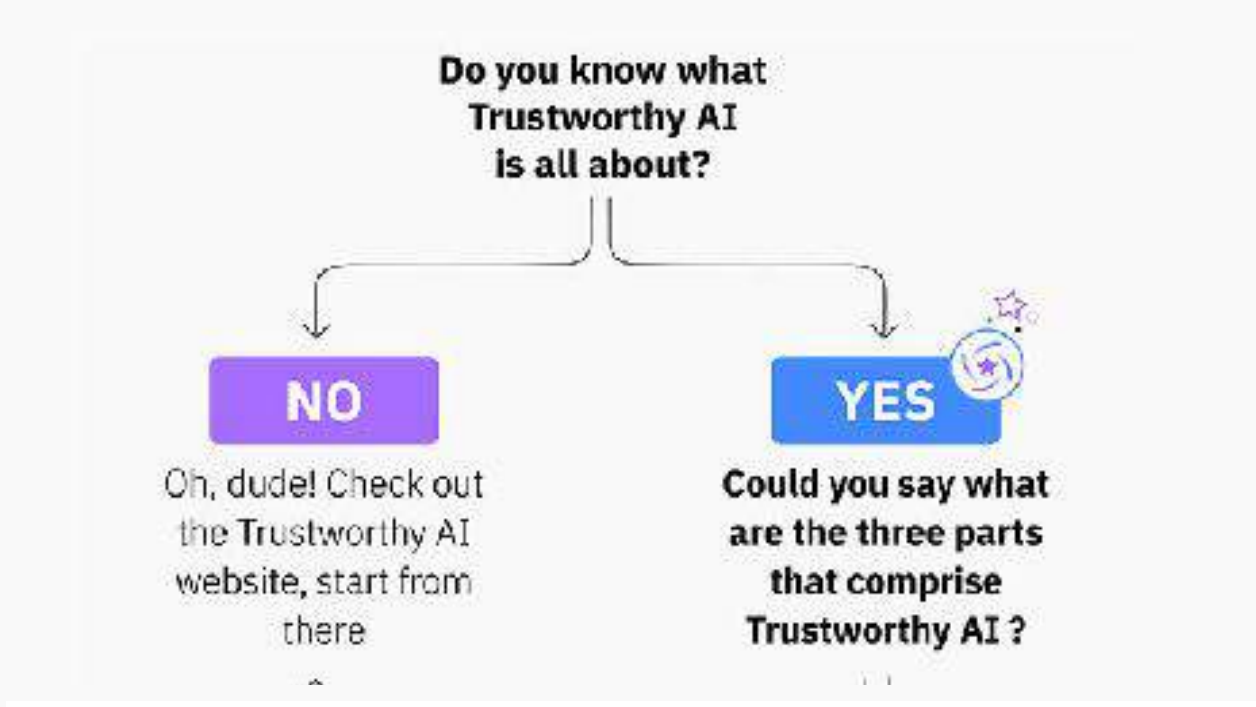
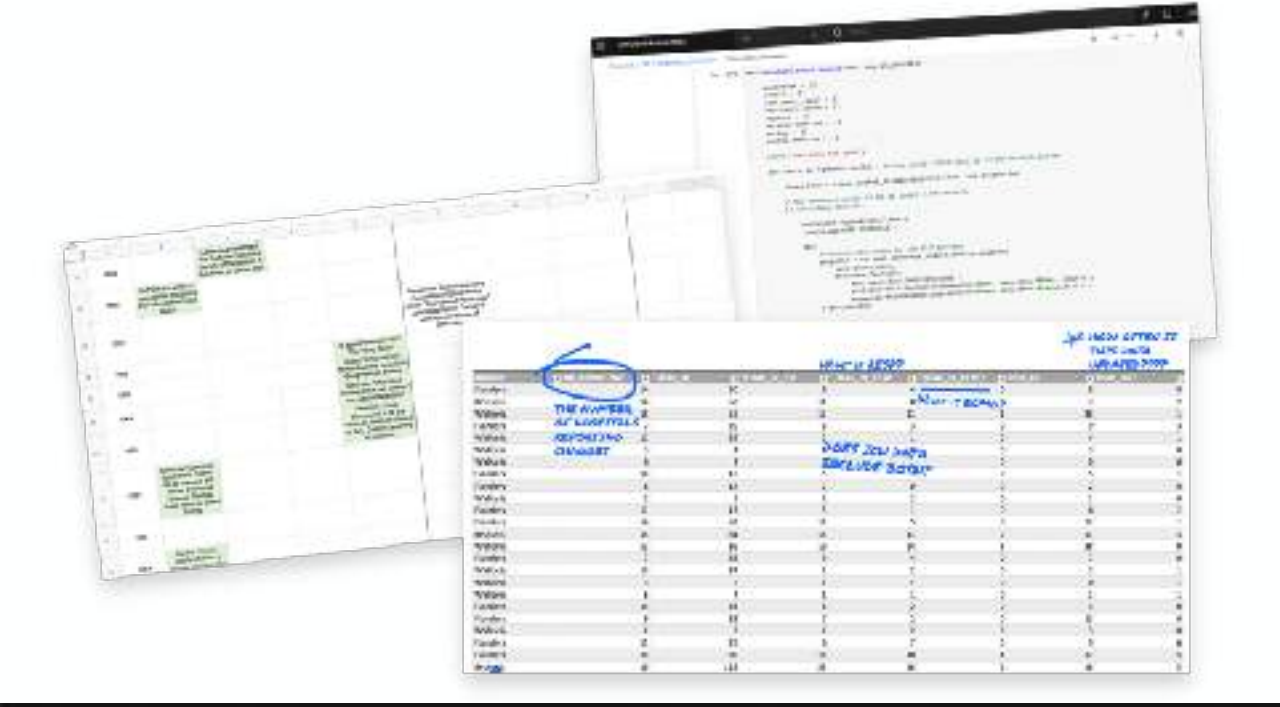
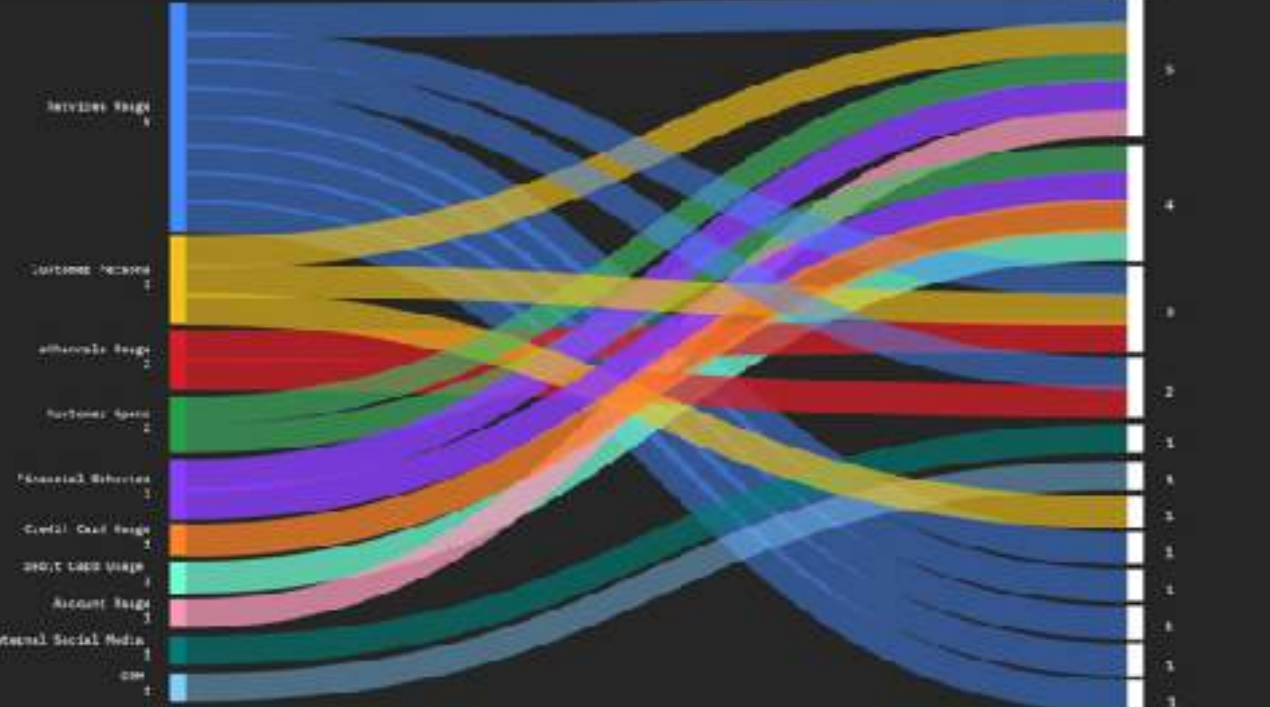
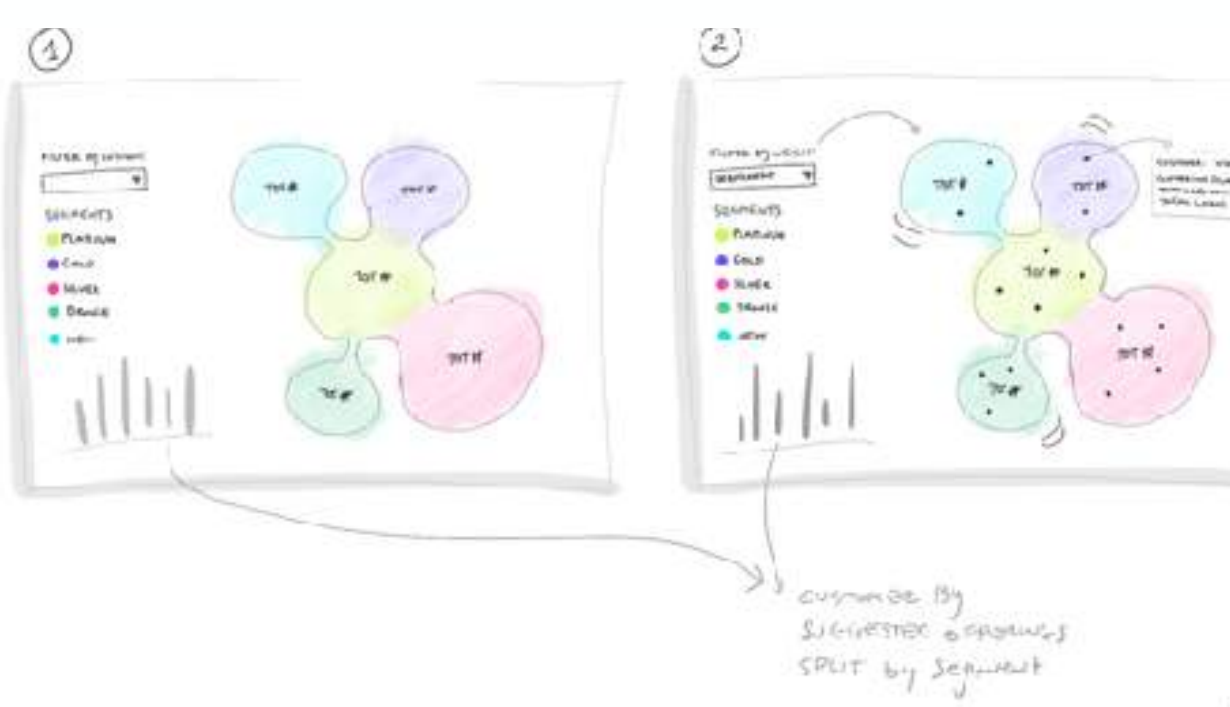
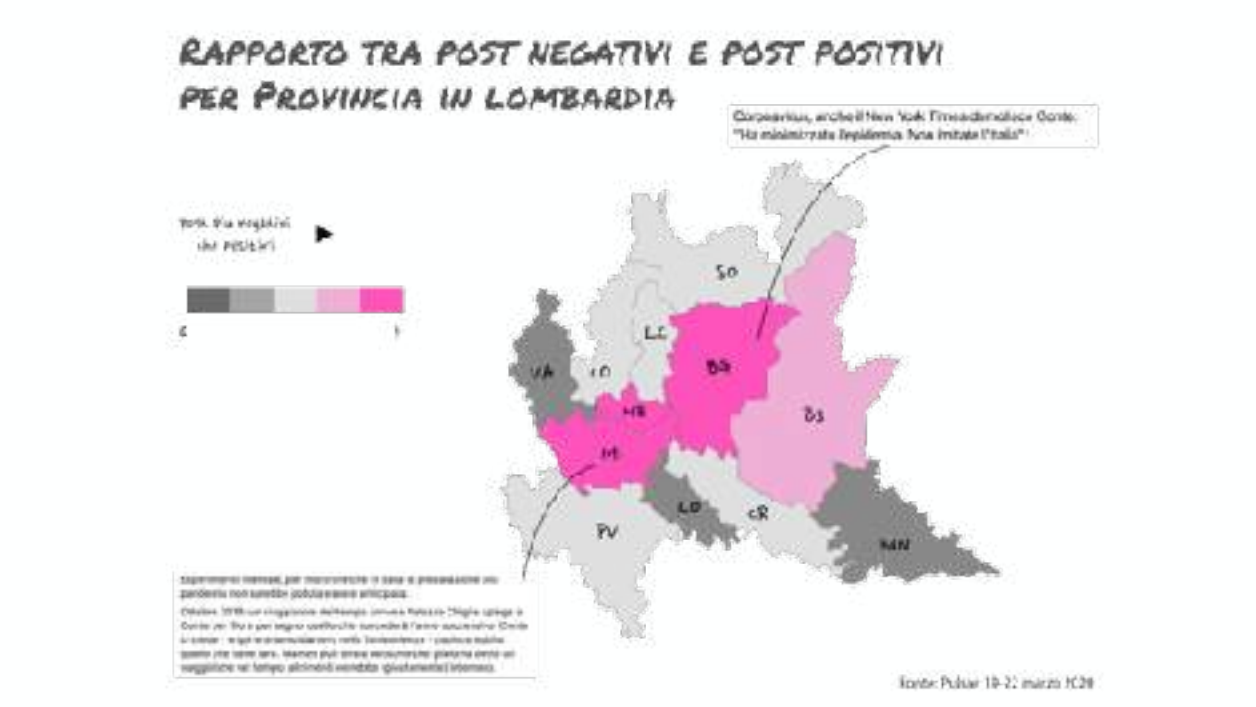
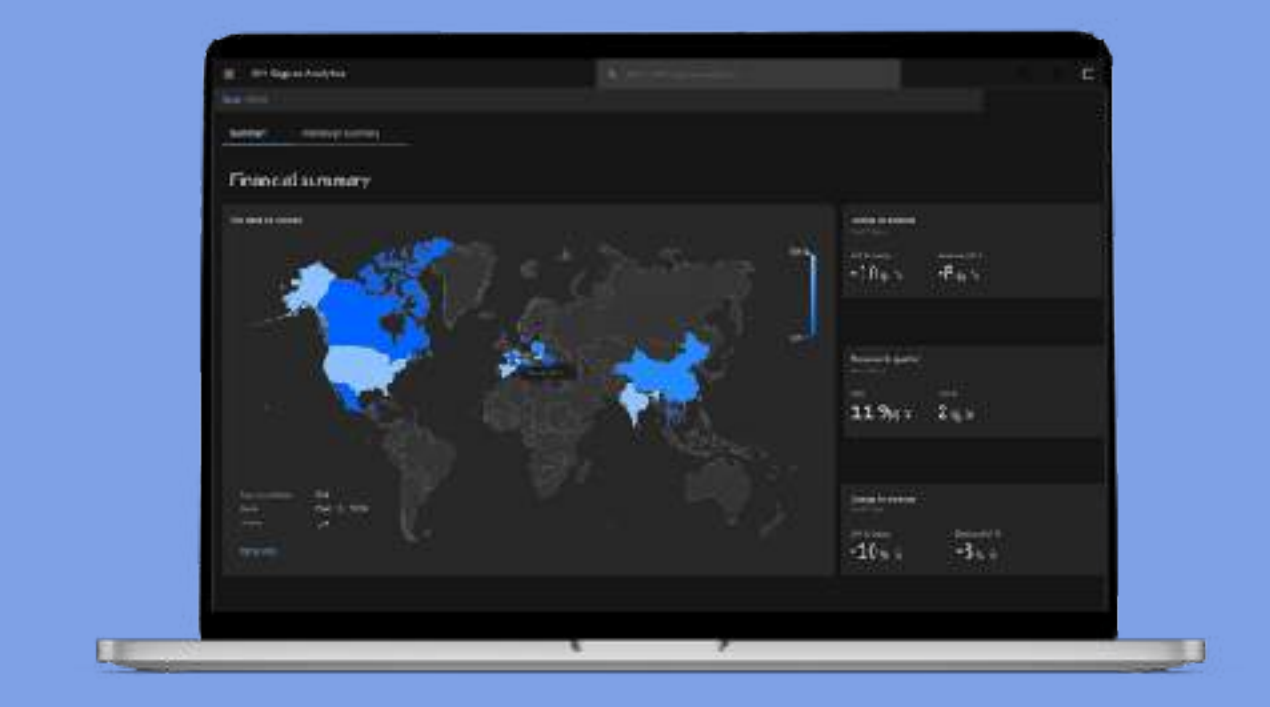
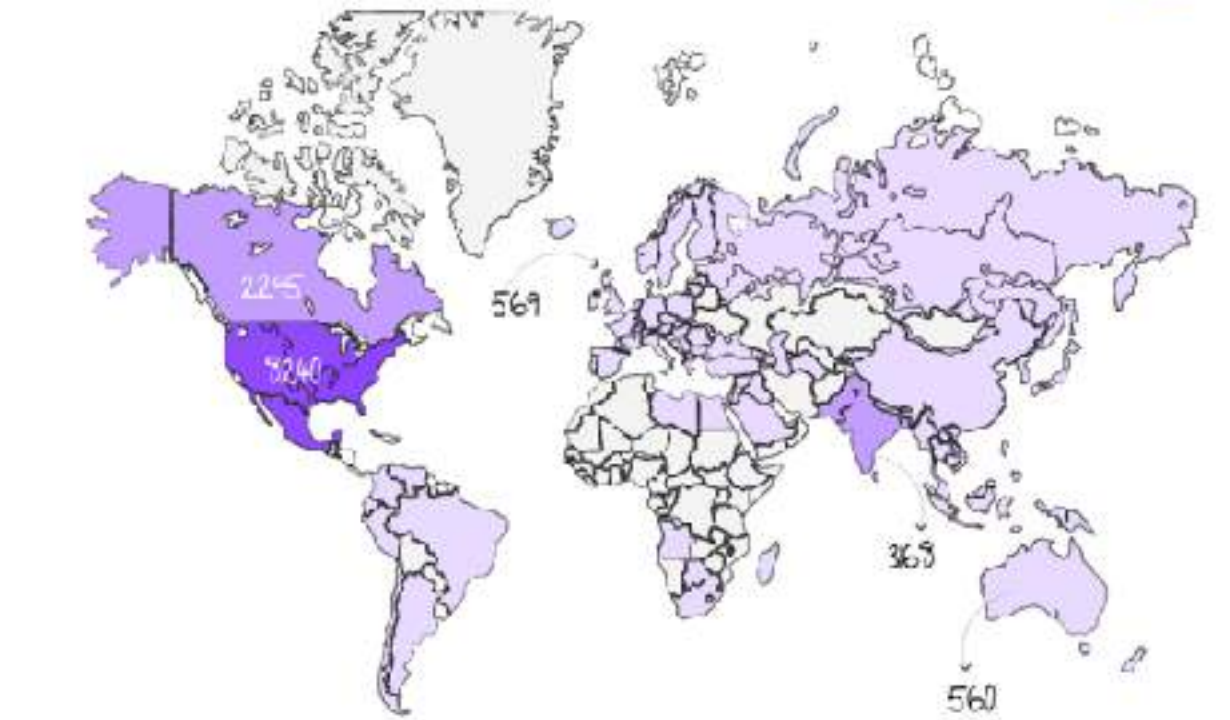
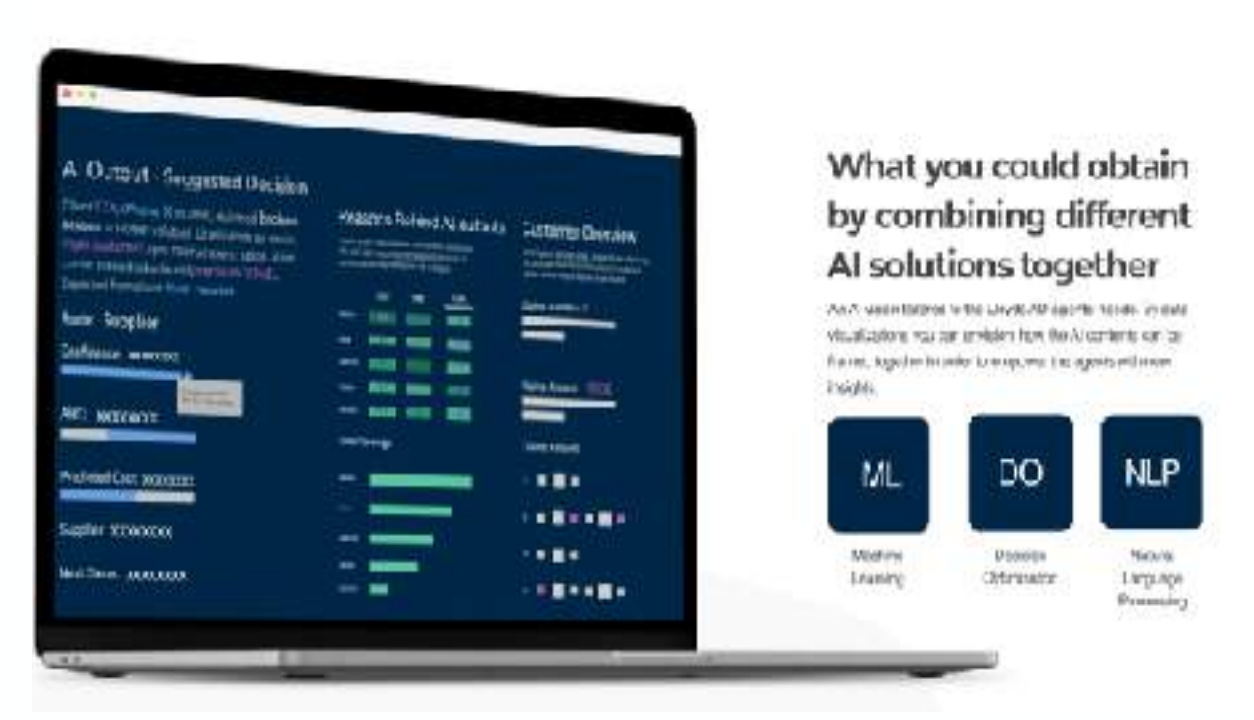
My  
Love ♥

Story with

AI

DATA FIRST,  
AI SECOND







```

Edit View Insert Cell Kernel Widgets Help
Code
1 Apply the spaCy language model to the entire collection of posts' text.

In [16]: docs = list(nlp.pipe(instadata.text))

In [17]: print(docs)

[ party cunnecticut sunshine , Meatpacking highline, gooday newyork sunshine , Mc
t of the best journalism school in the world Tears columbiauniversity journalismchool dream hope
brooklynbridge abroad photo, americaneaster Gabry , upperwestside newyork spring sur
goodday, sunset tarrytown me selfi newyork sun, First Saturday night at NY city timesquare brc
set newyork amazing wow landscape, Buongiorno la domenica mattina si mangia cos mybreakfast bacor
ay , timesquare broadway newyork taxi musical life, mycampus college sunset greatday, E
PLENDORE newyork rockfeller topoftherock mytrip, Via tacchi e stringate a New York mi arrendo anch ic
l Nike Town sicamina nike manhattan, ultimo venerd milanese Mi mancher Milano rac
n fridaynight, Grazie a tutti Un grazie speciale per va anche a luanaprivi che cerca sempre di ci
ti indimenticabili grazieamicamia, Mi avete fatto una sorpresa bellissima Avete reso la vostra
stra felice imieiragazzi adolescenti gruppoado vi voglio bene , moschino felpina casualstyle
eniche migliori solo al Fellini singleparty ape serata club, What Warhol said about Coke is he
t I really like about Coca Cola is the president of the United States can t get a better Coke than the bun
ner of the street warhol popart americanculture, 2014 newyork roma amicheinseparabili charm pa
me smile fun fine2013 lastday ready, nan, triopapete liveitup, Best friend my love , Graduati
, nan, dettagli necklace love sexandthecity style Carrie herlovecrystalnecklace great stile top,
pende sempre con me , I m singing in the rain , me newlook photo, nan, happy sun fur
ge, Cannes , montecarlo, havefun labellavita ape papete solopapete friends instalove goodday feel
ingle favoloso, instalove cute bf love tagsta mates instadaily

```

# MY ALGORITHMS & DATA

```

2 Define a function to extract all the properties of each word

In [18]: def extract_tokens_plus_meta(doc:spacy.tokens.doc.Doc):
        """Extract tokens and metadata from individual spaCy doc."""
        return [
            (i.text, i.i, i.lemma_, i.ent_type_, i.tag_,
             i.dep_, i.pos_, i.is_stop, i.is_alpha,
             i.is_digit, i.is_punct) for i in doc
        ]

```

```

3 Define a function to apply the function above to all documents and store the outputs in a Pandas dataframe

In [19]: def tidy_tokens(docs):
        """Extract tokens and metadata from list of spaCy docs."""

        cols = [
            "doc_id", "token", "token_order", "lemma",
            "ent_type", "tag", "dep", "pos", "is_stop",
            "is_alpha", "is_digit", "is_punct"
        ]

        meta_df = []

        for ix, doc in enumerate(docs):
            meta = extract_tokens_plus_meta(doc)
            meta = pd.DataFrame(meta)

```

```

Jupyter Instagram_analysis_080822 Last Checkpoint: 03/18/2023 (autosaved)
File Edit View Insert Cell Kernel Widgets Help
Code

```

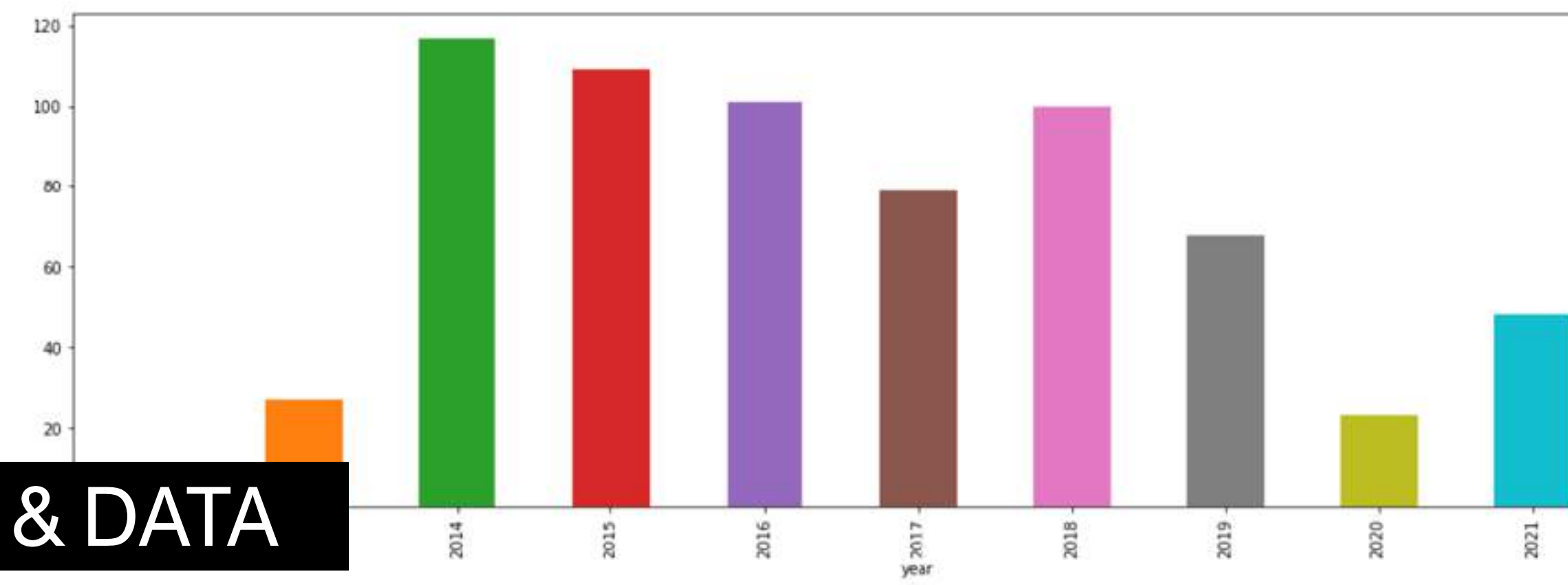
## How Many cities I visited per year?

```

In [22]: insta_data.groupby(['year'])['country'].count().plot(kind='bar', figsize=(20,6))
#(['year'])['count_dist'].sum()

Out[22]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd60f34dc10>

```



## My most fav cities ❤️

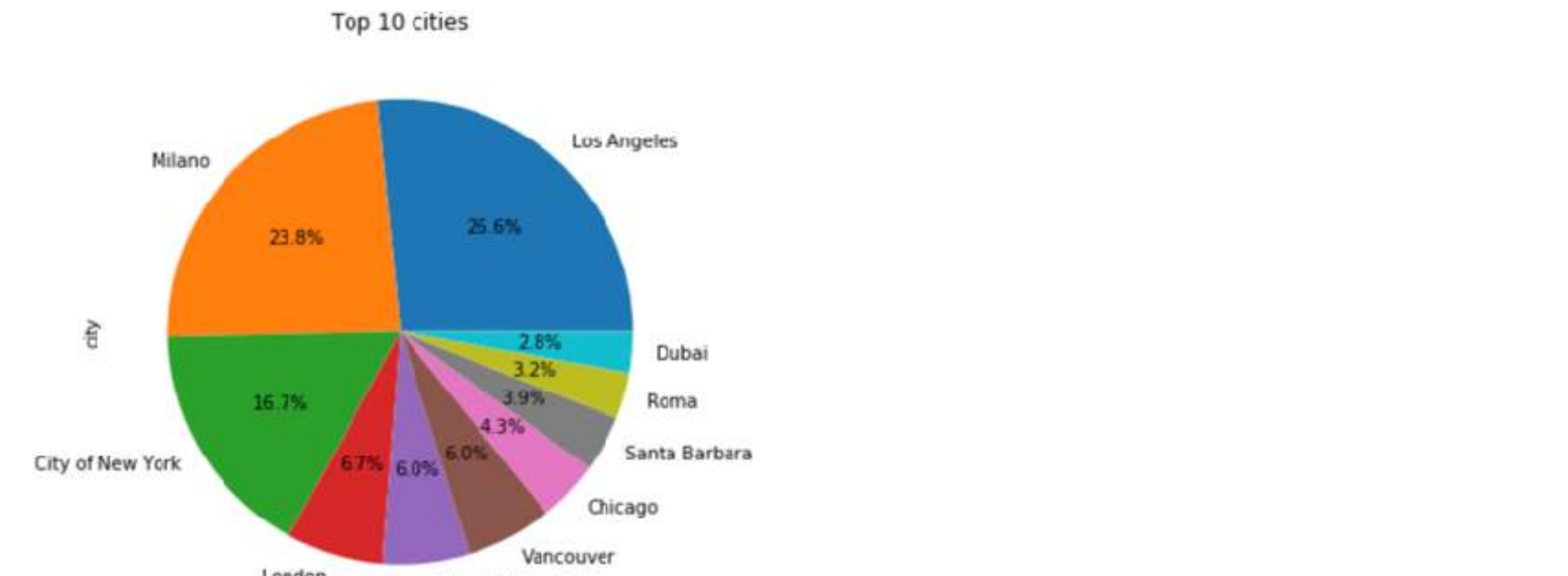
```

In [23]: insta_data_a = insta_data[insta_data.country != "no country for this"]

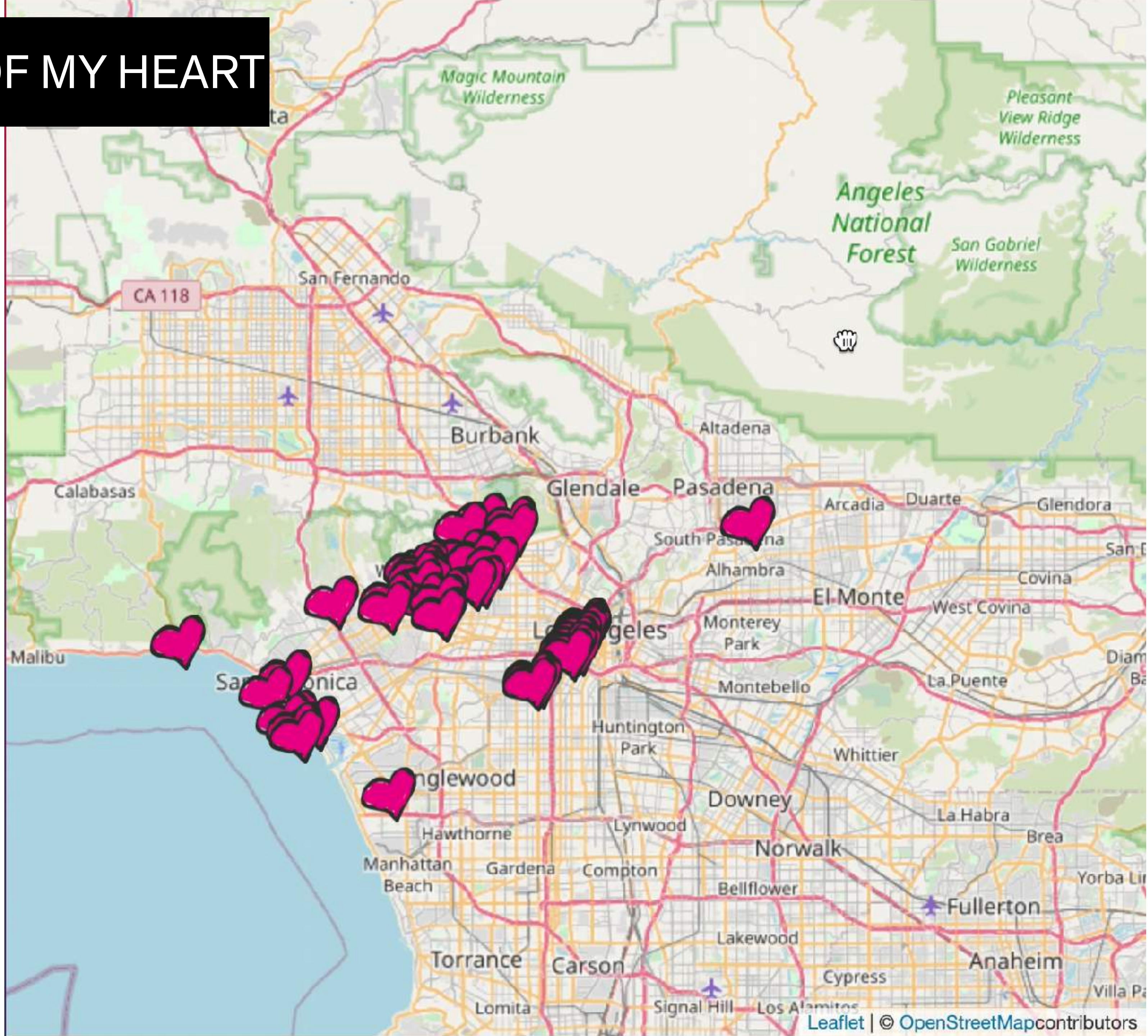
In [24]: insta_data_a.city.value_counts()[:10].plot(kind='pie', title='Top 10 cities', autopct='%1.1f%%', figsize=(10,10))

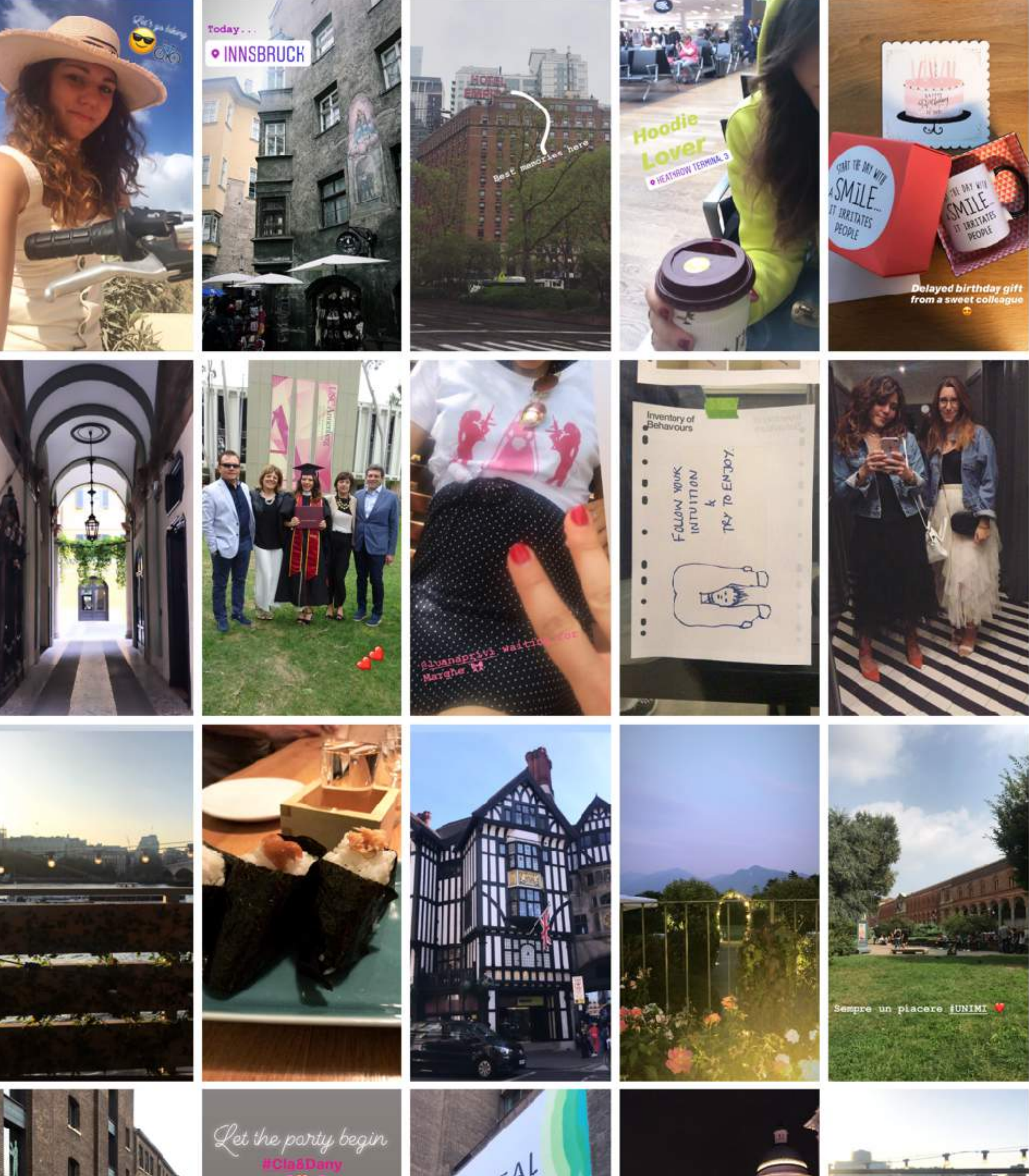
Out[24]: <matplotlib.axes._subplots.AxesSubplot at 0x7fd60f3e50d0>

```



# THE CITIES OF MY HEART





## My posts over the years

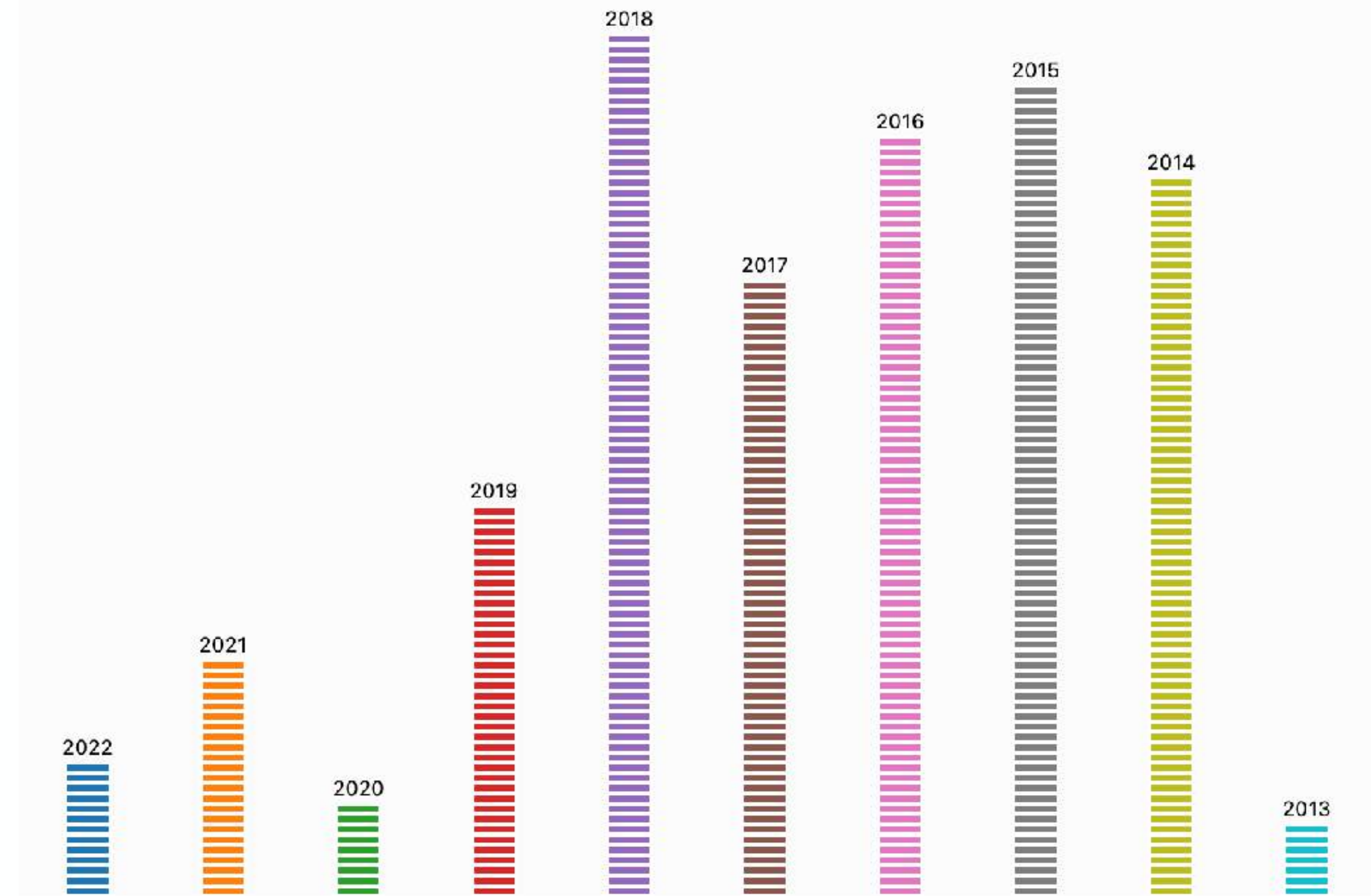




CHART A PATH TO AI  
THROUGH STORIES

# DESIGN THINKING

HOW DO WE REACT? INTENT 1

| PHASES (Current process) | 1        | 2        | 3        | 4        |
|--------------------------|----------|----------|----------|----------|
| DOING (INEFFICIENCY)     | [Sketch] | [Sketch] | [Sketch] | [Sketch] |
| THINKING (FRUSTRATION)   | [Sketch] | [Sketch] | [Sketch] | [Sketch] |

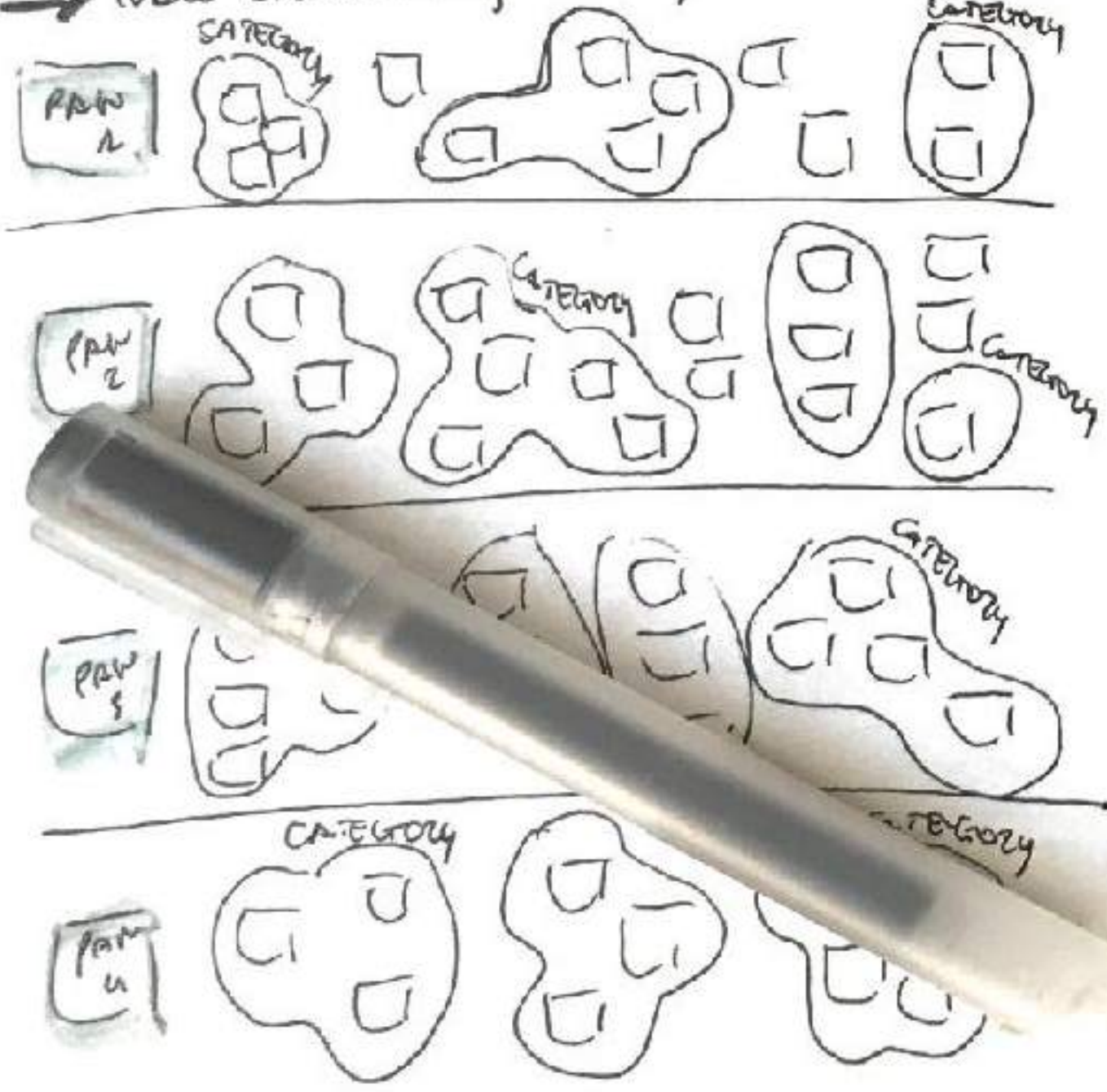
SPOT OPPORTUNITIES FOR TRANSFORMATION 2

| PHASES                 | 1        | 2        | 3        | 4        |
|------------------------|----------|----------|----------|----------|
| DOING (INEFFICIENCY)   | [Sketch] | [Sketch] | [Sketch] | [Sketch] |
| THINKING (FRUSTRATION) | [Sketch] | [Sketch] | [Sketch] | [Sketch] |

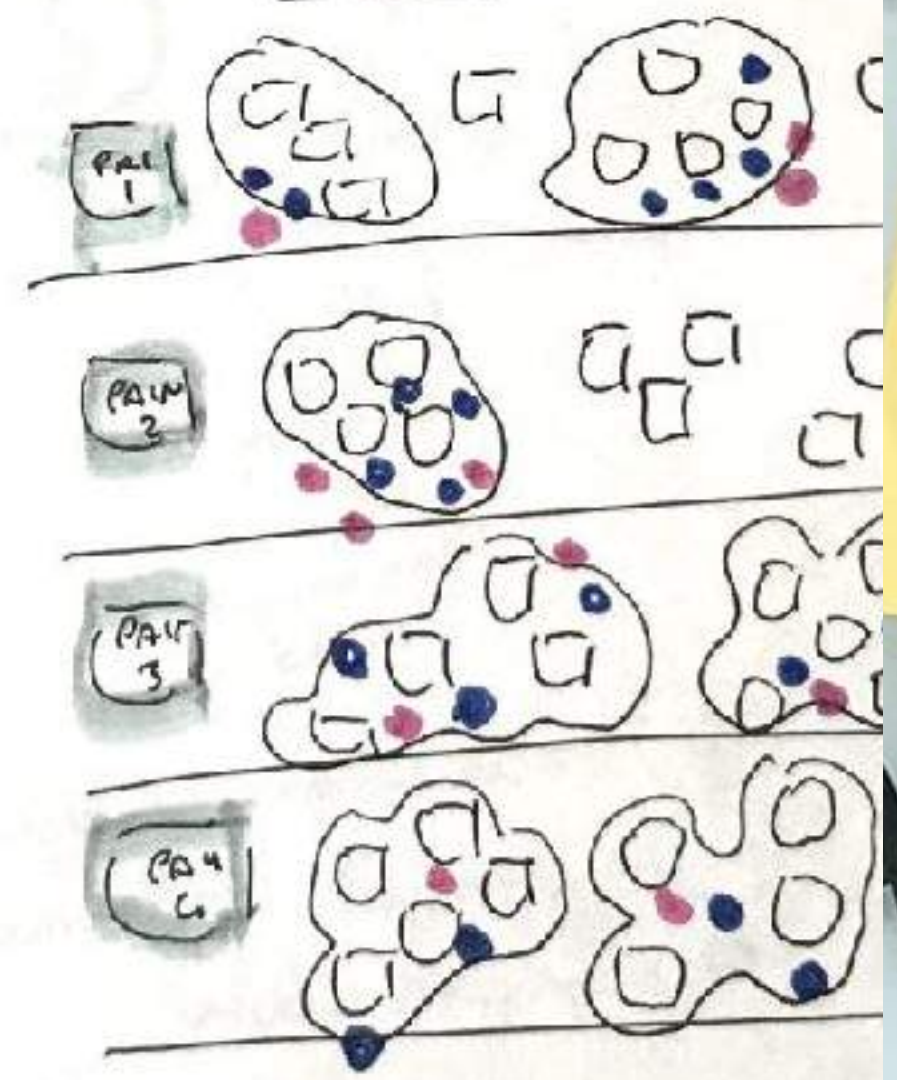
Think in terms of actions/decisions to make to improve your process (ACTIONS THAT CAN LEAD YOU TO...)

[BIG IDEAS/SOLUTIONS INSIGHT] BRAIN STORMING 3

From Brainstorming to categorization definition



VOTE IN TERMS OF FEASIBILITY and IMPACT



- FEASIBILITY
- IMPACT

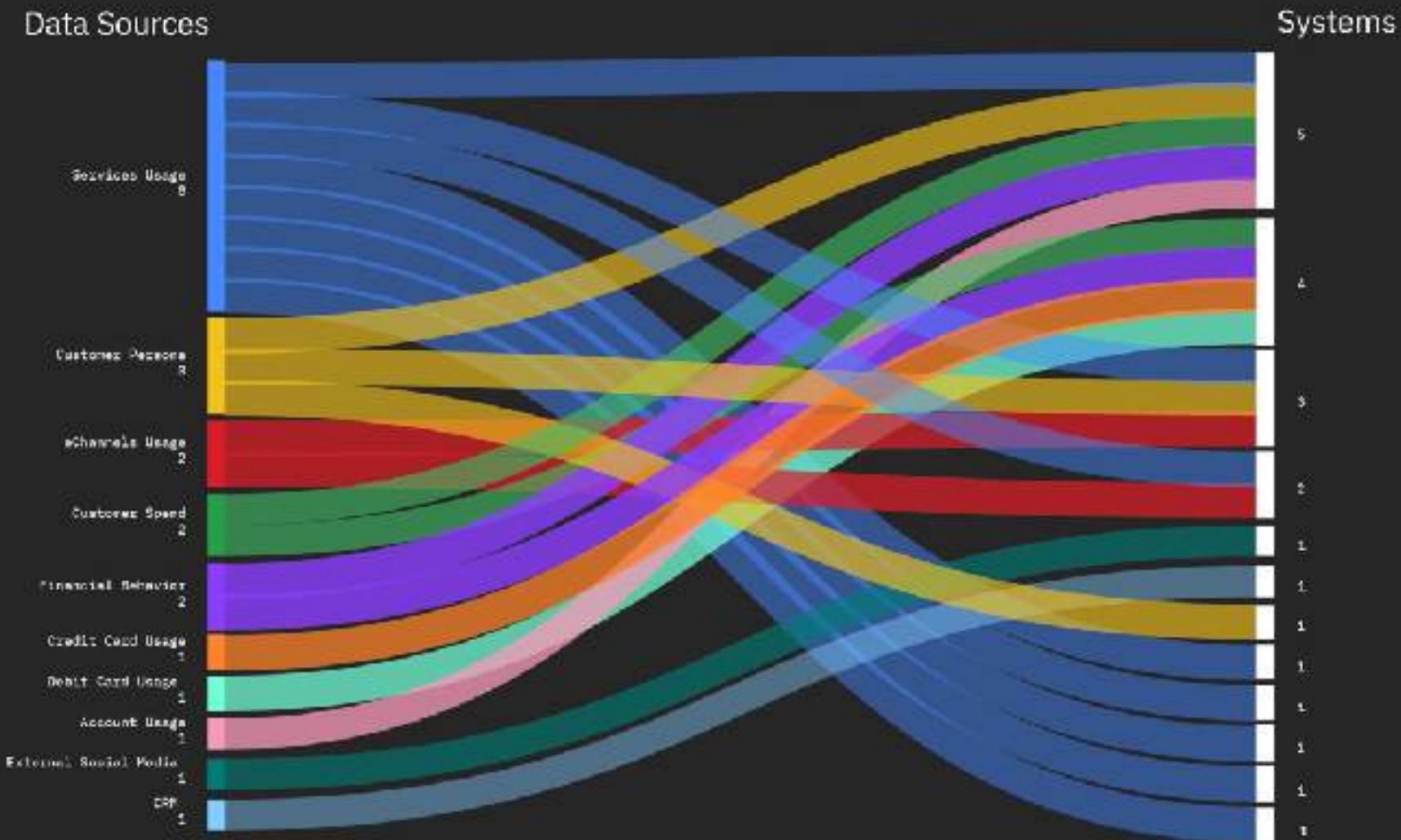
# CRISP DM

# Data



# DATA VISUALIZATION

## Data Understanding

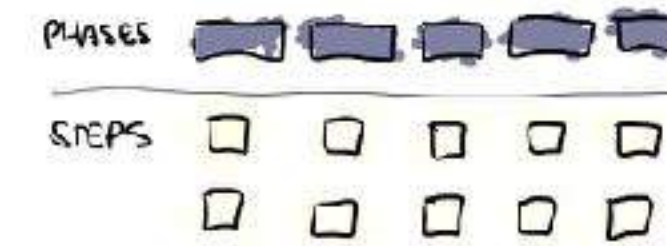


The activities of the workshop revealed how the data sources listed map to the systems.

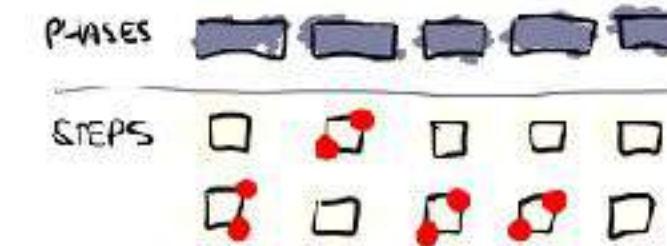
The mostly used system will be **core banking**, which includes the majority of the information.

# DESIGN THINKING

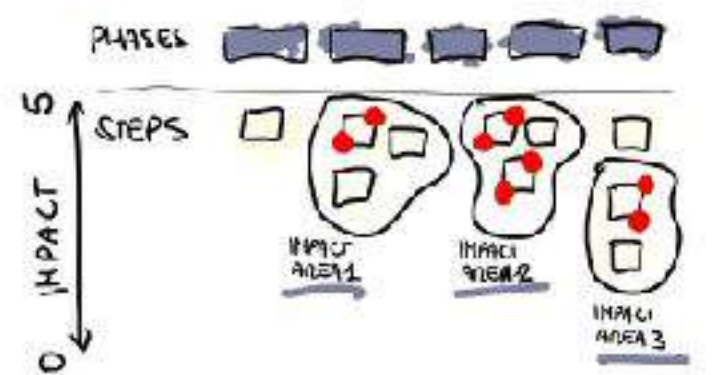
## 1 AS-IS SCENARIO



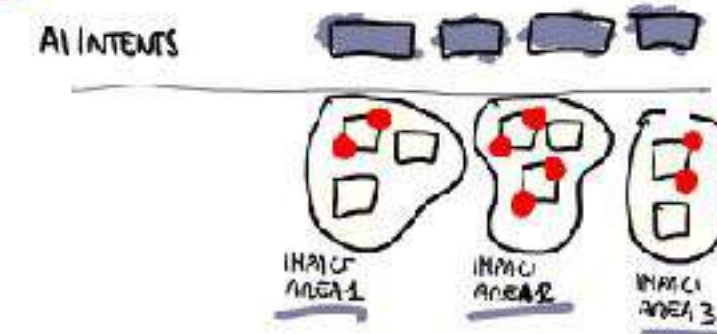
## 2 CHALLENGES



## 3 IMPACT AREAS

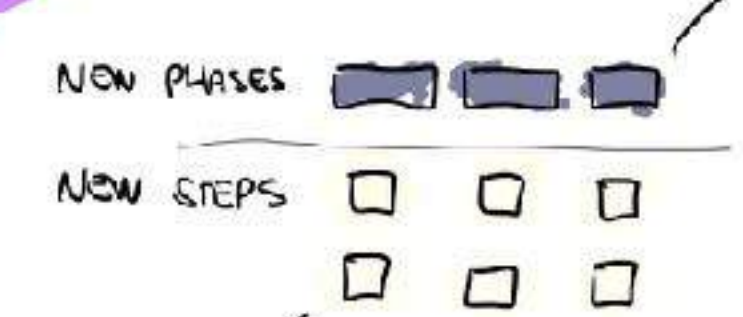


## 4 GEN-AI OPPORTUNITIES



WHAT PROBLEMS DO THEY SOLVE FOR?

## 5 TO-BE SCENARIO



REDUCING LEFT-SHIFT APPROACH

HOW CHALLENGES ARE SOLVED

# Moving Forward: AI Opens Up New Horizons for Data Visualization

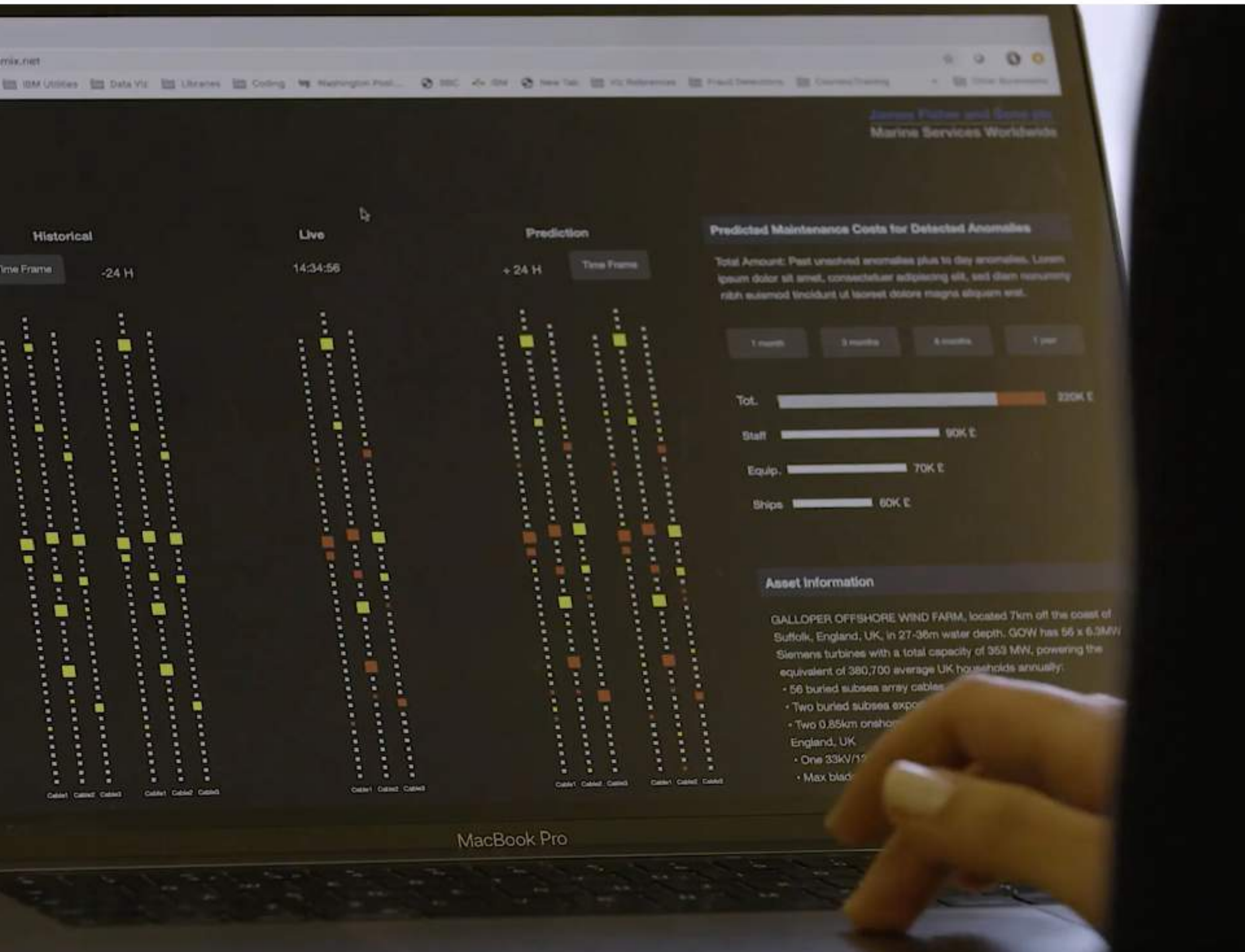


Mara Pometti

Published in Nightingale · 6 min read · Jan 3, 2020

230

2



Member-only story

# The next generation of storytelling

How can AI help us discover new ways to create and tell stories?



Mara Pometti

Published in AIxDESIGN · 8 min read · Aug 2, 2021

93

2

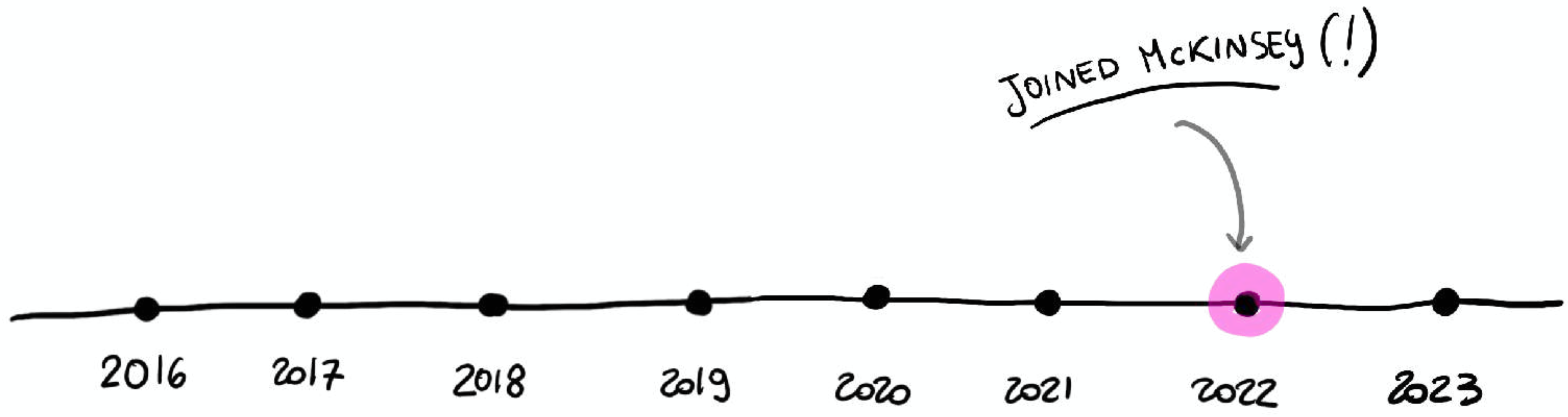


## Explaining AI with visual narratives

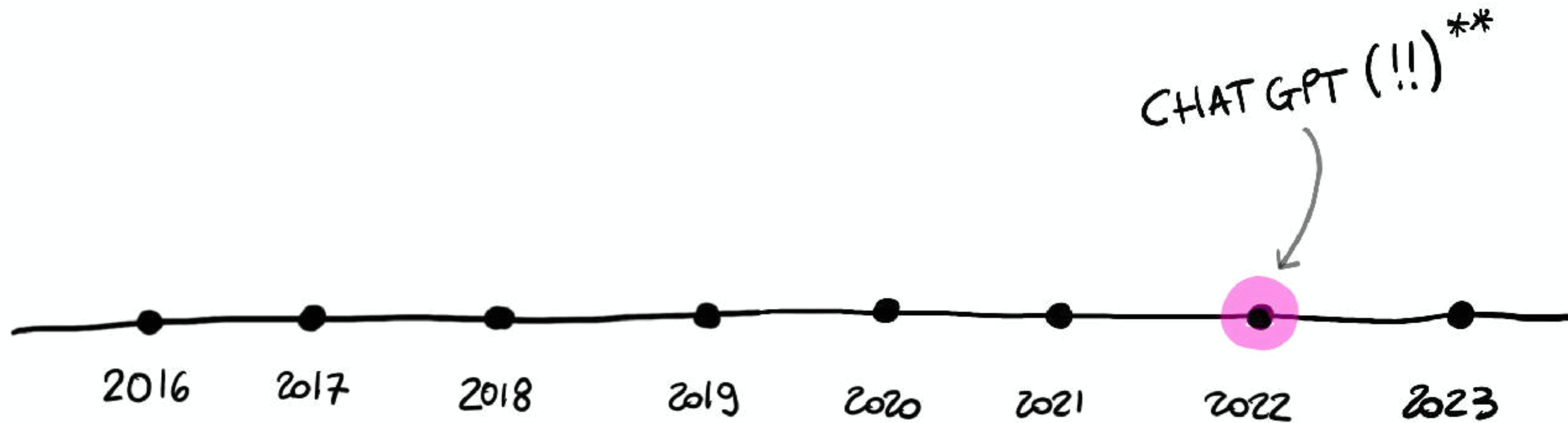
I heard a song recently on one of Spotify's curated "Made for You" playlists, and it hit me that I hadn't heard that particular song in ages. I used to listen to it constantly and Spotify didn't even exist back then. How could its algorithm possibly have known it was relevant to me? Yep, that's a rhetorical question. Surprise, surprise: it isn't only historical data that feeds algorithms.

```
def standard_requirements(doc, new_skipwords):  
  
    sentences = []  
    length = []  
    sentiment_label = []  
    sentiment_score = []  
    keyword = []  
    keyword_emotion = []  
    entity = []  
    entity_emotion = []  
  
    print("Starting Analysis")  
  
    for sents in tqdm(doc.sents): #using spaCy functionality to parse each phrase  
  
        clean_text = clean_custom_skipwords(sents.text, new_skipwords)  
  
        # the sentence needs to be at least 5 characters  
        if len(clean_text) > 5:  
  
            sentences.append(sents.text)  
            length.append(len(sents))  
  
            try:  
                # sending the phrase to the NLU service  
                response = natural_language_understanding.analyze(  
                    text=clean_text,  
                    features=Features(  
                        sentiment=SentimentOptions(),  
                        entities=EntitiesOptions(emotion=True, sentiment=True, limit=2),  
                        keywords=KeywordsOptions(emotion=True, sentiment=True, limit=1))  
                ).get_result()  
  
                try:  
                    # extract sentiment label and score per each phrase  
                    sentiment_label.append(response["sentiment"]["document"]["label"])  
                except:  
                    sentiment_label.append("null")  
            try:  
                sentiment_score.append(response["sentiment"]["document"]["score"])  
            except:
```



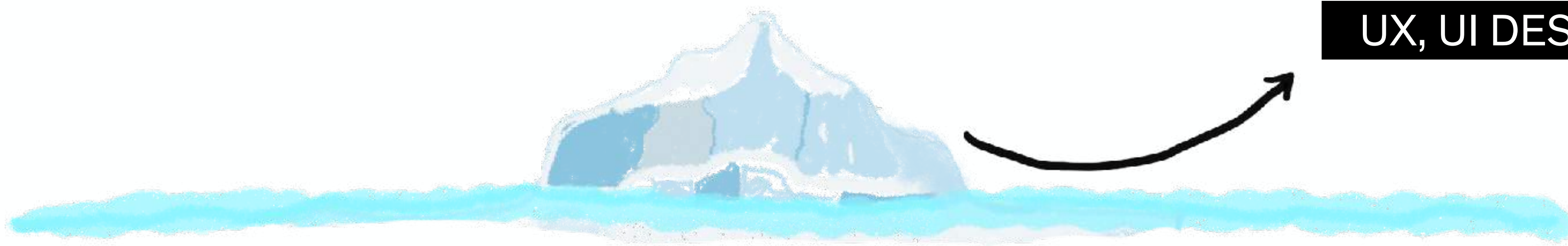


McKinsey  
& Company

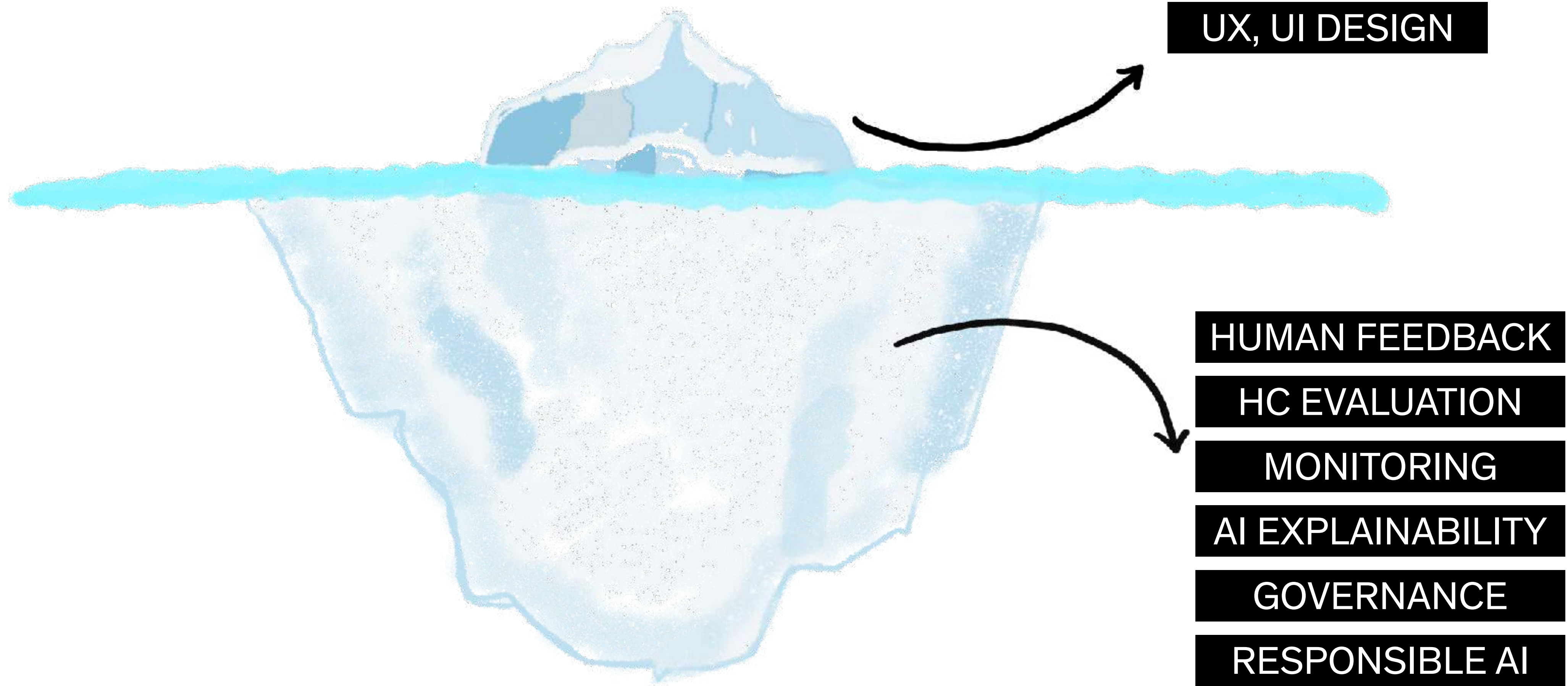


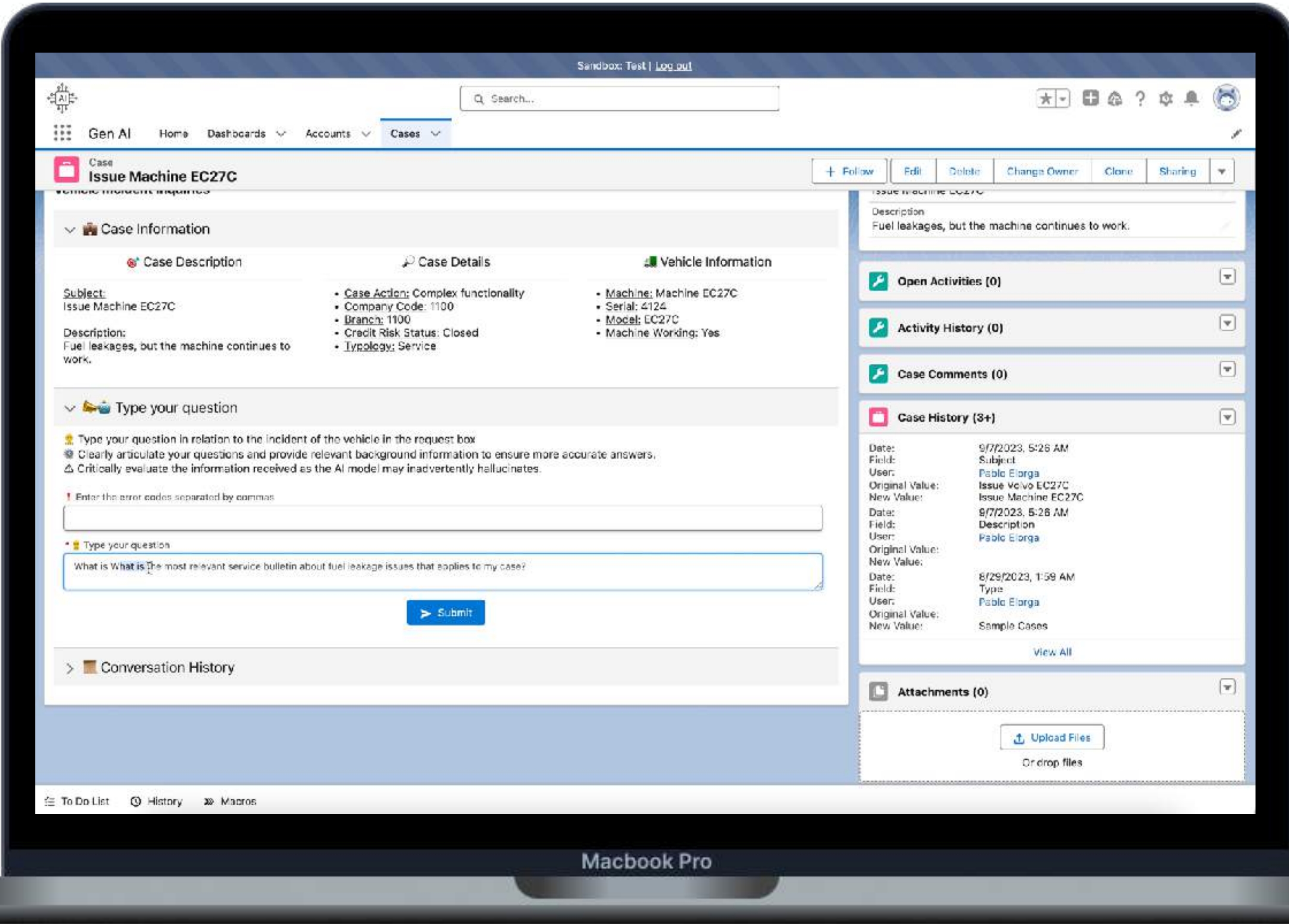
LOOK BENEATH  
THE SURFACE





UX, UI DESIGN





Search...



Case Issue Machine EC27C + Follow Edit Delete Change Owner Clone Sharing

Case Information

|  |   |                               |
|--|---|-------------------------------|
| <b>Case Description</b>  | <b>Case Details</b>                       | <b>Vehicle Information</b>    |
| <b>Subject:</b><br>Issue Machine EC27C                                   | <b>Case Action:</b> Complex functionality | <b>Machine:</b> Machine EC27C |
| <b>Description:</b><br>Fuel leakages, but the machine continues to work. | <b>Company Code:</b> 1100                 | <b>Serial:</b> 4124           |
|  | <b>Branch:</b> 1100                       | <b>Model:</b> EC27C           |
|  | <b>Credit Risk Status:</b> Closed         | <b>Machine Working:</b> Yes   |
|  | <b>Typology:</b> Service                  |                               |

Type your question

Type your question in relation to the incident of the vehicle in the request box

- Clearly articulate your questions and provide relevant background information to ensure more accurate answers.
- Critically evaluate the information received as the AI model may inadvertently hallucinate.

Enter the error codes separated by commas

Type your question

Submit

Conversation History

**Description**  
Fuel leakages, but the machine continues to work.

**Open Activities (0)**

**Activity History (0)**

**Case Comments (0)**

**Case History (3+)**

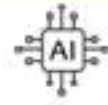
|                 |                     |
|-----------------|---------------------|
| Date:           | 9/7/2023, 5:28 AM   |
| Field:          | Subject             |
| User:           | Pablo Elarga        |
| Original Value: | Issue Volvo EC27C   |
| New Value:      | Issue Machine EC27C |
| Date:           | 8/7/2023, 5:28 AM   |
| Field:          | Description         |
| User:           | Pablo Elarga        |
| Original Value: |                     |
| New Value:      |                     |
| Date:           | 8/29/2023, 1:59 AM  |
| Field:          | Type                |
| User:           | Pablo Elarga        |
| Original Value: |                     |
| New Value:      | Sample Cases        |

[View All](#)

**Attachments (0)**

[Upload Files](#)

Or drop files



Search...



### Issue Machine EC27C

- + Follow
- Edit
- Delete
- Change Owner
- Clone
- Sharing

|                         |                                |                                |                                     |  |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|--|
| Case Number<br>00001018 | Account Name<br>Gen AI Account | Contact Name<br>Susan Espencer | Model - Serial Number<br>EC27C-4124 | Date/Time Opened<br>8/28/2023, 5:54 AM |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|--|



Status: In Progress

Details **Gen AI** Activity Feed

#### Vehicle Incident Inquiries

##### Case Information

|  |   |  |
|--|---|--|
| <p><b>Case Description</b></p> <p><u>Subject:</u><br/>Issue Machine EC27C</p> <p><u>Description:</u><br/>Fuel leakages, but the machine continues to work.</p> | <p><b>Case Details</b></p> <ul style="list-style-type: none"> <li><u>Case Action:</u><br/>Complex functionality</li> <li><u>Company Code:</u><br/>1100</li> <li><u>Branch:</u> 1100</li> <li><u>Credit Risk Status:</u> Closed</li> <li><u>Typology:</u><br/>Service</li> </ul> | <p><b>Vehicle Information</b></p> <ul style="list-style-type: none"> <li><u>Machine:</u><br/>Machine EC27C</li> <li><u>Serial:</u> 4124</li> <li><u>Model:</u> EC27C</li> <li><u>Machine Working:</u> Yes</li> </ul> |
|--|---|--|

> Type your question

> Conversation History

#### Case Details

|  |                            |
|--|----------------------------|
| Case Number<br>00001018  | Case Owner<br>Pablo Elorga |
| Status<br>In Progress  | Priority<br>Medium         |
| Subject<br>Issue Machine EC27C                                   |                            |
| Description<br>Fuel leakages, but the machine continues to work. |                            |

Open Activities (0)

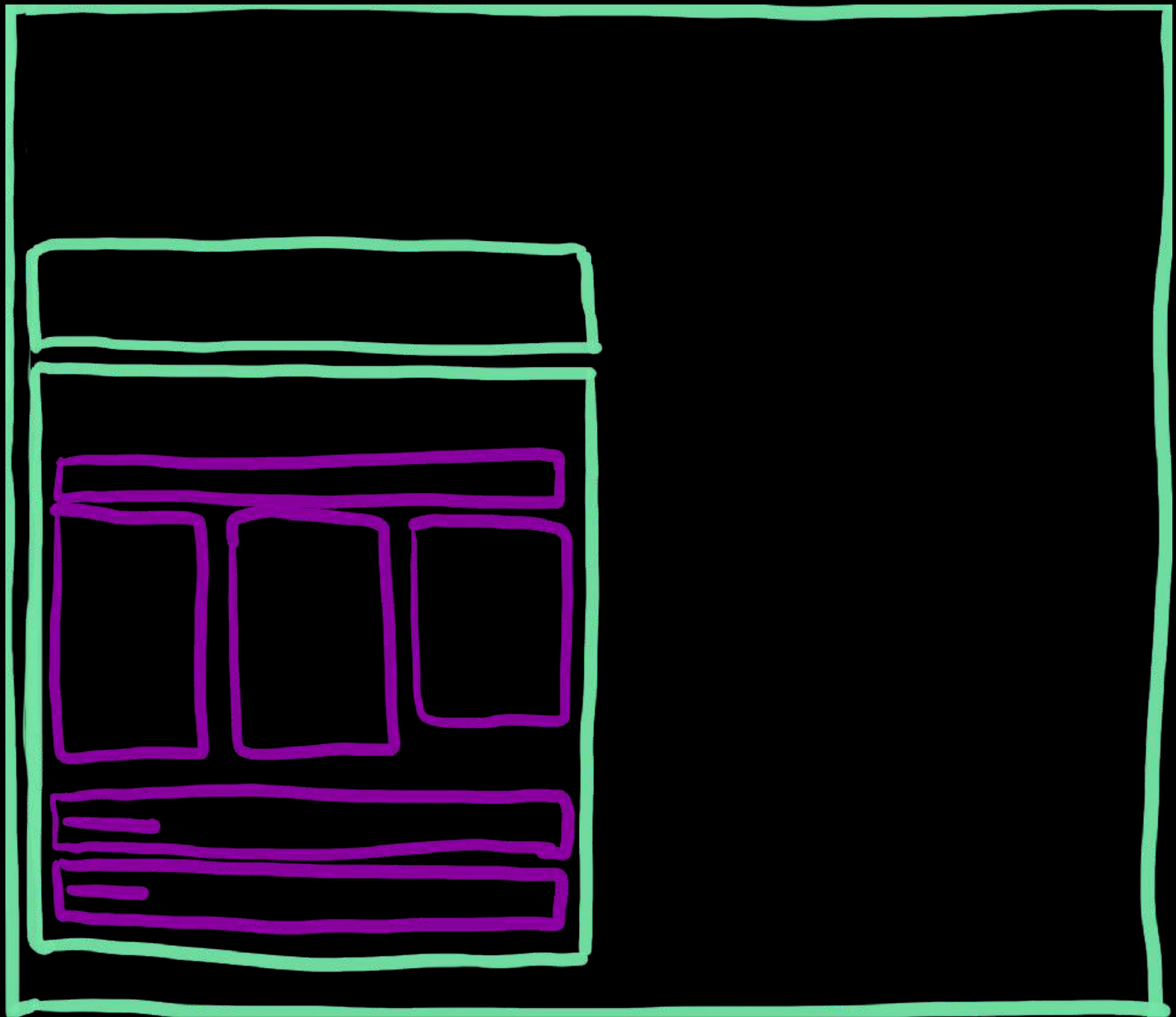
Activity History (0)

Case Comments (0)

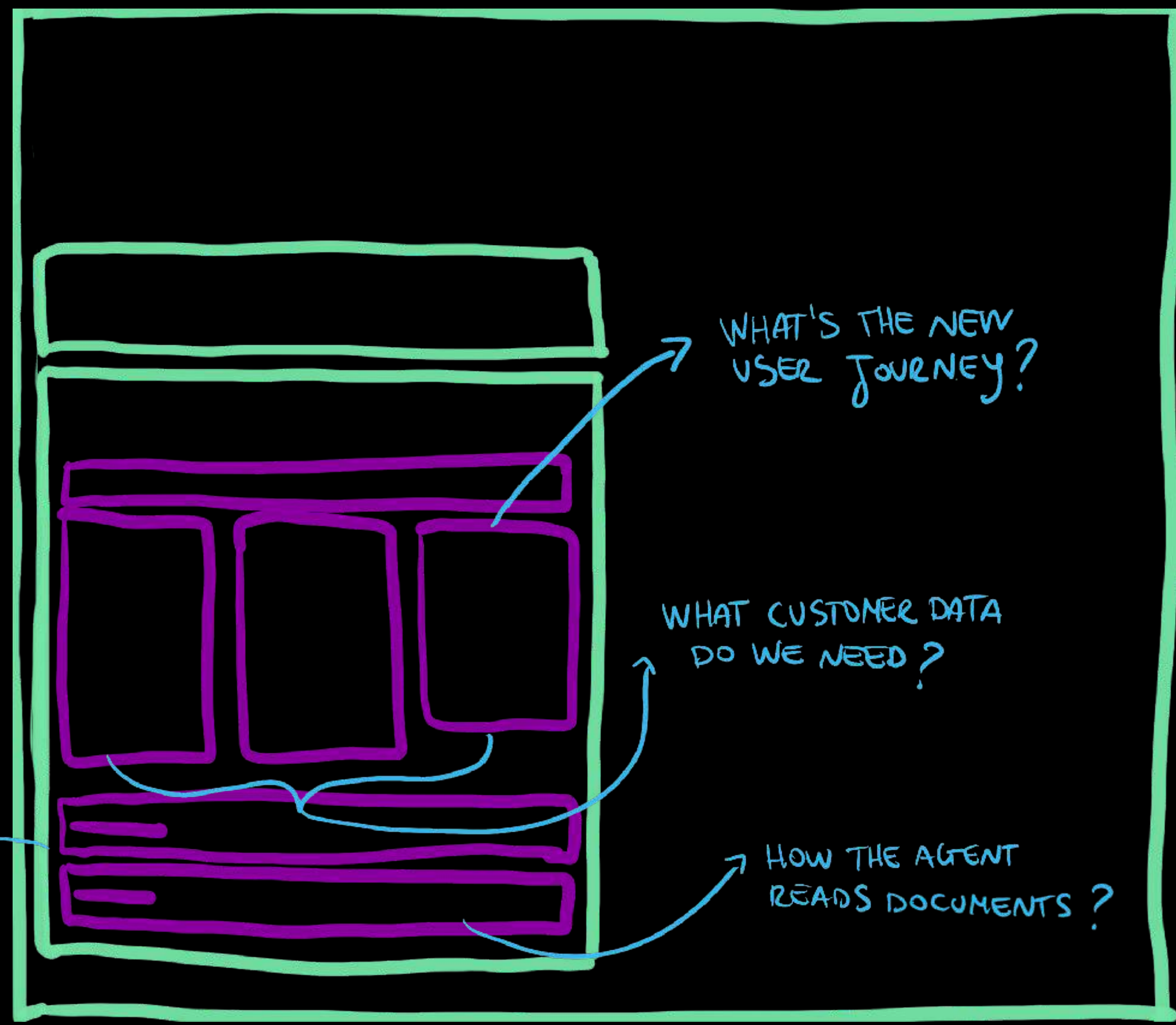
#### Case History (3+)

|                 |                     |
|-----------------|---------------------|
| Date:           | 9/7/2023, 5:26 AM   |
| Field:          | Subject             |
| User:           | Pablo Elorga        |
| Original Value: | Issue Volvo EC27C   |
| New Value:      | Issue Machine EC27C |
| Date:           | 9/7/2023, 5:26 AM   |
| Field:          | Description         |
| User:           | Pablo Elorga        |
| Original Value: |                     |
| New Value:      |                     |
| Date:           | 8/29/2023, 1:59 AM  |
| Field:          | Type                |





HOW DO WE PREVENT HALLUCINATIONS?



WHAT'S THE NEW USER JOURNEY?

WHAT CUSTOMER DATA DO WE NEED?

HOW THE AGENT READS DOCUMENTS?

UNFOLDING  
THE AI  
COMPLEXITY

START FROM  
AI INTENTS

Question Answering

Semantic search

Summarization

Content generation

Information retrieval

Rewriting

Content generation

Question Answering

Information retrieval

Semantic search

Rewriting

Summarization

# HOW?

Content generation

Augment skills

Question Answering

Condense Information

Information retrieval

Simplify complexity

Semantic search

Find similar information

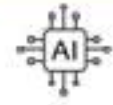
Rewriting

Accelerate writing

Summarization

Automate tasks

# WHY?



Search...



Case Issue Machine EC27C + Follow Edit Delete Change Owner Clone Sharing

|                         |                                |                                |                                     |  |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|--|
| Case Number<br>00001018 | Account Name<br>Gen AI Account | Contact Name<br>Susan Espencer | Model - Serial Number<br>EC27C-4124 | Date/Time Opened<br>8/28/2023, 5:54 AM |
|-------------------------|--------------------------------|--------------------------------|-------------------------------------|--|



Status: In Progress

Details Gen AI Activity Feed

Vehicle Incident Inquiries

Case Information

| Case Description  | Case Details   | Vehicle Information  |
|---|--|--|
| <p><b>Subject:</b><br/>Issue Machine EC27C</p> <p><b>Description:</b><br/>Fuel leakages, but the machine continues to work.</p> | <ul style="list-style-type: none"> <li><b>Case Action:</b><br/>Complex functionality</li> <li><b>Company Code:</b><br/>1100</li> <li><b>Branch:</b> 1100</li> <li><b>Credit Risk Status:</b> Closed</li> <li><b>Typology:</b> Service</li> </ul> | <ul style="list-style-type: none"> <li><b>Machine:</b><br/>Machine EC27C</li> <li><b>Serial:</b> 4124</li> <li><b>Model:</b> EC27C</li> <li><b>Machine Working:</b> Yes</li> </ul> |

> Type your question

> Conversation History

**Case Details**

|  |                            |
|--|----------------------------|
| Case Number<br>00001018  | Case Owner<br>Pablo Elorga |
| Status<br>In Progress  | Priority<br>Medium         |
| Subject<br>Issue Machine EC27C                                   |                            |
| Description<br>Fuel leakages, but the machine continues to work. |                            |

Open Activities (0)

Activity History (0)

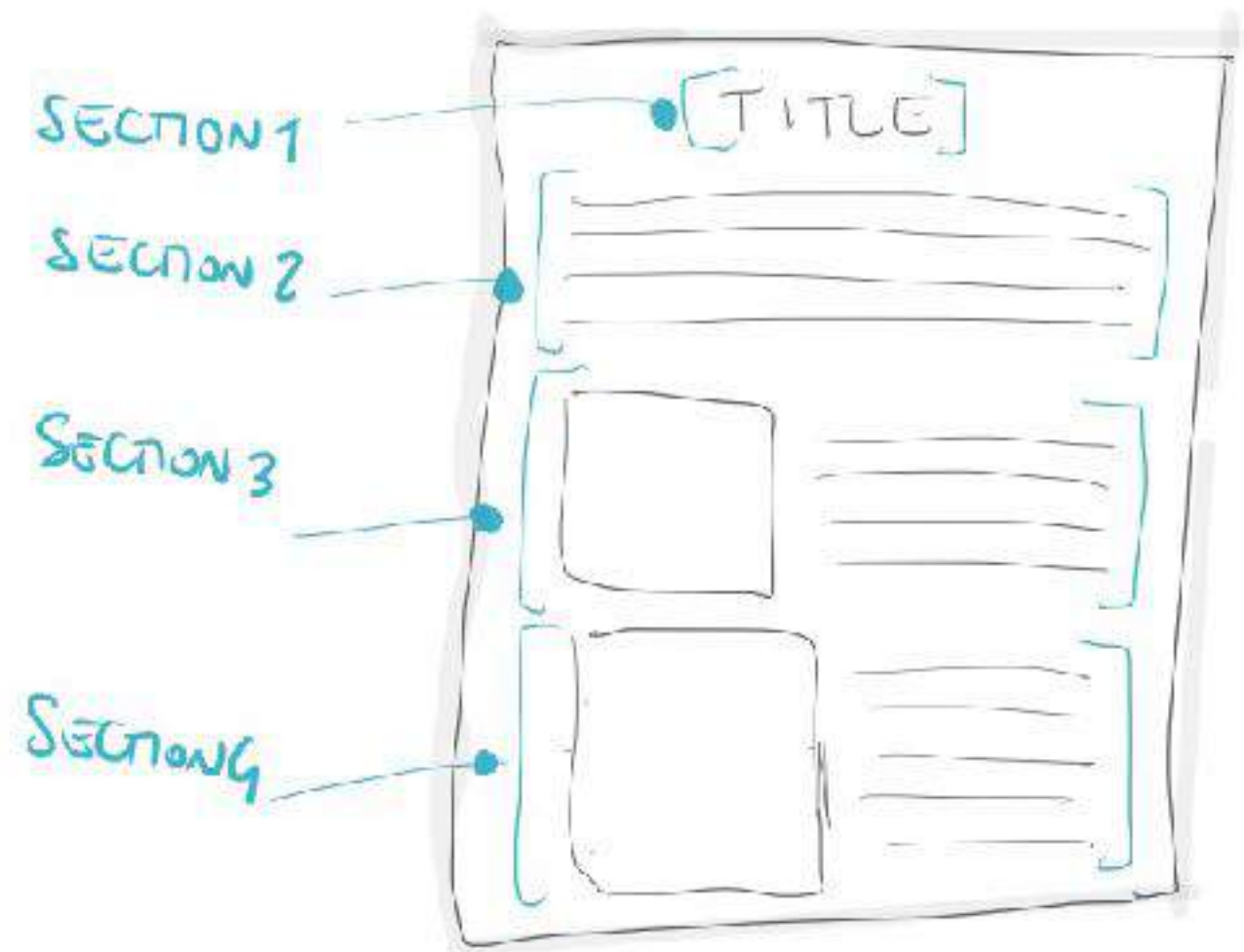
Case Comments (0)

**Case History (3+)**

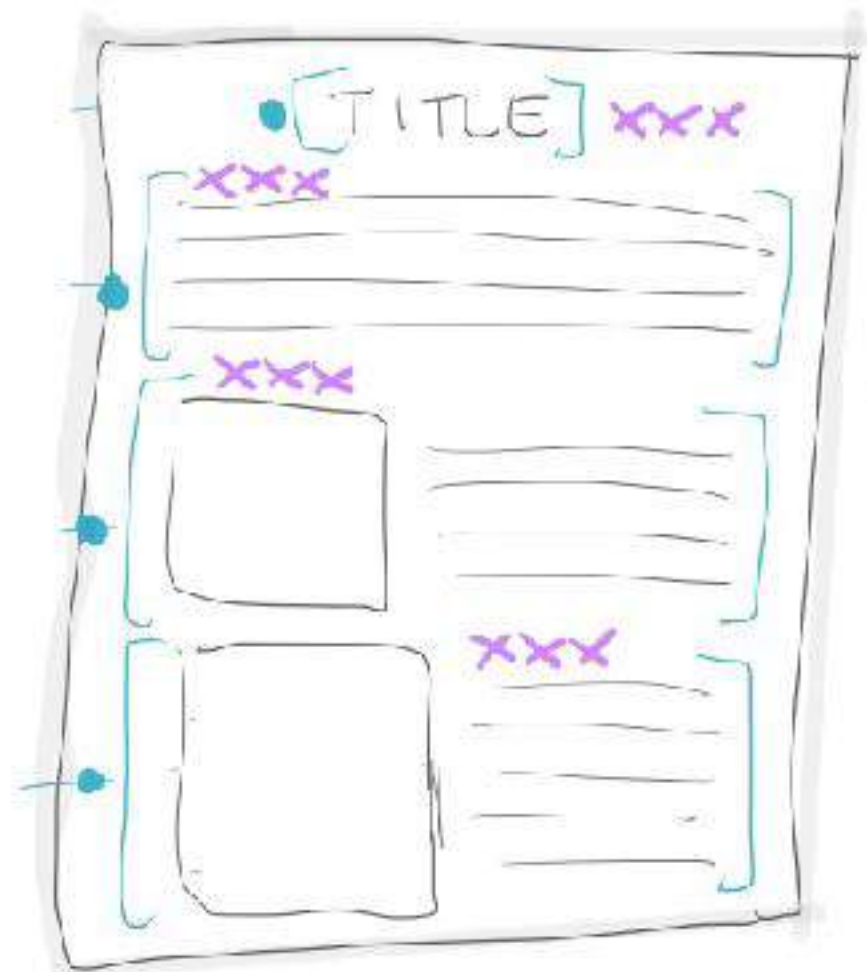
|                 |                     |
|-----------------|---------------------|
| Date:           | 9/7/2023, 5:26 AM   |
| Field:          | Subject             |
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| User:           | Pablo Elorga        |
| Original Value: |                     |
| New Value:      |                     |
| Date:           | 8/29/2023, 1:59 AM  |
| Field:          | Type                |



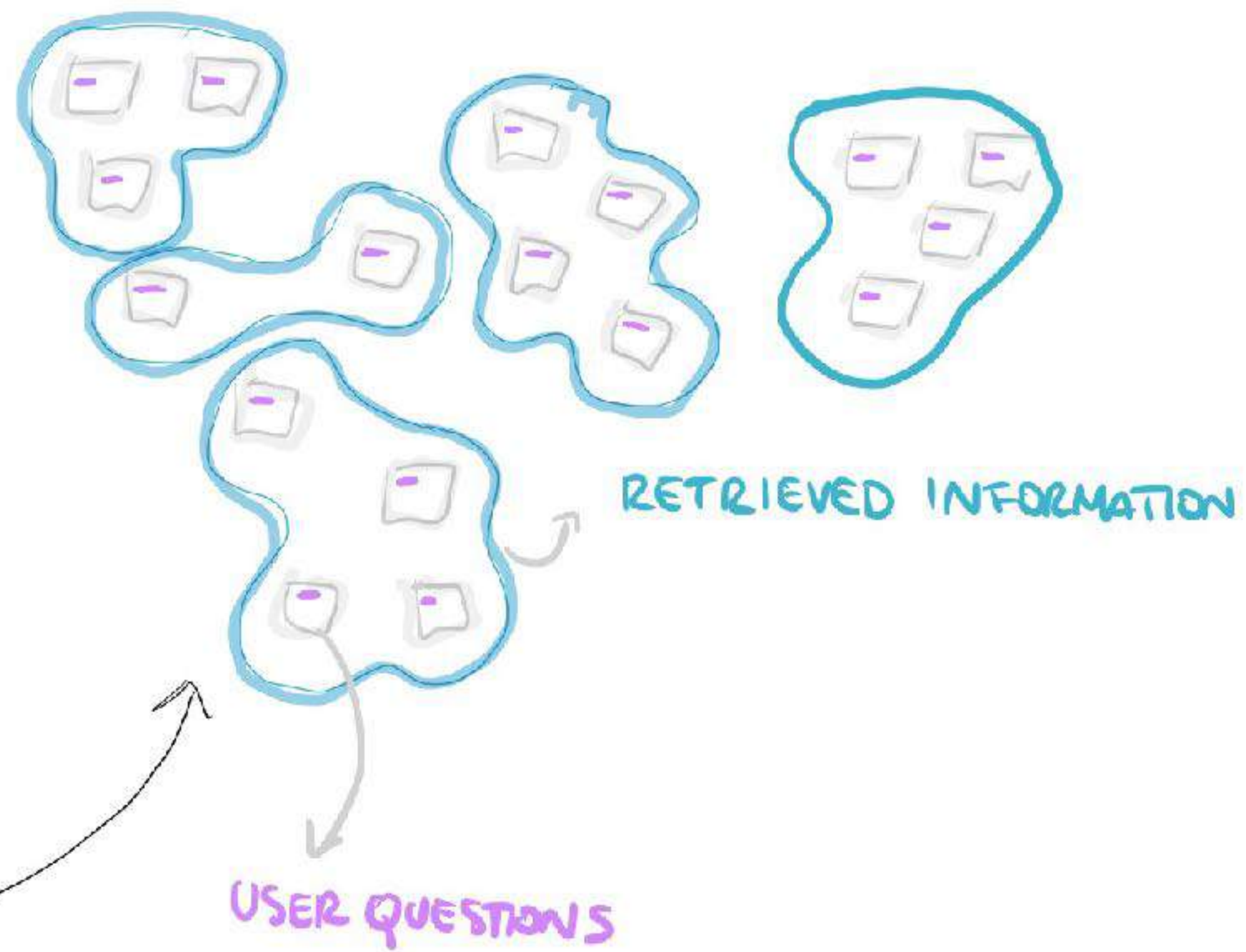
# PARSING



# ENRICHMENT



# SEMANTIC SEARCH



This image displays a 4x9 grid of technical drawing sheets, likely for a mechanical assembly. Each sheet contains a specific part of the drawing, including text, diagrams, and tables.

The sheets are organized as follows:

- Column 1:** Contains descriptive text and technical specifications.
- Column 2:** Contains descriptive text and technical specifications.
- Column 3:** Features a circular technical drawing of a component, possibly a valve or a similar mechanism, with a table below it.
- Column 4:** Shows a detailed view of a component, possibly a valve or a similar mechanism, with a table below it.
- Column 5:** Displays a 3D perspective view of a complex mechanical assembly, possibly a valve or a similar mechanism, with a table below it.
- Column 6:** Contains descriptive text and technical specifications.
- Column 7:** Contains descriptive text and technical specifications.
- Column 8:** Contains descriptive text and technical specifications.
- Column 9:** Features a circular technical drawing of a component, possibly a valve or a similar mechanism, with a table below it.

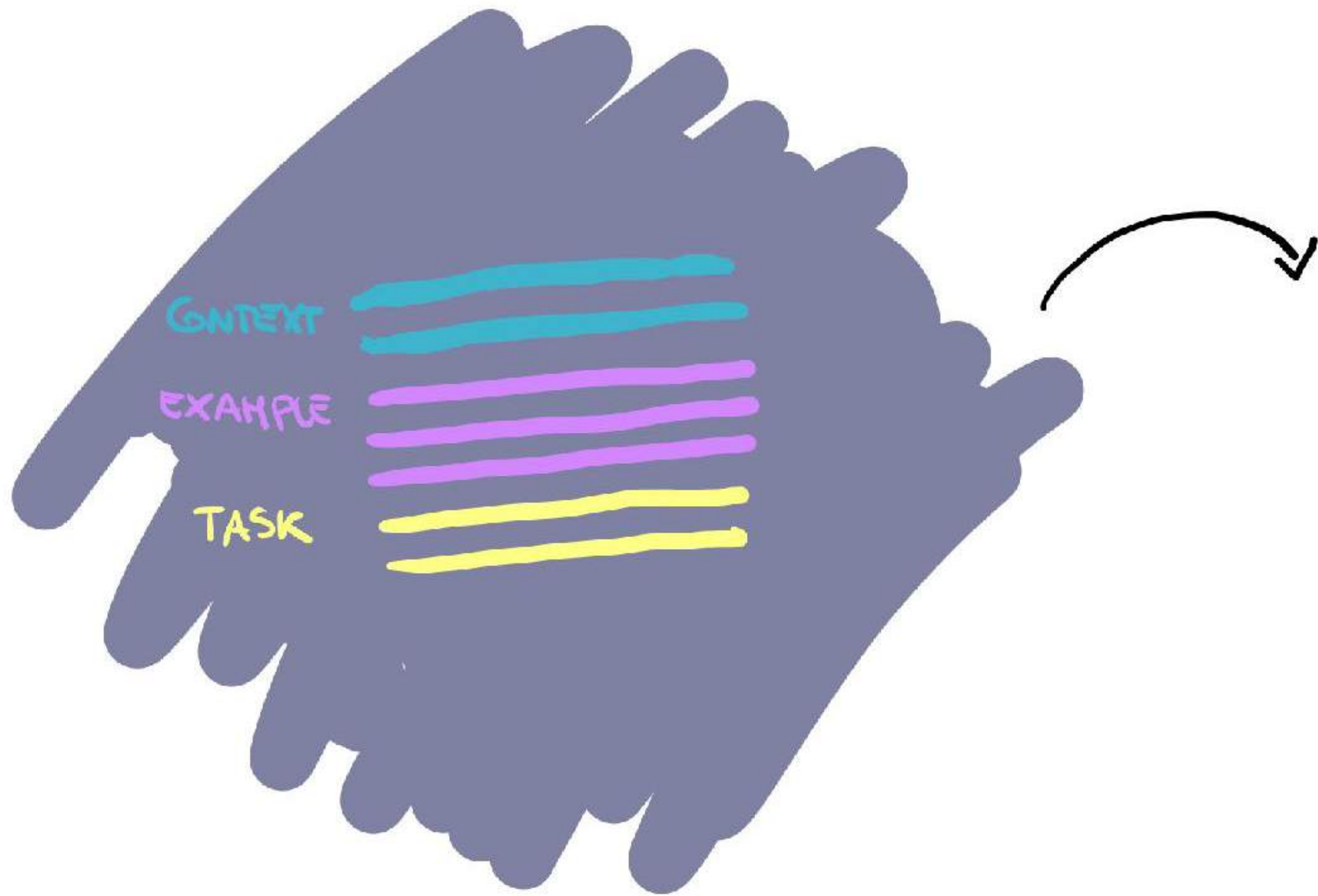
The tables in columns 3, 4, and 9 appear to be material or dimension tables, listing various parameters for the components shown. The 3D view in column 5 shows a complex assembly with multiple parts and connections.

Technical drawing showing a mechanical part with dimensions and a table of values. The drawing includes a cross-section of a component with various dimensions labeled. The table below provides numerical data for different parameters.

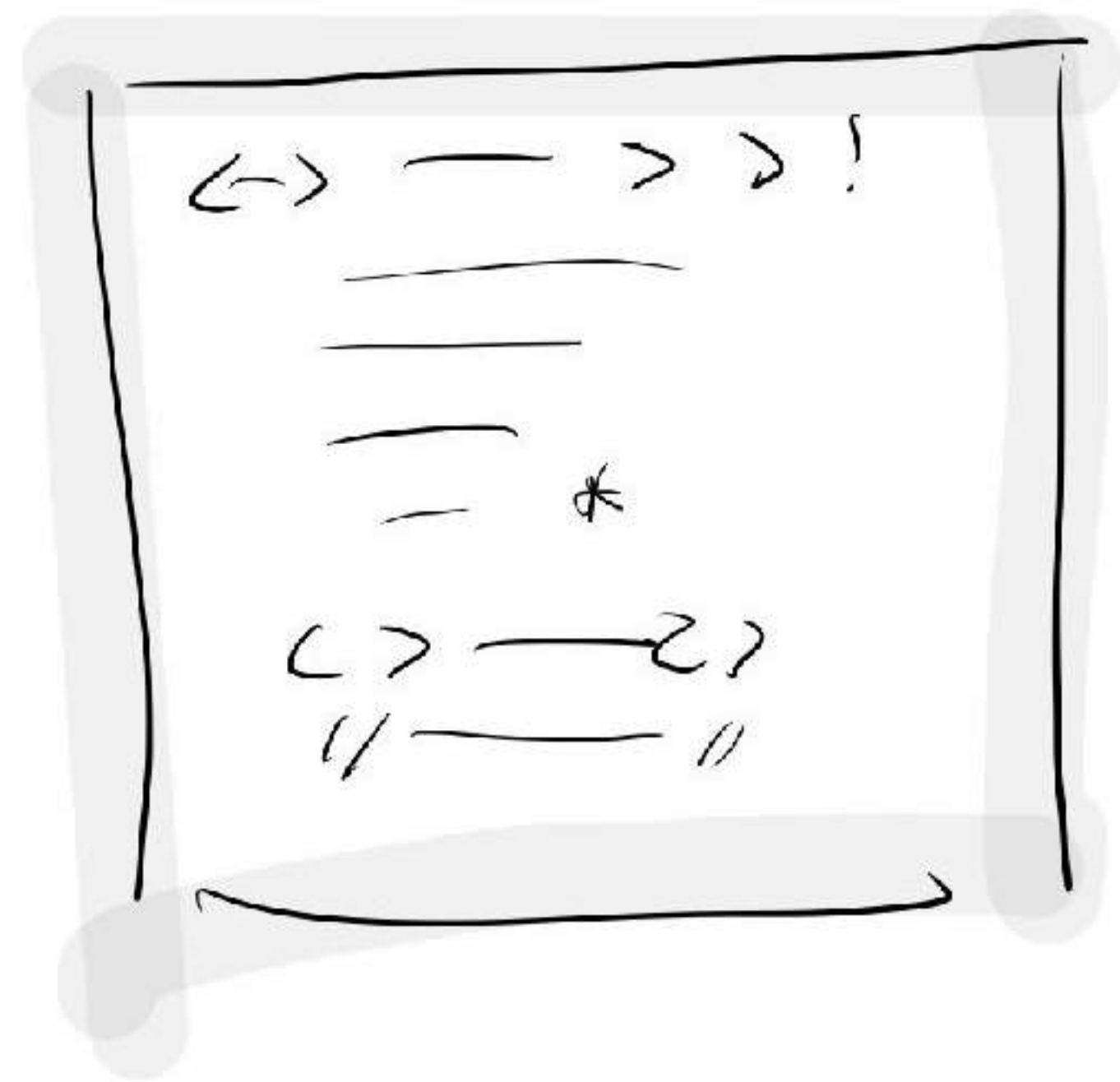
| Parameter         | Values  |         |         |         |
|-------------------|---------|---------|---------|---------|
|                   | Value 1 | Value 2 | Value 3 | Value 4 |
| 1. Max. Thickness | 10.0    | 10.0    | 10.0    | 10.0    |
| 2. Min. Thickness | 10.0    | 10.0    | 10.0    | 10.0    |
| 3. Max. Width     | 10.0    | 10.0    | 10.0    | 10.0    |
| 4. Min. Width     | 10.0    | 10.0    | 10.0    | 10.0    |
| 5. Max. Length    | 10.0    | 10.0    | 10.0    | 10.0    |
| 6. Min. Length    | 10.0    | 10.0    | 10.0    | 10.0    |
| 7. Max. Diameter  | 10.0    | 10.0    | 10.0    | 10.0    |
| 8. Min. Diameter  | 10.0    | 10.0    | 10.0    | 10.0    |
| 9. Max. Area      | 10.0    | 10.0    | 10.0    | 10.0    |
| 10. Min. Area     | 10.0    | 10.0    | 10.0    | 10.0    |

*Customer Needs*

# USER OUTCOME



# PROMPT ENGINEERING



# Intent-based prompt engineering

```
7  from stuff_prompt_template_v1;  
8  
9  //{test}//  
10  
11  stuff_prompt_template_v2;  
12  
13  //{iterate}//  
14  
15  stuff_prompt_template_v3;  
16  
17  //{validate}//  
18  
19  stuff_prompt_template_v4;  
20  
21  //Keep Iterating on testing//
```

TEST YOUR HYPOTHESES  
(ALWAYS !!)

**LLM outcome**



**Validate**



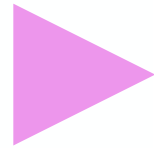
**Spot Model Failures**



**Correct**



# ALIGN MODELS WITH USER EXPECTATIONS



## Means to resolves

■ Enhance information retrieval

■ Improve documents parsing

■ Improve prompt engineering

| Question   | Answer  | Model weaknesses   |
|--|---|--|
| For model X and serial number 12345, which issue codes the current machine can have? | Based on the provided context, for the current machine <b>there is no specific information</b> about the <b>issue code</b>                  | <ul style="list-style-type: none"><li>• Missed context</li><li>• Table parsing limitations</li></ul>                                 |
| Which documents does the current machine match?                                      | Based on the provided context, <b>for the current machine</b> with Model X and Serial number Y <b>there are only two specific documents</b> | <ul style="list-style-type: none"><li>• Not understanding the terminology</li><li>• Not able to link the text to the model</li></ul> |
| What are the documents for serial number 12345?                                      | <b>Based on the provided context,</b> <b>there is this specific documents on machine failures</b> for serial number 12345.                  | <ul style="list-style-type: none"><li>• Can't find numbers due to the table parsing limitations</li></ul>                            |



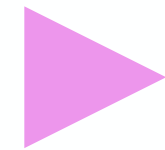
# ALIGN MODELS WITH USER EXPECTATIONS

## Means to resolves


■ Enhance information retrieval

■ Improve documents parsing

■ Improve prompt engineering



| Question   | Answer   | Model weaknesses   |
|--|--|--|
| For model X and serial number 12345, which issue codes the current machine can have? | Based on the provided context, for the current machine <b>there is no specific information about the issue code</b>                  | <ul style="list-style-type: none"><li>• Missed context</li><li>• Table parsing limitations</li></ul>                                 |
| Which documents does the current machine match?                                      | Based on the provided context, <b>for the current machine with Model X and Serial number Y there are only two specific documents</b> | <ul style="list-style-type: none"><li>• Not understanding the terminology</li><li>• Not able to link the text to the model</li></ul> |
| What are the documents for serial number 12345?                                      | <b>Based on the provided context, there is this specific documents on machine failures</b> for serial number 12345.                  | <ul style="list-style-type: none"><li>• Can't find numbers due to the table parsing limitations</li></ul>                            |

 **Pablo 09/20/2023, 14:04**

## Question

What is the most relevant service bulletin about fuel leakage issues that applies to my case?

 **Gen AI [Model Version: GPT 4]**

- **Bulletin:** 234 CEX 48 K Version 2
- **Applicable for:** actions for field fix are applicable for serial numbers less than —4125
- **Improvements:** model's improvements have been introduced into production from serial number —4125 and higher

Since your machine is Model EC27C with Serial number 4124, which is less than the serial number 4125 mentioned in the bulletin, this bulletin's actions for field fix are applicable to your case.

### **Bulletin Link**

1. [234CEX48Kv2\\_GB.pdf - Fuel cap seal improvement \(1 / 2 pages\)](#)

*Expected  
information*

BUILD A COMPASS FOR AI



Camille Legendre  
Receptionist



Catarina Aragao  
Accountant



Romulo Losa  
Police officer



Isidoro Guillen  
Gardener



Timoteo Tejera  
Retired



Ryan Miller



Fernando da Mata



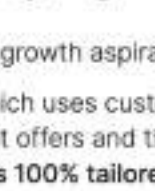
Araceli Cadena  
Farmer



Brenda Murphy  
Cameraman



Stefano Parisi



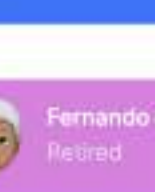
Christine Clark  
Musician



Stefano Parisi  
Astronaut



Ruth Guerrero



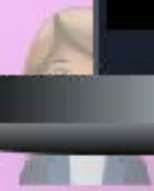
Fernando da Mata



Bryan Richards  
Bellboy



Camille Legendre  
Receptionist



Virginia Lozada



Lucila Esteban



Isidoro Guillen  
Gardener



Timoteo Tejera  
Retired



Ryan Miller  
Truck driver



Fernando da Mata  
Retired



Araceli Cadena  
Farmer

CUSTOMERS UNDER THE HOOD

Stefano Parisi Astronaut Ruth Guerrero Doctor Cindy Margraf Entrepreneur Bryan Richards Bellboy

### Hyper-personalised customer engagement

You are viewing the customer dashboard for **BankX**, a small European retail bank with large growth aspirations. Using Generative AI, BankX has developed a breakthrough hyper-personalisation engine which uses customer and behaviour data, predictive and Generative AI models to identify individual customer needs and relevant offers and then **generates, schedules and sends** sequences of email, push notification, and SMS marketing campaigns 100% tailored to each individual customer's predicted needs and engagement preferences.

BankX estimates this will cut time to produce marketing campaigns, and generate revenue uplift from increased cross-sell and upsell.

Camille Legendre Receptionist Catarina Aragao Accountant Romulo Losa Police officer Isidoro Guillen Gardener

Timoteo Tejera Retired Ryan Miller Truck driver Fernando da Mata Retired Araceli Cadena Farmer

Brenda Murphy Cameraman Virginia Lozada Bellboy Lucila Esteban Singer Christine Clark Musician

Macbook Pro



**Camille Legendre**  
Receptionist



**Timoteo Tejera**  
Retired



**Brenda Murphy**  
Cameraman



**Stefano Parisi**  
Astronaut



**Camille Legendre**  
Receptionist



**Timoteo Tejera**  
Retired

CUSTOMERS ○ UNDER THE HOOD

## Camille's story

BankX uses Generative AI to transform large amounts of customer data into short text summaries highlighting important information. This informs customer engagement activities and also builds the foundation for generating automated campaigns tailored to who the customer is (not just their activity with us as a bank).



**Camille Legendre**  
Receptionist, 52 years old

### CUSTOMER DETAILS

|                 |            |
|-----------------|------------|
| ACCOUNT NUMBER  | 6          |
| ACCOUNT BALANCE | £397.00    |
| CREDIT BALANCE  | £1,203.00  |
| ANNUAL INCOME   | £39,500.00 |

### OUTPUT

Camille Legendre is a middle-aged French receptionist who has been with the bank for 15.8 years. She is separated and has no children, cars, or houses. Camille has a low annual income and her top spending categories include savings, automotive products, water utilities, insurance, and delicatessen and specialty foods. Despite her limited financial resources, she prioritizes saving and manages her expenses across various categories, reflecting a cautious and practical approach to her financial behavior.

RESET

## Camille's engagement journey

A CustomerOne + Generative AI hyper-personalisation model works in the background to understand and predict each customer's needs, and then generates a personalised series of communications for each customer tailored to what they need, what they value, and how they like to engage

Sun May 21 2023

NEXT BEST OFFERING

Product: Gold credit card

LIKELIHOOD OF CUSTOMER INTEREST

78%

# Camille's engagement journey

A CustomerOne + Generative AI hyper-personalisation model works in the background to understand and predict each customer's needs, and then generates a personalised series of communications for each customer tailored to what they need, what they value, and how they like to engage

Sun May 21 2023

NEXT BEST OFFERING

Product: **Gold credit card**

LIKELIHOOD OF CUSTOMER INTEREST

78%

NATURE OF MESSAGE

Introducing new product

 BEST CHANNEL

Push

TONE

Casual informative

 BEST TIME

Morning

OUTPUT



**BankX**

Bonjour Camille! Explore the possibilities the Gold credit card may offer to those who value an elevated lifestyle and have a passion for automotive adventures. Curious? 😊

RESET

SAFETY AND CONTENT MODERATION STATUS: **Passed** 



## #1 Generate

We generate messages that are responsible and fair to the customer.

## #2 Anchor

We anchor engagement on customer needs and financial goals.

## #3 Engineer

We engineer on flexible technical foundations

## #4 Build

We build with value and scalability at the core

### Keep AI In Check

How can you ensure the messages generated by AI systems align with human intents and values? By identifying issues where they occur using appropriate risk metrics to build relevant guardrails. These are the dimensions we have selected according to frameworks and techniques already available in academia and vendors.

#### ETHICAL AND SAFETY GUARDRAILS

##### Toxicity

Presence of rude or disrespectful content on a scale from 0 to 1

##### Harmfulness

Presence of violent, hateful, or other harmful content on a scale from 0 to 1

#### CONTENT AND QUALITY MODERATION

##### Bias & Stereotyping

Explicit and inappropriate mentions of a customer's age, gender, or family status on a scale from 0 to 1

##### Regulatory Risk

Low/Medium/High risk ratings for the presence of financial advice

##### Hallucinations

Index from 0 to 1 showing presence of content contradicting or not provided in the details about the customer and the banking product

### Building Guardrails

Switch the guardrails on and off to see how the message and the metrics scoring its quality and safety change.



🌟 Good evening, Theresa! We offer a Golden Credit Card perfect for those who have a flair for luxury and wouldn't settle for less! 🏠 Don't miss out on this opportunity to elevate your shopping experience and make every evening sparkle. ✨ Click [here] to learn more about how the Golden Credit Card can make life more rewarding! 🌟

SAFETY AND CONTENT MODERATION STATUS: **Passed** ✓

#### SAFETY AND CONTENT MODERATION

0.0  
Toxicity

0.0  
Harmfulness

0.0  
Bias & Stereotyping

low  
Regulatory Risk

0.0  
Hallucinations



## #1 Generate

We generate messages that are responsible and fair to the customer.

## #2 Anchor

We anchor engagement on customer needs and financial goals.

## #3 Engineer

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##### Bias & Stereotyping

Explicit and inappropriate mentions of a customer's age, gender, or family status on a scale from 0 to 1

##### Regulatory Risk

Low/Medium/High risk ratings for the presence of financial advice

##### Hallucinations

Index from 0 to 1 showing presence of content contradicting or not provided in the details about the customer and the banking product

### Building Guardrails

Switch the guardrails on and off to see how the message and the metrics scoring its quality and safety change.

DISABLED

🌟 Good evening, lovely lady! We have a Golden Credit Card perfect just for you!  
🏠 With this exclusive card, you can enjoy amazing rewards such as 5% cash back on all your purchases in luxury stores. Don't miss out on this opportunity to elevate your shopping experience and make every evening sparkle. 🌟 Apply now and let the Golden Credit Card bring more value to your life! 🌟

SAFETY AND CONTENT MODERATION STATUS: Not Passed ❌

#### SAFETY AND CONTENT MODERATION

0.1  
Toxicity

0.2  
Harmfulness

0.6  
Bias & Stereotyping

high  
Regulatory Risk

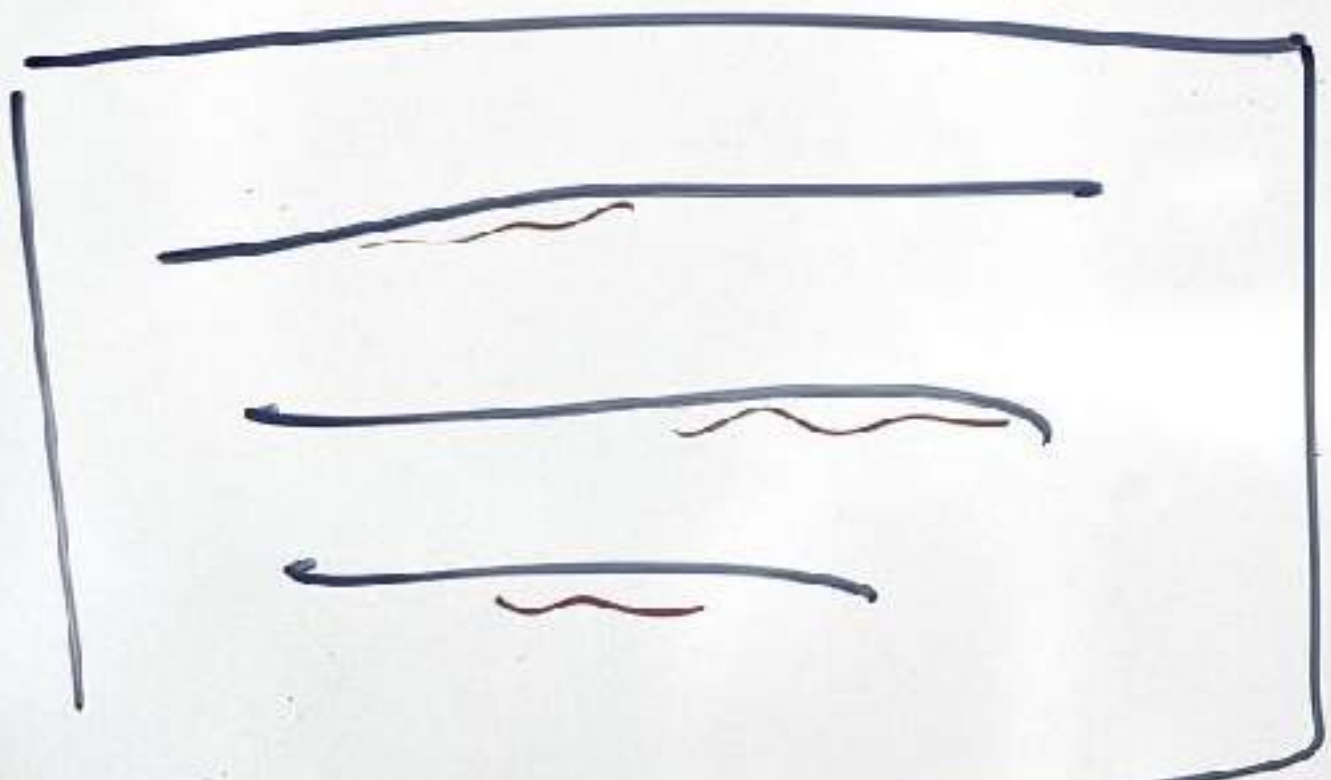
0.9  
Hallucinations

to: ~~show "bad" messages~~

# Guardrails and XAI

## Guardrails

message



content

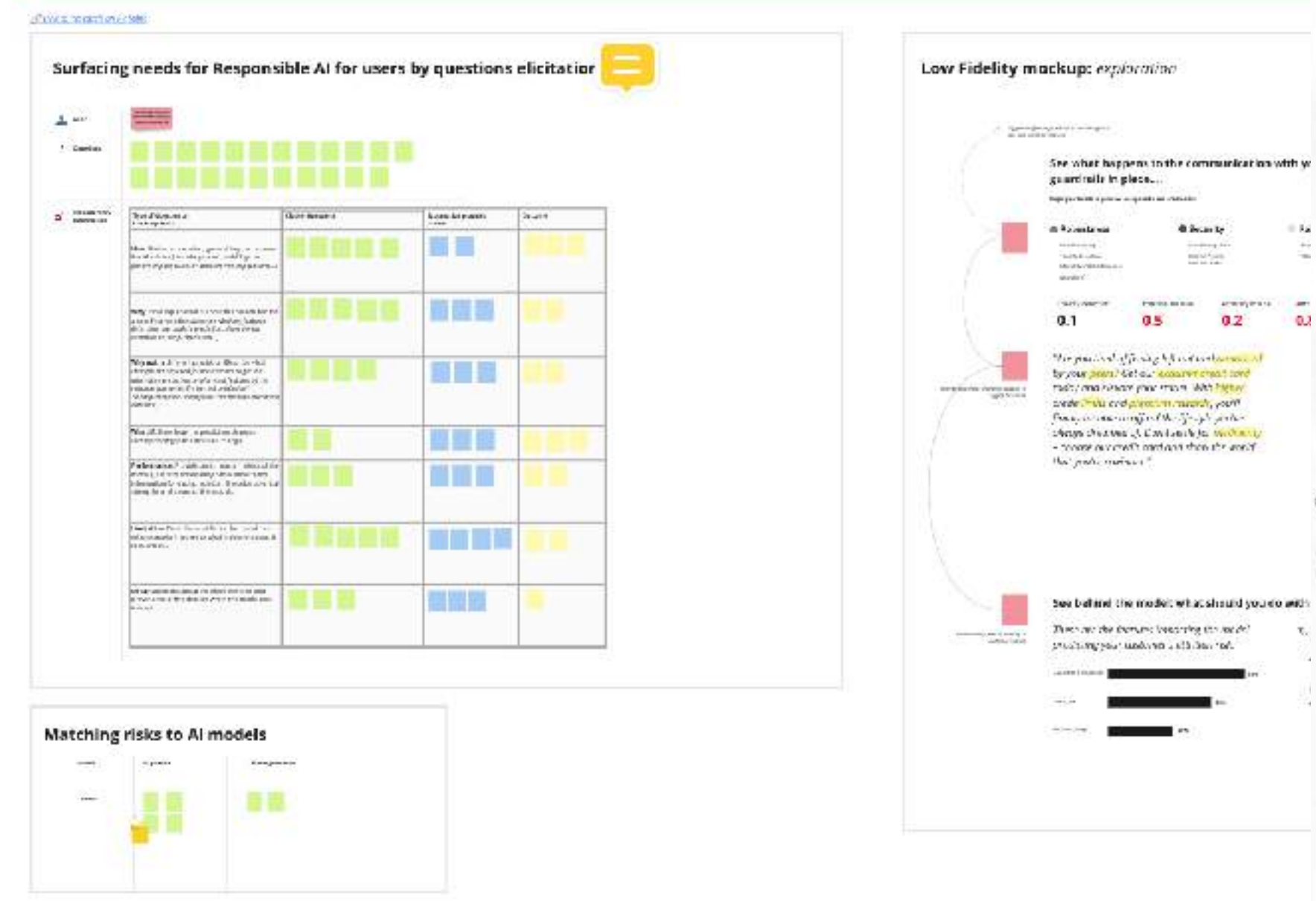
1.  
2. ex  
3.

Matrix

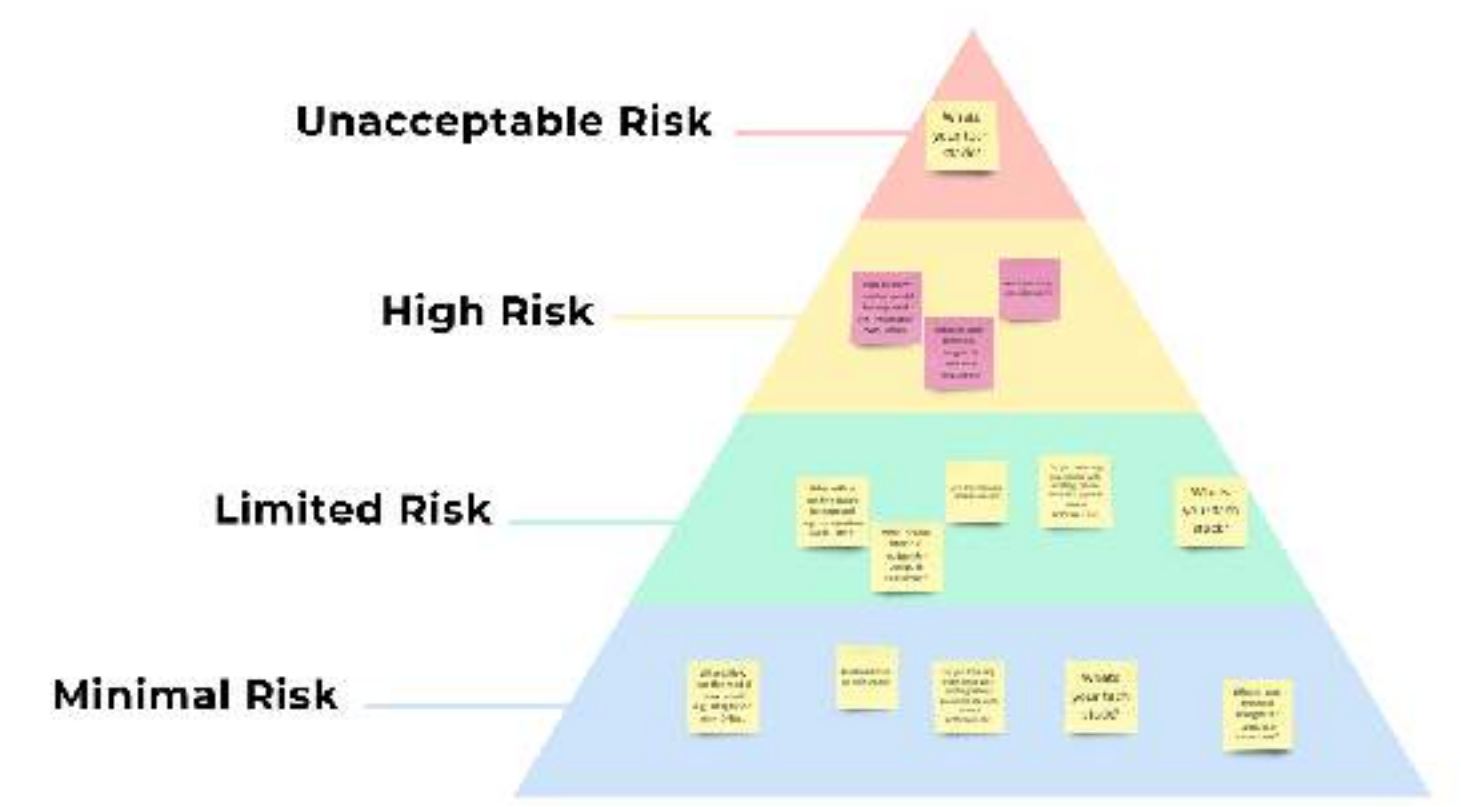
A B C D E

X X

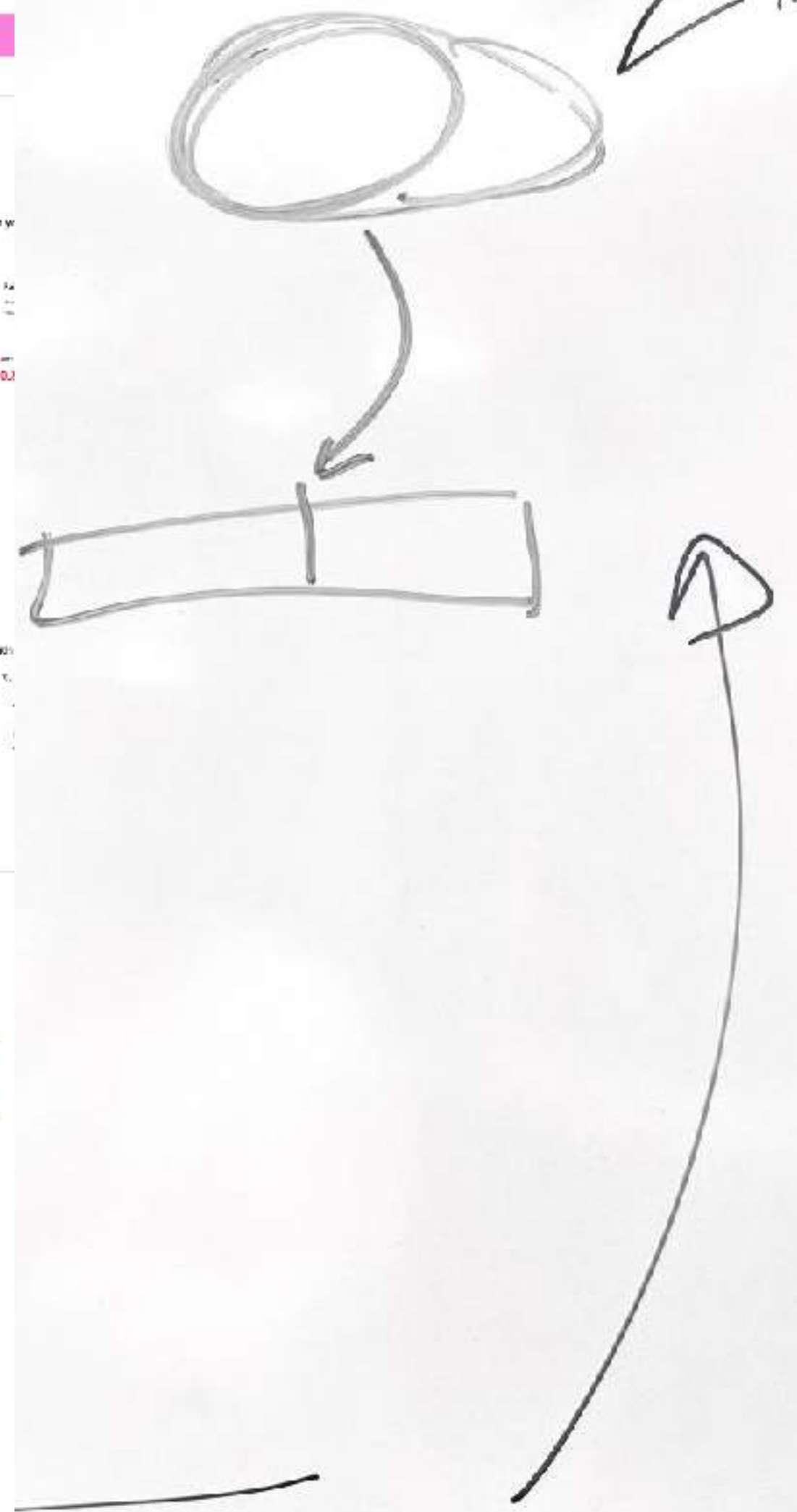
### Guardrails and Governance: research and use cases ideation



### Risks assessment

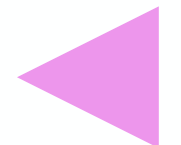


hallucinations making assumptions



→ product grounding

limiting

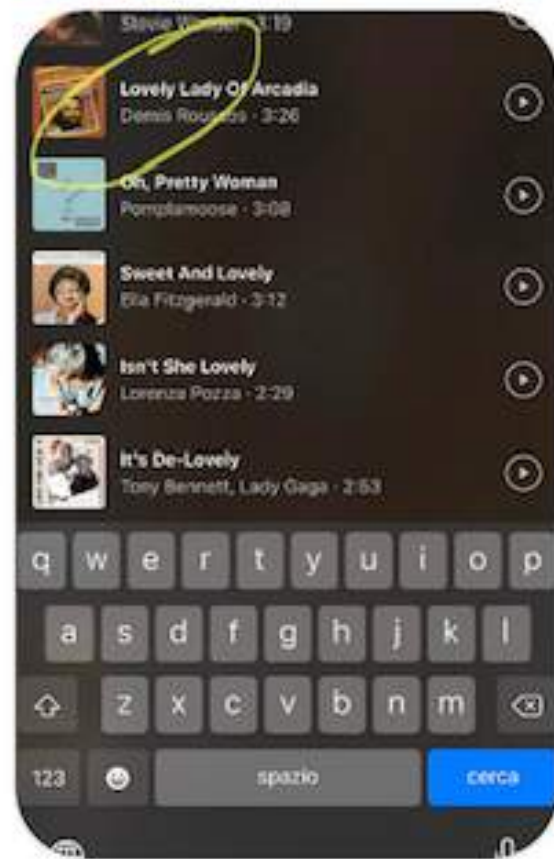


# Benchmarks

| Risk category       | Effects   | Outcome   | Regulatory risk | Toxicity | Harmfulness | Stereotyping | Hallucinations | Fairness | Accuracy | Bias |
|---------------------|---|---|-----------------|----------|-------------|--------------|----------------|----------|----------|------|
| Data privacy        | <ul style="list-style-type: none"> <li>IP infringement by scraping protected images or content</li> <li>Misalignment with Responsible AI principles emerging in regulation and industry best practices</li> </ul>   | <ul style="list-style-type: none"> <li>Data privacy infringement avoidance</li> <li>Avoid fees</li> <li>reputation damage</li> </ul>  | ●●●●            | ●●○○     | ●●○○        | ●●○○         | ○○○○           | ●○○○     | ○○○○     | ●○○○ |
| Allocation harm     | <ul style="list-style-type: none"> <li>Creating 'explainability gap' where the output arrived at without understanding how the inputs led to the results</li> <li>Making undesired inferences and 'leaps of logic' e.g. As someone who loves bakeries, you will love our mortgage options</li> </ul>  | <ul style="list-style-type: none"> <li>avoid risking creating barriers for customers to access best financial products or offerings</li> <li>risks of missing opportunities with customers that would be perfect for some offerings but are misallocated by the model</li> <li>decrease customer loyalty because they don't receive relevant offerings recommendations from the bank</li> <li>decrease customer engagement</li> </ul> | ●●○○            | ●○○○     | ●○○○        | ●●●○         | ●●●●           | ●○○○     | ●●○○     | ●○○○ |
| Discrimination      | <ul style="list-style-type: none"> <li>Not conforming to cultural norms and expectations of the customer's region and demographic</li> <li>Mentioning of tabu topics</li> <li>Stereotyping based on customer characteristics e.g. As a busy doctor and a loving mom...</li> </ul>   | <ul style="list-style-type: none"> <li>Reputation damage</li> <li>Avoid statistical or historical biases that could create barriers for customer access financial services</li> <li>Social impact and stay aligned to the bank's social and responsibility efforts</li> </ul>   | ●○○○            | ●●●●     | ●●●●        | ●●●●         | ●○○○           | ●●●○     | ●●○○     | ●●●○ |
| Representation harm | <ul style="list-style-type: none"> <li>Not conforming to cultural norms and expectations of the customer's region and demographic</li> <li>Stereotyping based on customer characteristics e.g. As a busy doctor and a loving mom...</li> </ul>  | <ul style="list-style-type: none"> <li>avoid reputation damage and decreasing customers interaction or missing opportunity because of perpetuation of stereotypes and power dynamics that reinforces discrimination and opportunities segregation</li> </ul>  | ●○○○            | ●○○○     | ●○○○        | ●○○○         | ●○○○           | ●●○○     | ●●●○     | ●●●○ |
| Drift               | <ul style="list-style-type: none"> <li>Generating factually incorrect content (so-called 'hallucinations')</li> <li>Making undesired inferences and 'leaps of logic' e.g. As someone who loves bakeries, you will love our mortgage options</li> </ul>  | <ul style="list-style-type: none"> <li>risk of having a model that doesn't adapt to changes in customers spending</li> <li>risk of missing new opportunities by addressing customer needs as they change</li> <li>risks of losing personalization</li> <li>risk of having wrong or old or ineffective matches between customers and offerings</li> </ul>  | ●●●●            | ●●●●     | ●●●●        | ●●●●         | ●●●●           | ●○○○     | ●●●○     | ●○○○ |
| Toxicity            | <ul style="list-style-type: none"> <li>Using inappropriate or non-conforming tone, language, wording</li> </ul>   | <ul style="list-style-type: none"> <li>reputation damage by creating messages that can spread hate, racism, discrimination and are toxic</li> <li>losing clients</li> <li>decrease customer loyalty</li> <li>bad social impact</li> </ul>   | ●○○○            | ●●●●     | ●●●●        | ●●●○         | ●○○○           | ●●●○     | ●●●○     | ●●●● |
| Misinformation      | <ul style="list-style-type: none"> <li>Inaccurate summaries or citations of legal and/or regulatory requirements</li> <li>Generating factually incorrect content (so-called 'hallucinations')</li> <li>Revealing 'inner workings' of the model (e.g. unwanted placeholders, prompt instructions, internal data) e.g. Follow instructions at [Bank Name] to get started</li> </ul> | <ul style="list-style-type: none"> <li>prevent mistakes</li> <li>prevent giving customers factually wrong information or data</li> <li>prevent hallucination</li> <li>prevent decrease customer loyalty</li> <li>prevent decrease customer interactions/engagement</li> <li>brand reputation</li> </ul>   | ●●○○            | ●○○○     | ●○○○        | ●○○○         | ●●●●           | ●●●●     | ●●●●     | ●○○○ |

lovely lady!

26 May, 16:33



28 May, 21:05

Lol 😂

Great energy at the stand with this lovely lady!

IMG\_4086 ▾



where the HyPe started... haven't been here since then 😂

IMG\_0395 ▾



● AI Strategy and Governance   ● Data Science   ● Software, Data & Cloud Engineering



**TEY BANNERMAN**  
Marketing Content Director  
*Designing content guidelines*



**MATTIA BONI SFORZA**  
Data Science Manager  
*Retail banking domain expertise*



**EVANGELOS THEODORIDIS**  
Big Data Engineer  
*Scalable tech solution implementation*



**MARGAUX PENWARDEN**  
XAI & Fairness Modeller  
*Ensuring fair model outputs*



**THABO MPHUTHI**  
Software & Cloud Engineer  
*Development of integrations with core systems*



**MARA POMETTI**  
UX/UI Specialist  
*Customer journey designing*



**IOAN STANCULESCU**  
Data Science Manager  
*Wealth management domain expertise*



**JONATHAN HAMSHAW**  
Software & Cloud Engineer  
*Development of live feedback*



**VIKTORIIA OLIINYK**  
Prompt Engineer  
*Context and chain of thought design*



**VAIBHAV SINHA**  
Data Engineer  
*Feature store integration*



**JULIETTE QUERSIN**  
Digital Designer  
*Design of user interfaces*



**DAVID ROSCHEWITZ**  
Machine Learning Engineer  
*Scaling of message generation*



**ROXANA PAMFIL**  
Safety Engineer  
*Content moderation and guardrail implementation*



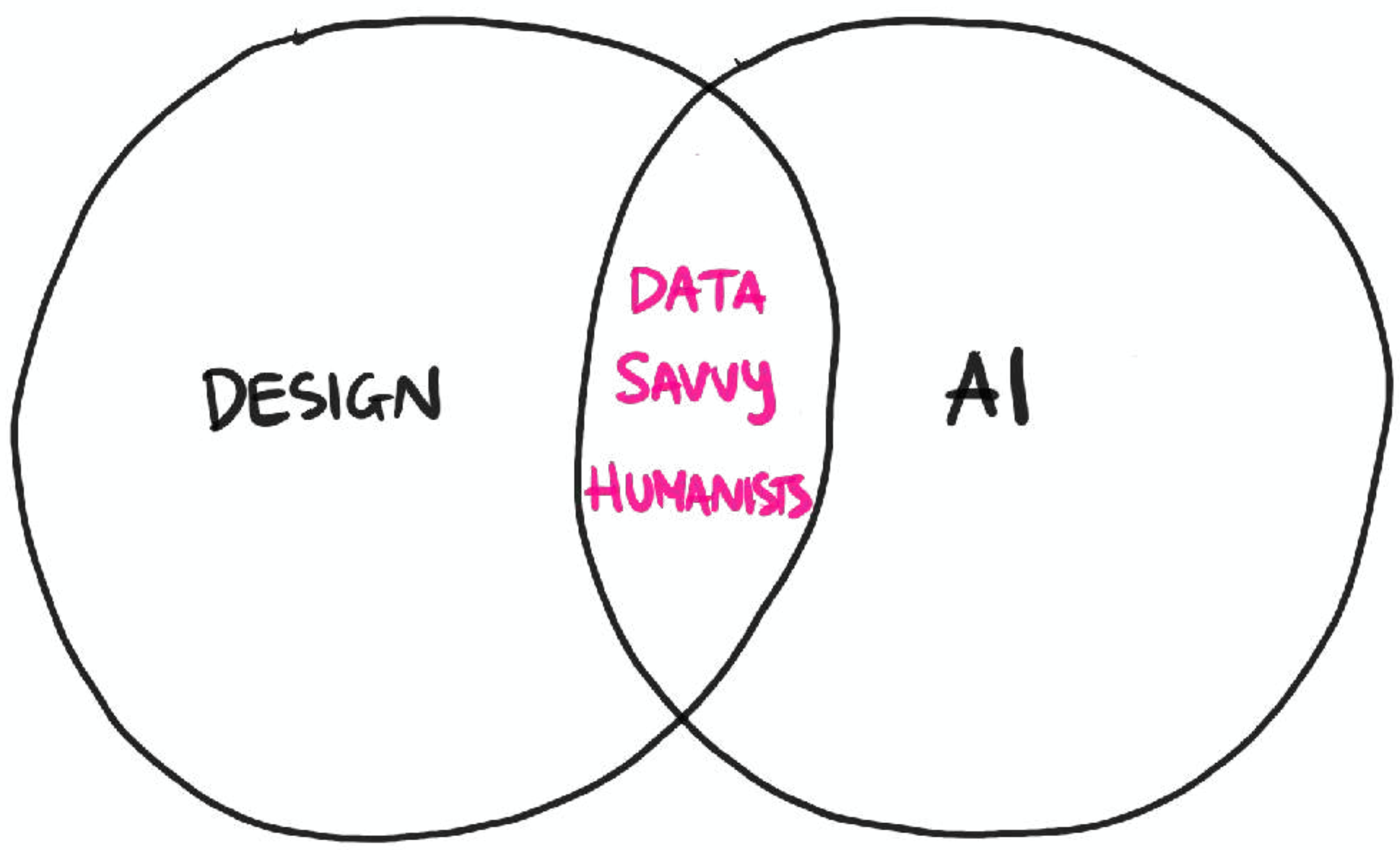
**GIOVANNA CAVALI**  
Data Scientist  
*NBA engine predictive modelling*



**MATHEUS SAMPAIO**  
Deployment Engineer  
*MLOps & monitoring*

...and many others

A HUMANISTIC  
OVERTURE TO AI



DESIGN

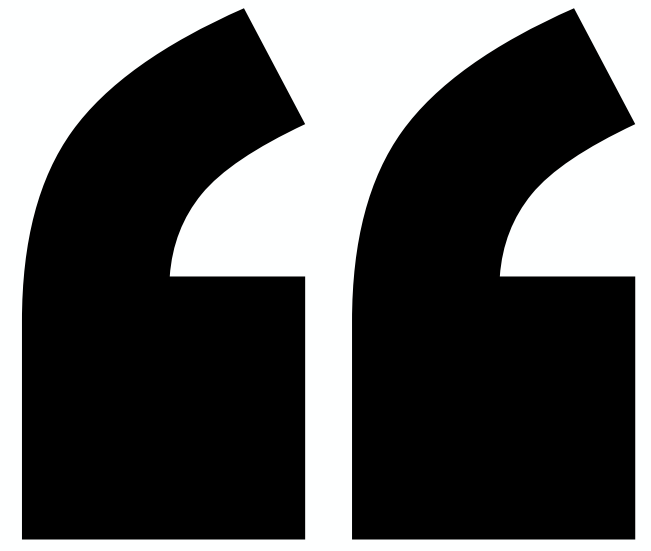
DATA  
SAVVY  
HUMANISTS

AI

Capture human stories in algorithms

```
30
31
32
33 stuff_prompt_template_v3 = """You are an ad
34 technical service adviser. You focus on ass
35 Use the following pieces of context to ans
36 you don't know, don't try to make up an ans
37
38 The context block starts with START_CONTEXT
39 {document_separator}.
40 START_CONTEXT>>>
41 {setup}
42 {context}
43
44 <<<END_CONTEXT
45
46
```





We humanize what is going on in the world and in ourselves only by speaking of it, and in the course of speaking of it we learn to be human.

Hannah Arendt

STAY IN TOUCH 

