L’IA Générative au service de la Réassurance : impacts techniques et humains

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The Art & Science of Risk

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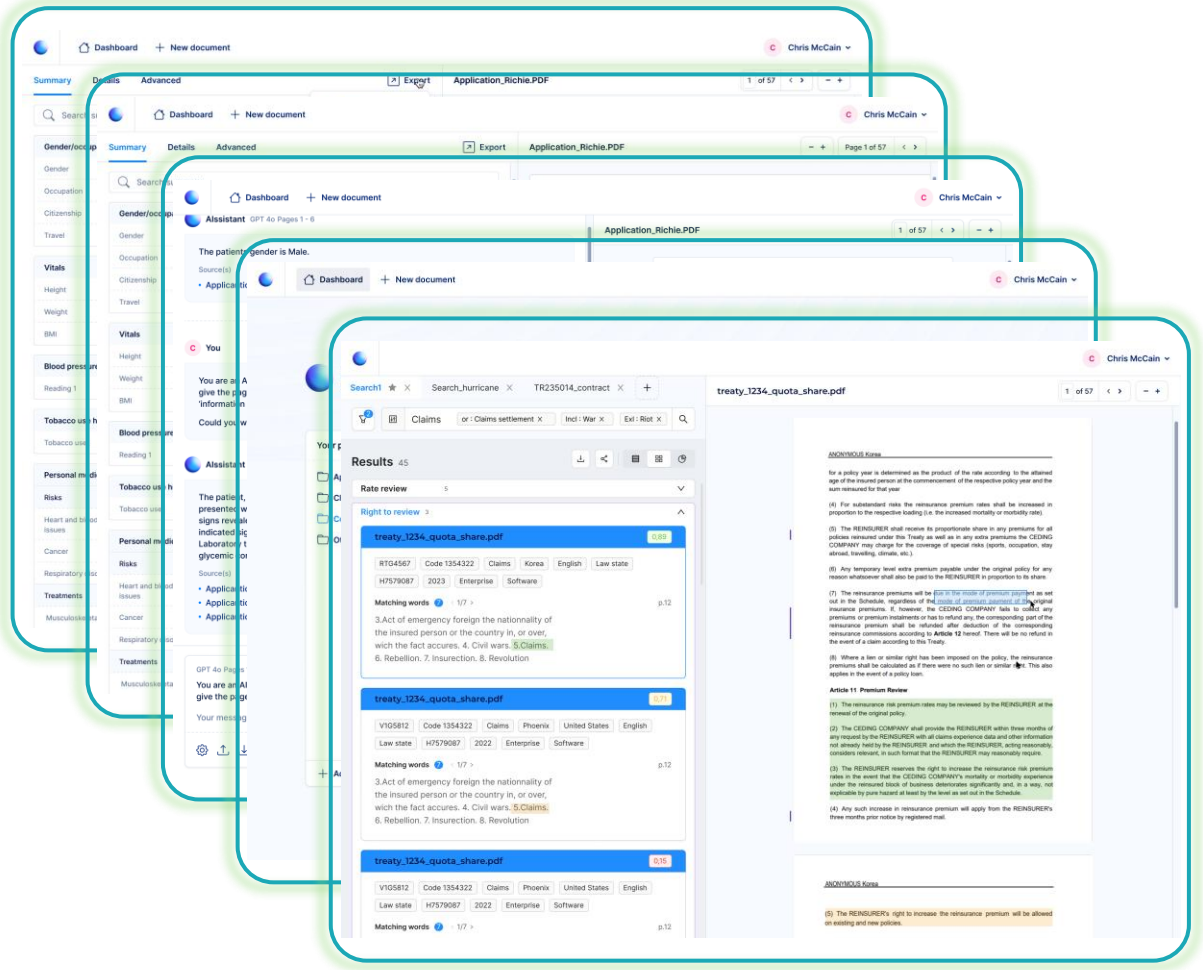
Where we are now in reinsurance?

The platform is more than just a tool for extracting information

SCOR designed the GenAI platform to offer a comprehensive suite of capabilities by leveraging Generative AI models that can revolutionize how we handle reinsurance documents.

- **Extract**
- **Validate**
- **Explore**
- **Collaborate**
- **Search**



Where we are now in reinsurance?

The journey to AI contract

Achieving the AI Contract vision, It's not just about adopting new technology like Generative AI; it's about an overall **paradigm shift with multiples impacts.**

GenAI model training is provider-manager (*Model-as-a-Service)*

Technical impacts

AI development shifts from model-centric to data-centric

AI products shift from trained model to instructed model

Human impacts

Data Scientist role & skillset evolve

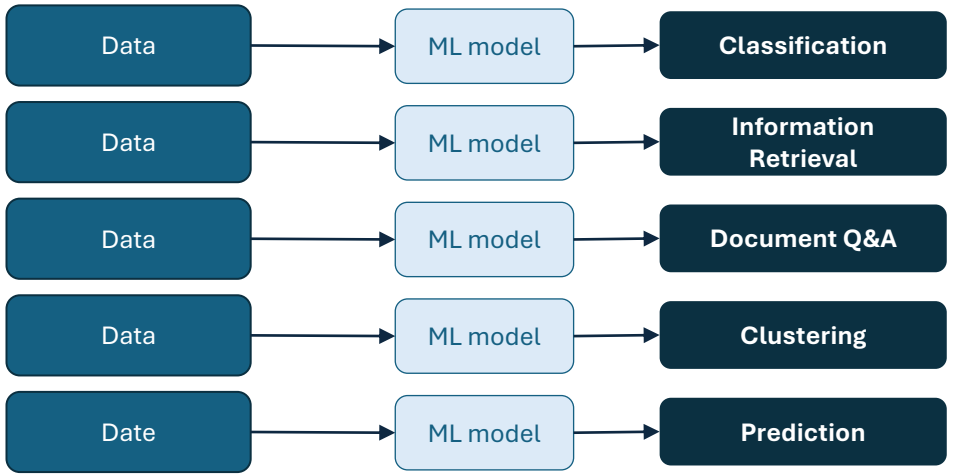
Business users are increasingly involved in AI solutions fine-tuning

Which require more than ever to move from siloed organization to collaborative, agile teams

What does GenAI really change in data science?

From 1 model per use case to 1 model for all use cases

TRADITIONAL NLP MODELS



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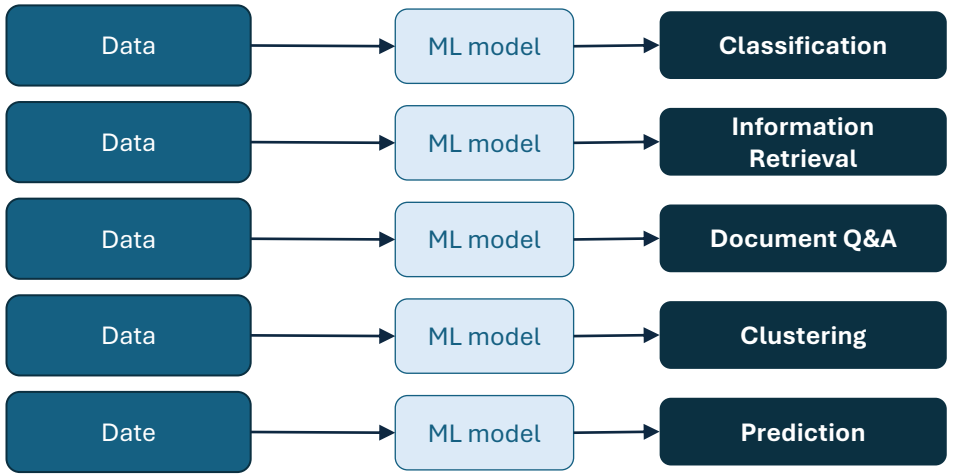
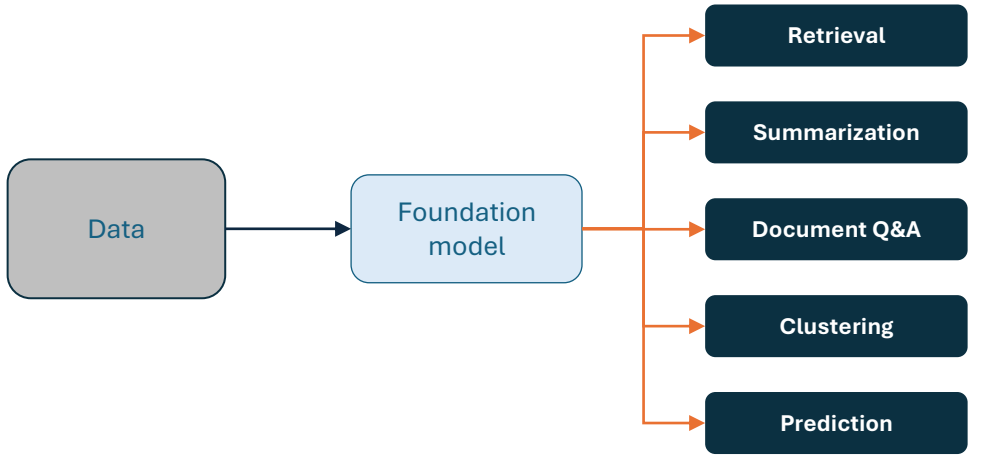


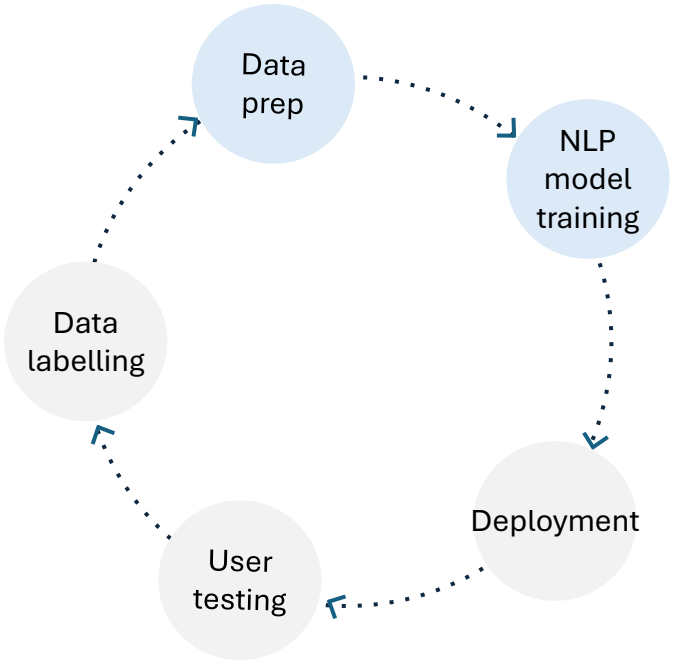
GENAI FOUNDATION MODELS



GenAI accelerates the shift from model-centric to data-centric

Traditional NLP entails more time on model itself

TRADITIONAL NLP LIFECYCLE



GenAI accelerates the shift from model-centric to data-centric

GenAI focuses more on data understanding and refining

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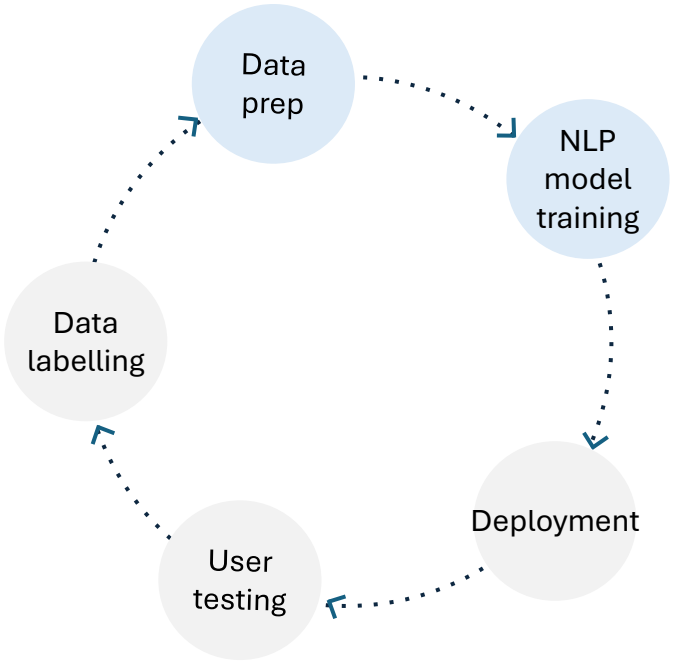

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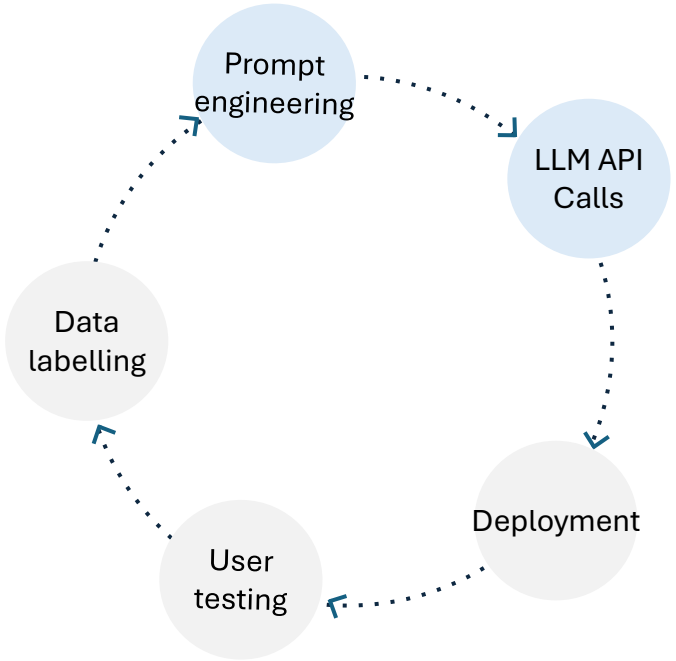

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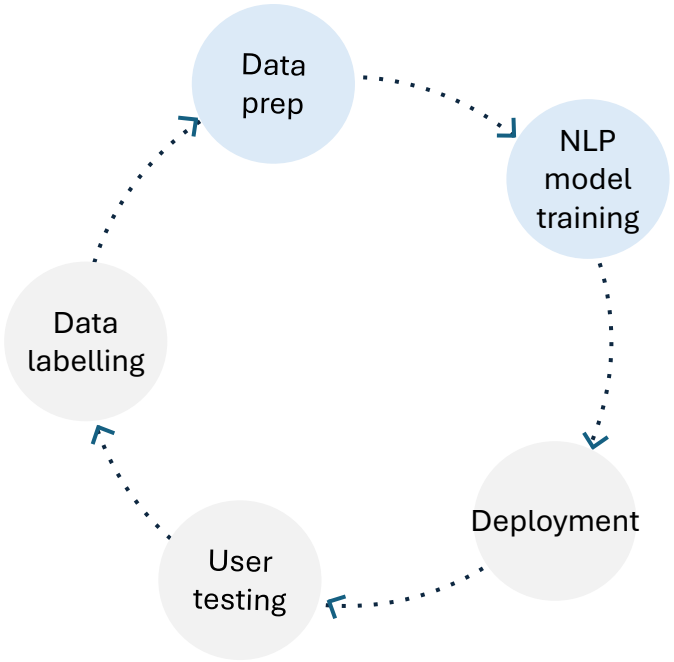
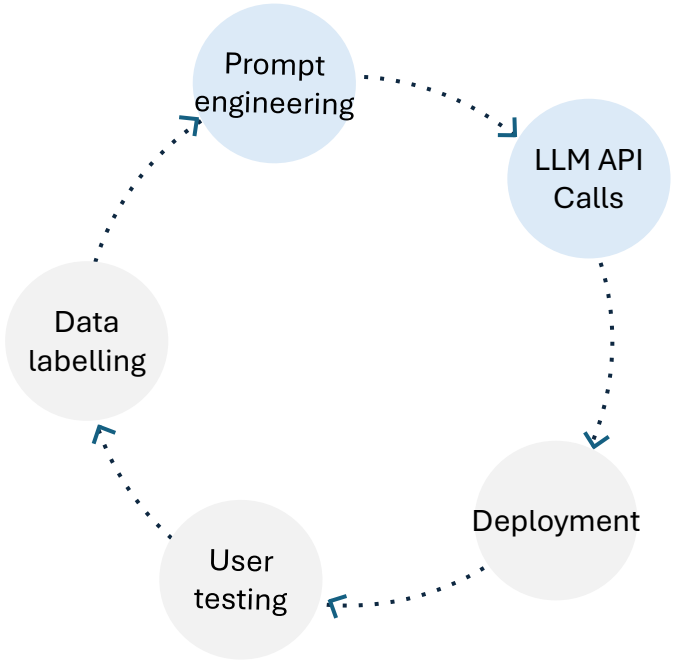


- *Large volume of labeled data required*
- *Time spent on preprocessing, training and deploying specific models*

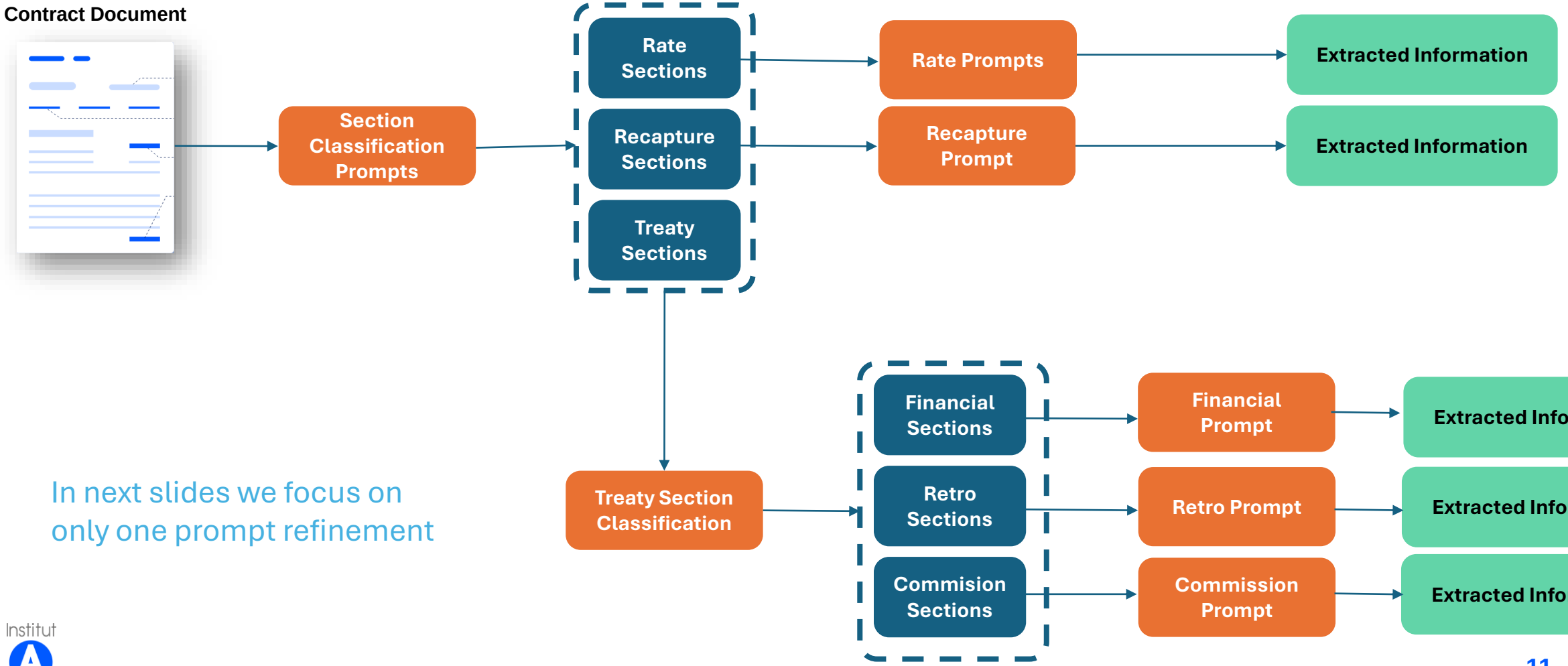
GENAI LIFECYCLE



- *Limited volume of labeled data required initially (more for evaluation)*
- *Time spent on data understanding, prompt engineering and evaluation*

Prompting in complex pipelines

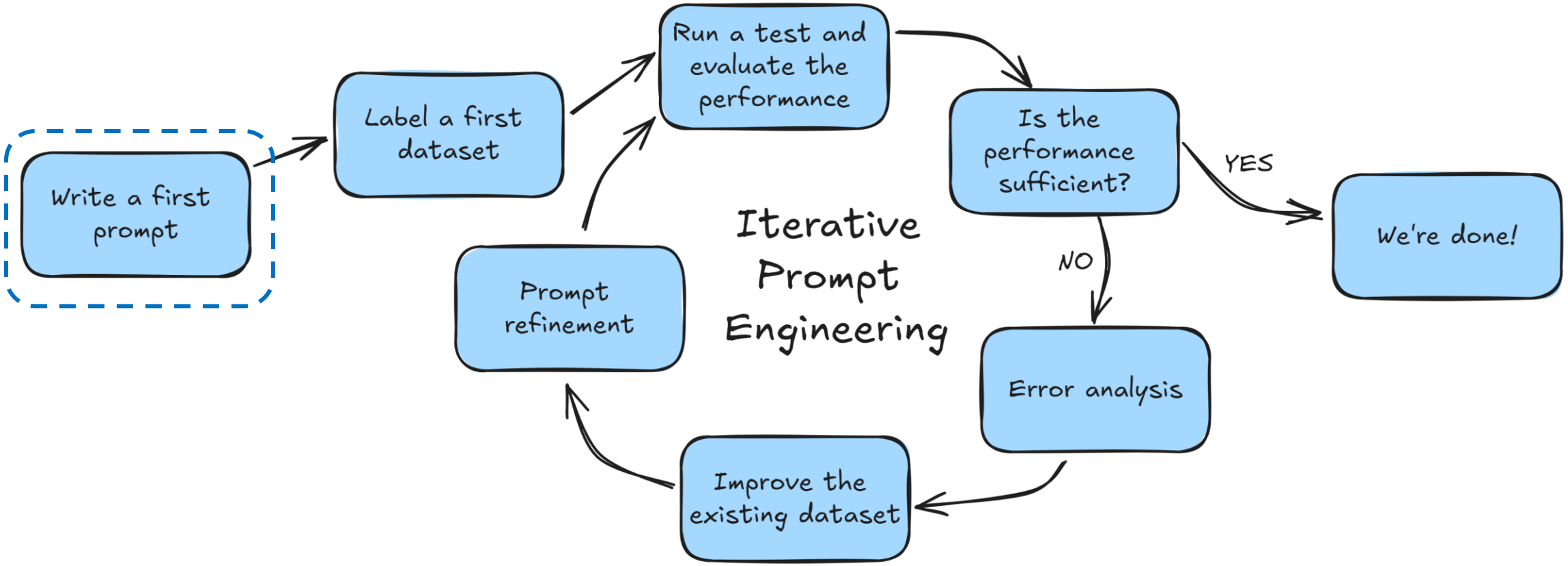
We can use prompting to extract detailed information



In next slides we focus on only one prompt refinement

Prompting in complex pipelines

Our Iterative Prompt Engineering Framework



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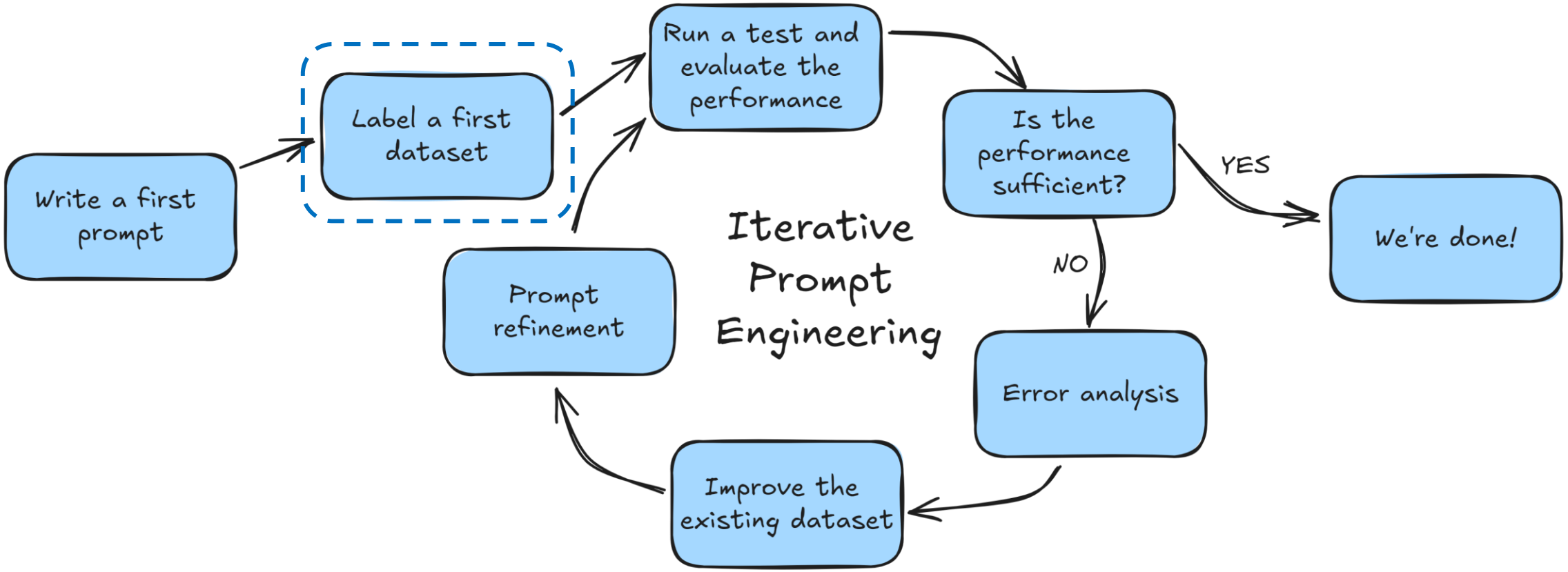

What exactly do we mean by labeling the data?

Data labeling or annotation is a key step in the process

Data Labeling:
Creation of ground truths that can be used to for evaluating the results of a prompt

File Name	Page Number	Field	Value
Document 1	1	Expiry Date	2022/03/01
Document 1	2	Situation	Worldwide
Document 1	3	Reporting Country	France
Document 2	1	Premium Currencies	EUR
Document 2	2	Expiry Date	2024/02/28
...	...	...	...
Document 38	133	Account Frequency	4 months period

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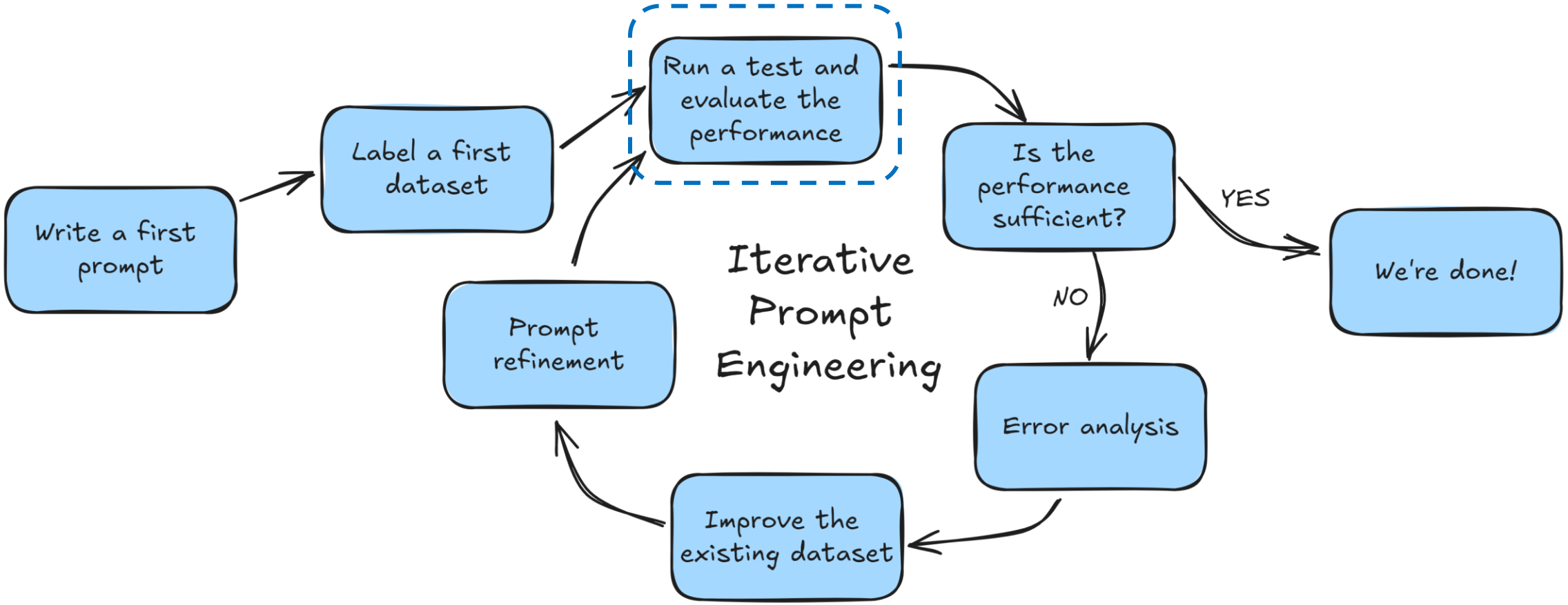

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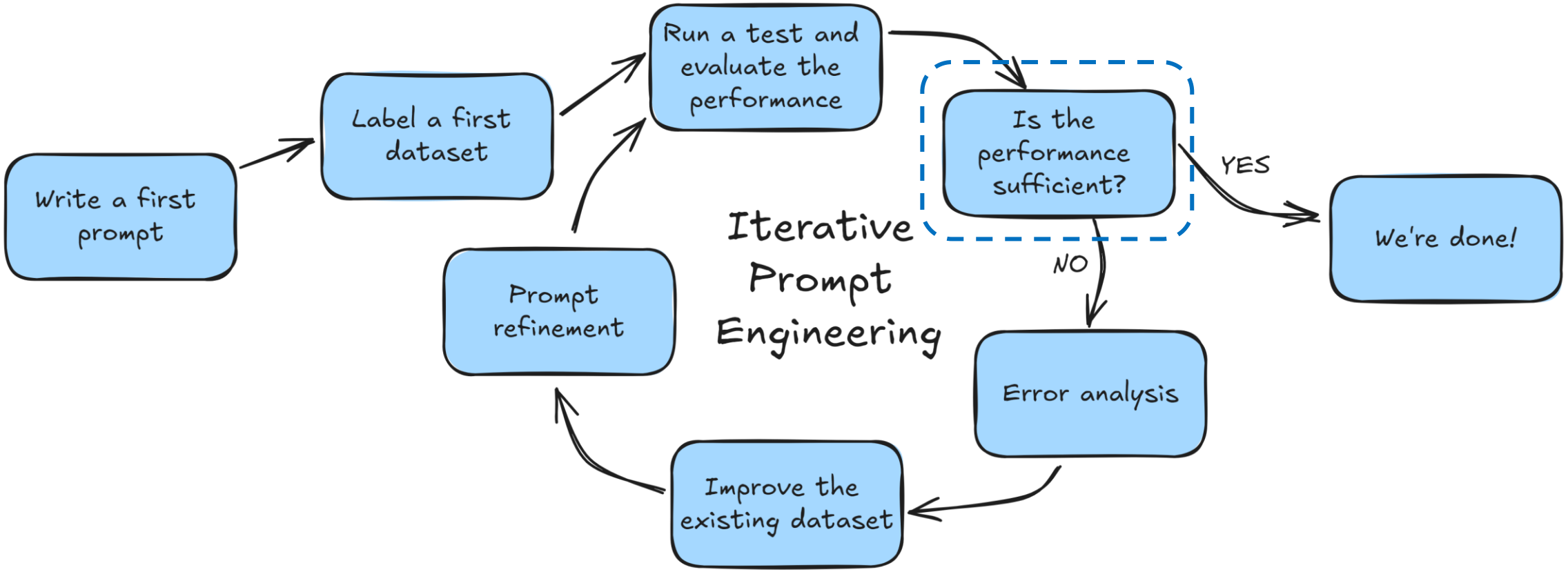

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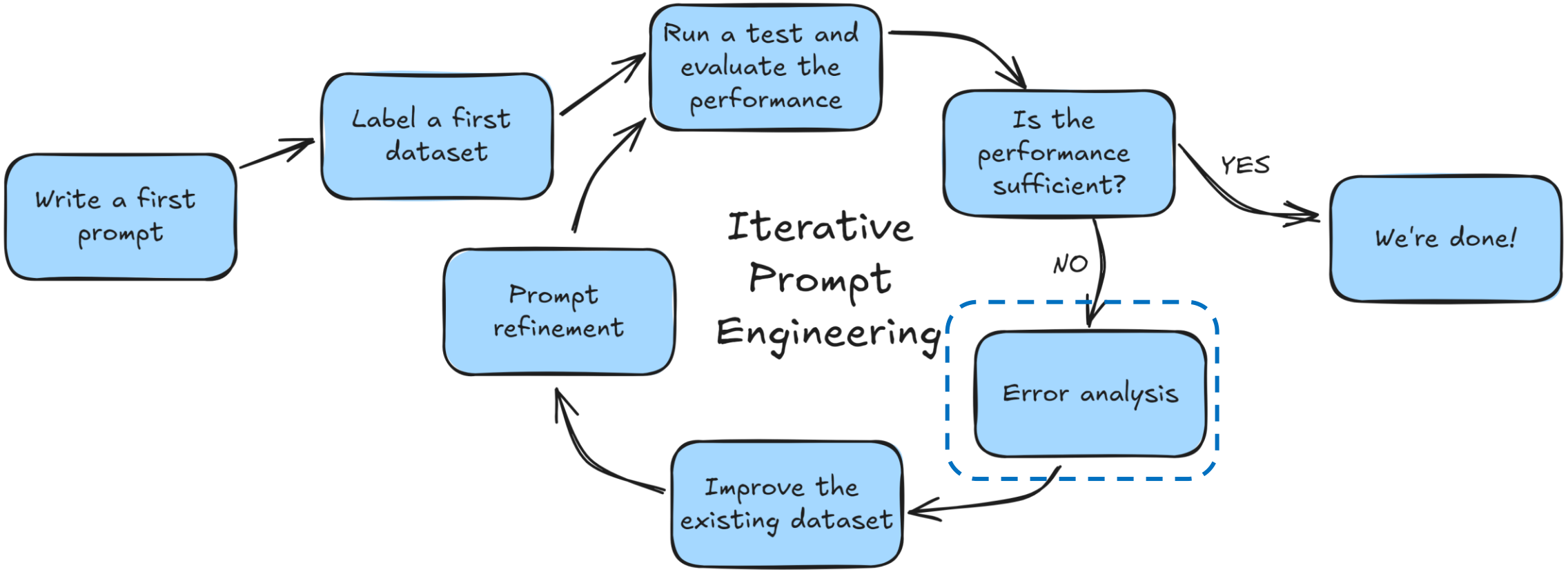

Error Analysis

One exact value and different types of errors

Correct, can be found in the labeled dataset

Value corretly predcited, but not in the labeled dataset (human error)

Field	Label	Prediction
Premium Currencies		EUR

Difference values predicted than valued. Error can be in the labelled value or in the prediction (or both).

Field	Label	Prediction
Premium Currencies	USD	EUR

Value not predicted by the model

Field	Label	Prediction
Premium Currencies	USD	

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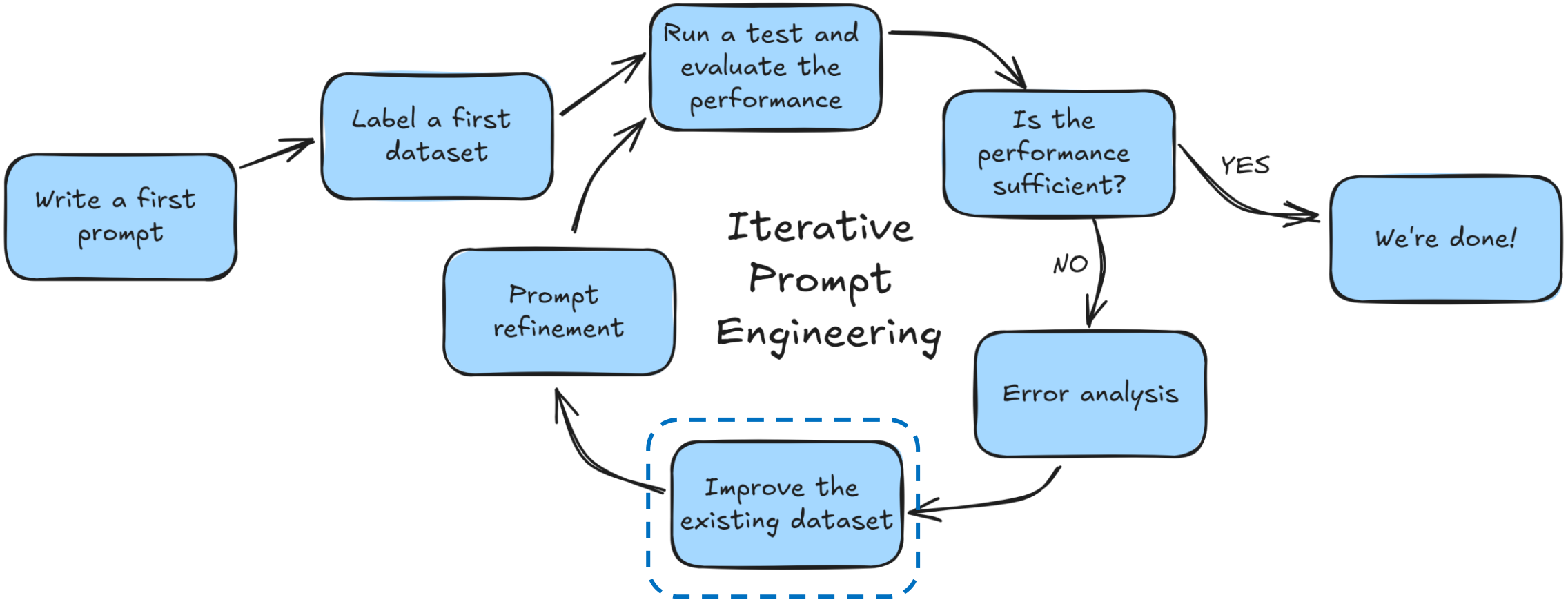

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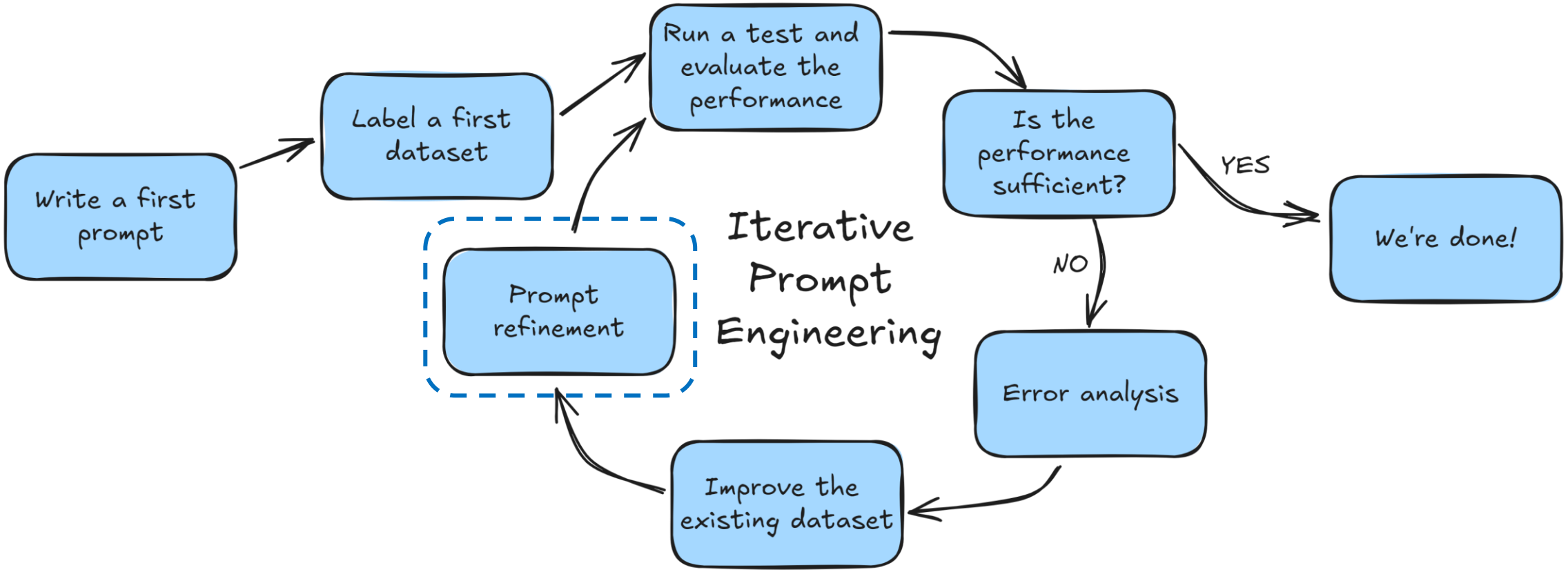

How to structure a prompt

An example

Assign a role to the LLM	You are a technical assistant specializing in analyzing reinsurance treaties. Your task is to extract information related to the reinsurer's rights to recapture the reinsured portfolio from the given treaty text.
Specify the output format	1. OUTPUT FORMAT: Extracted information should be in JSON format: `[{“field”: the field to extract, "context": the context, "page_number": the page number, “value": the value}, ...]` . Ensure the JSON is valid and starts and ends with square brackets.
State the length of the answer	2. CONTEXT EXTRACTION: For each value, return the page numbers where it has been found and a specific context (maximum one per page). Context should be no longer than 50 words.
Let the LLM choose from a list of allowed answers	3. FIELDS: Use only the fields provided in the following list at the end of the prompt. Each fields has a description with examples to help identify it.
Specify exceptions	4. AVOID ANNEX PAGES: Do not extract information from pages that are annexes. Annexes can contain outdated information that we don’t want to extract.
Advise the LLM what to focus on	5. ACCURACY: Focus primarily on the precision. It is important that the things that you extract have the right value assigned and that they can actually be found in the documents.
Provide the LLM with a real-world example for the desired output	### Example JSON Output ```json [{“field”: “date”, "context": “The date is 2012/03/04", "page_number": 2, “value”: “2012/03/04"}, ...]

Prompting in complex pipelines

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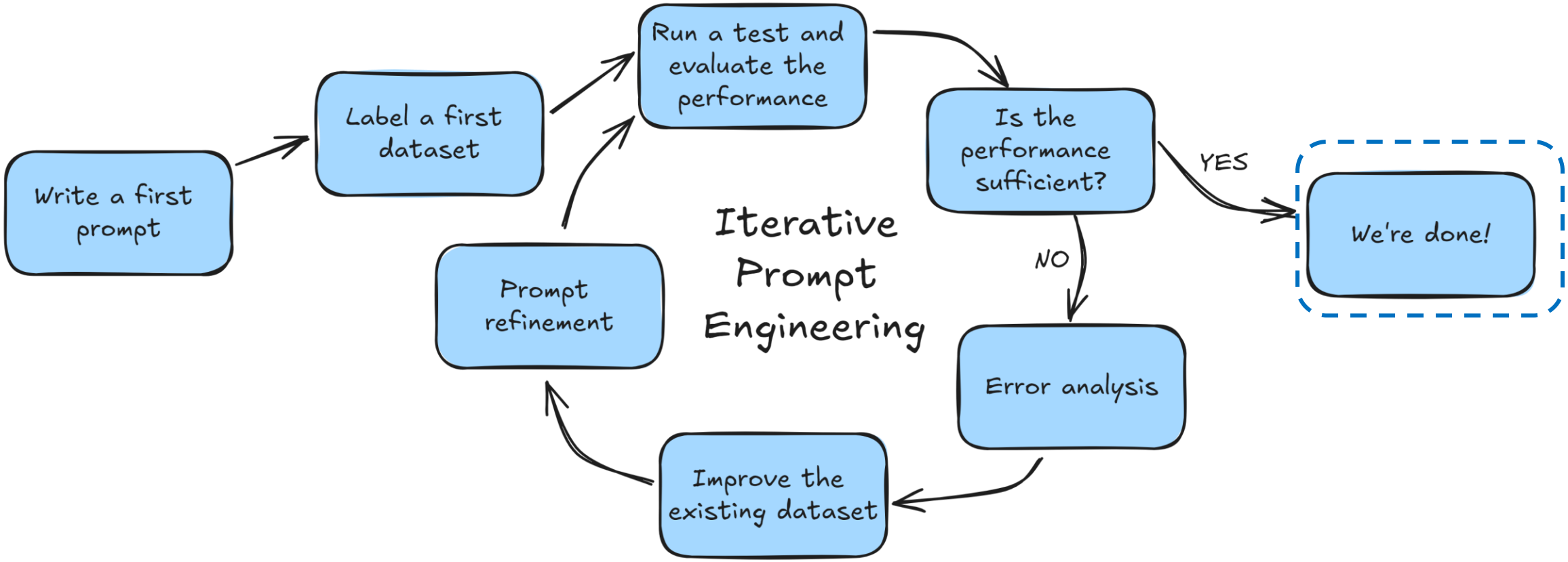
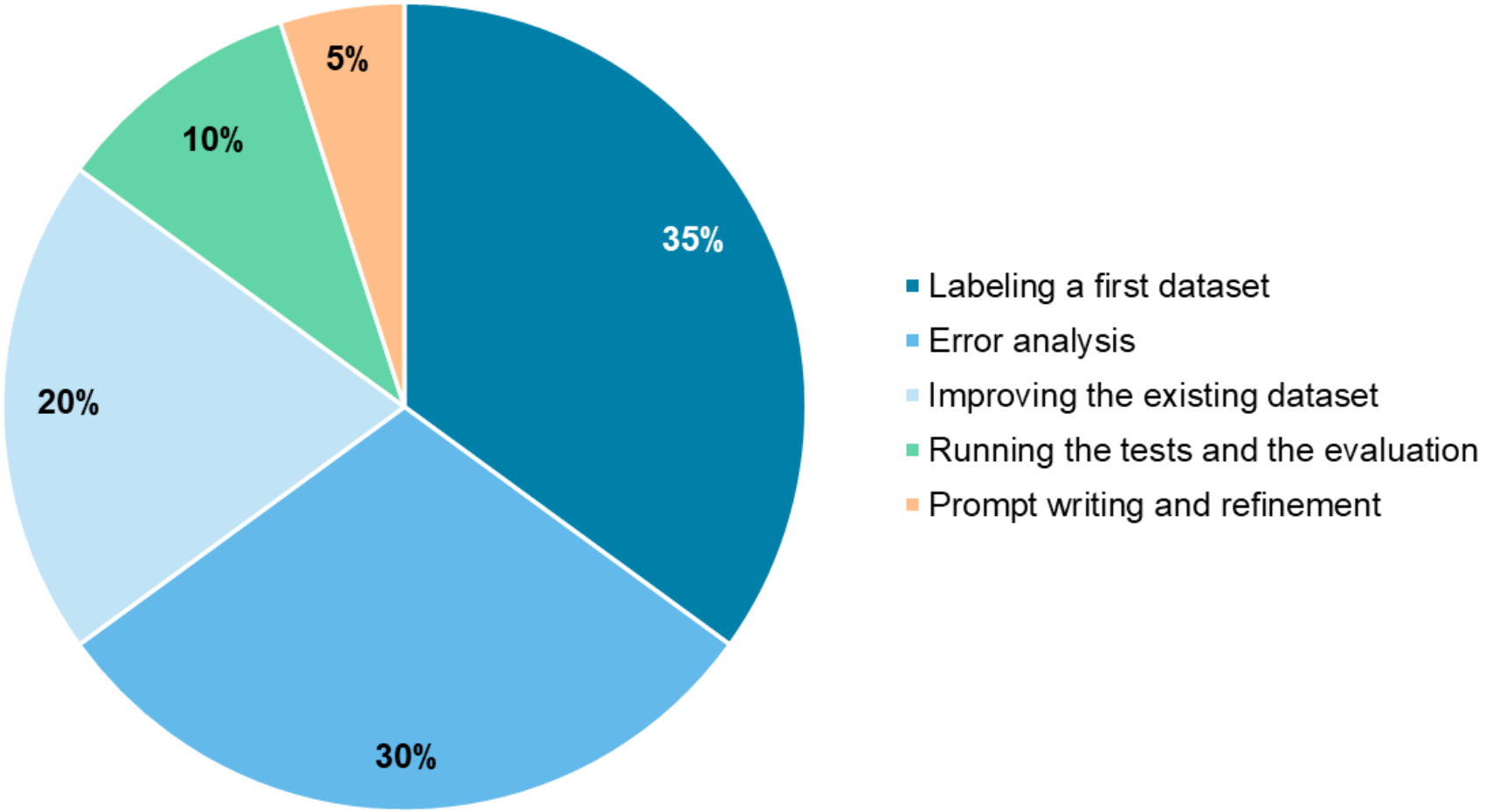


How much time on each task

A look at this graph reveals what the work on data-centric AI really looks like



How is Data Scientists' scope of work evolving?

TRADITIONAL ML LIFECYCLE

Data preprocessing

Model training

Generic model evaluation

Deployment

Retraining

How is Data Scientists' scope of work evolving?

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- Data preprocessing
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GENAI LIFECYCLE

- Data preprocessing
- Prompt engineering / Fine-tuning
- In-depth error analysis
- Deployment
- Relabelling

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REQUIRED SKILLSET

Software Engineering

+

Business Knowledge

And what about business users role?

BEFORE GENAI

★★☆ **Generic model testing**

WITH GENAI

★★☆ **In-depth error analysis**

Prompt refinement

Relabelling

Questions?