

Introduction

DECODING DECISION MODELING



Tiago Brasil

Lead Data Engineer

Decisions matter

Decisions are an essential part of human existence, influencing every aspect of our lives. From daily routines to life-changing moments, we are constantly making choices that shape our paths.



Did You Know?

An average adult makes anywhere from 20,000 to 35,000 conscious decisions each day.



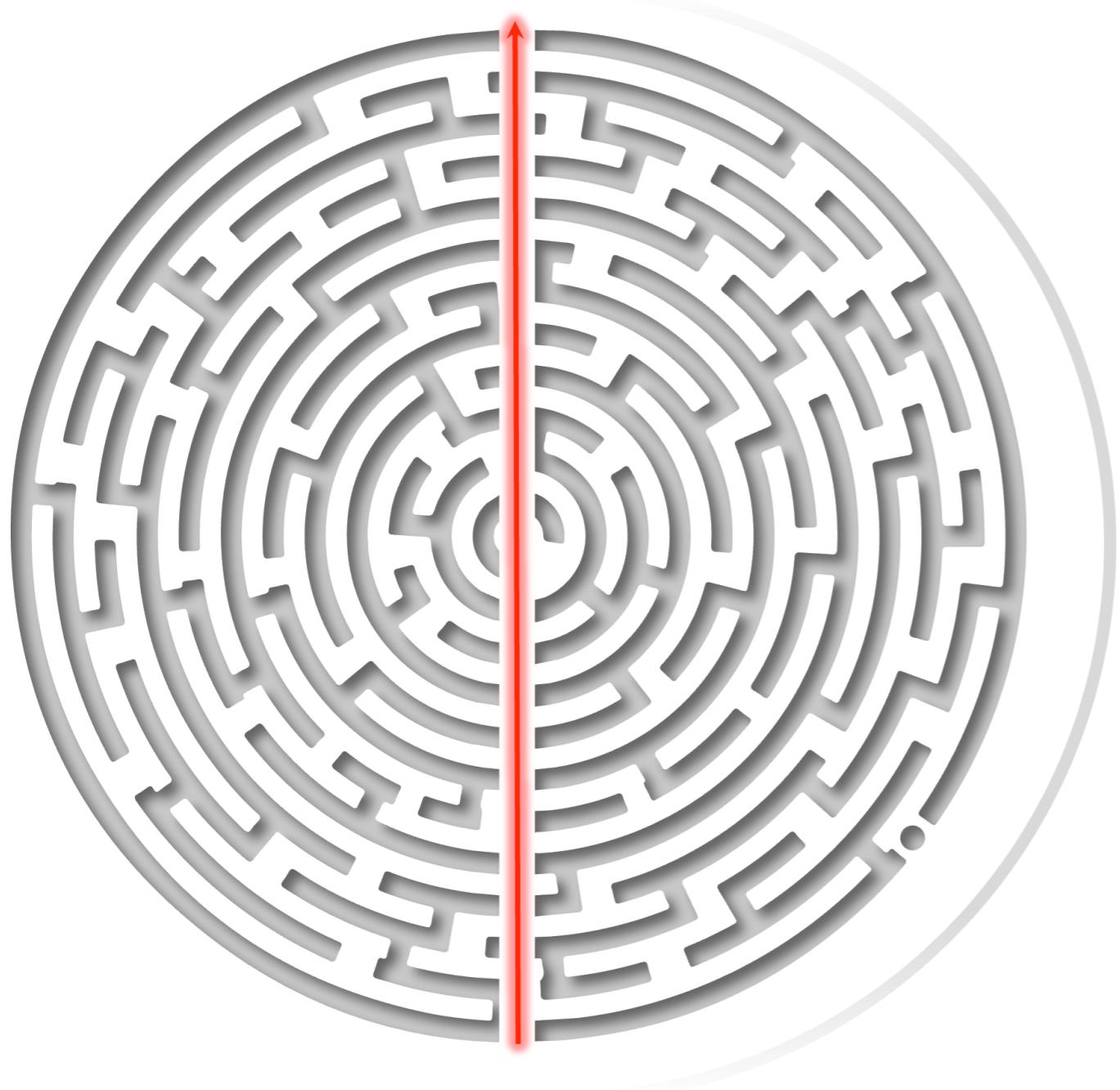
Decision factors



Objectives

Clarity in purpose and goals

Decision factors



Objectives

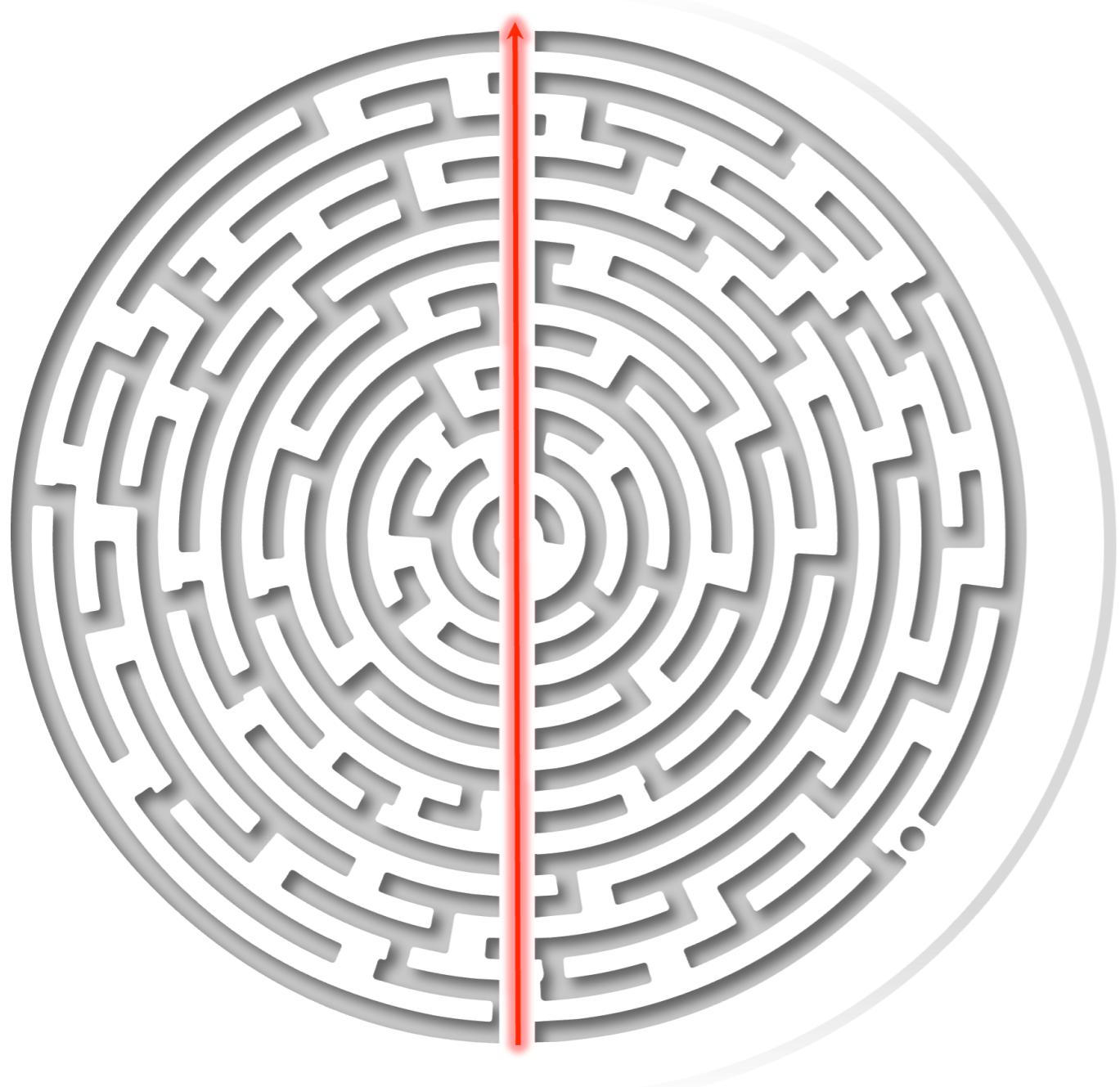
Clarity in purpose and goals



Information & data

Relevant facts, figures, and insights

Decision factors



Objectives

Clarity in purpose and goals



Information & data

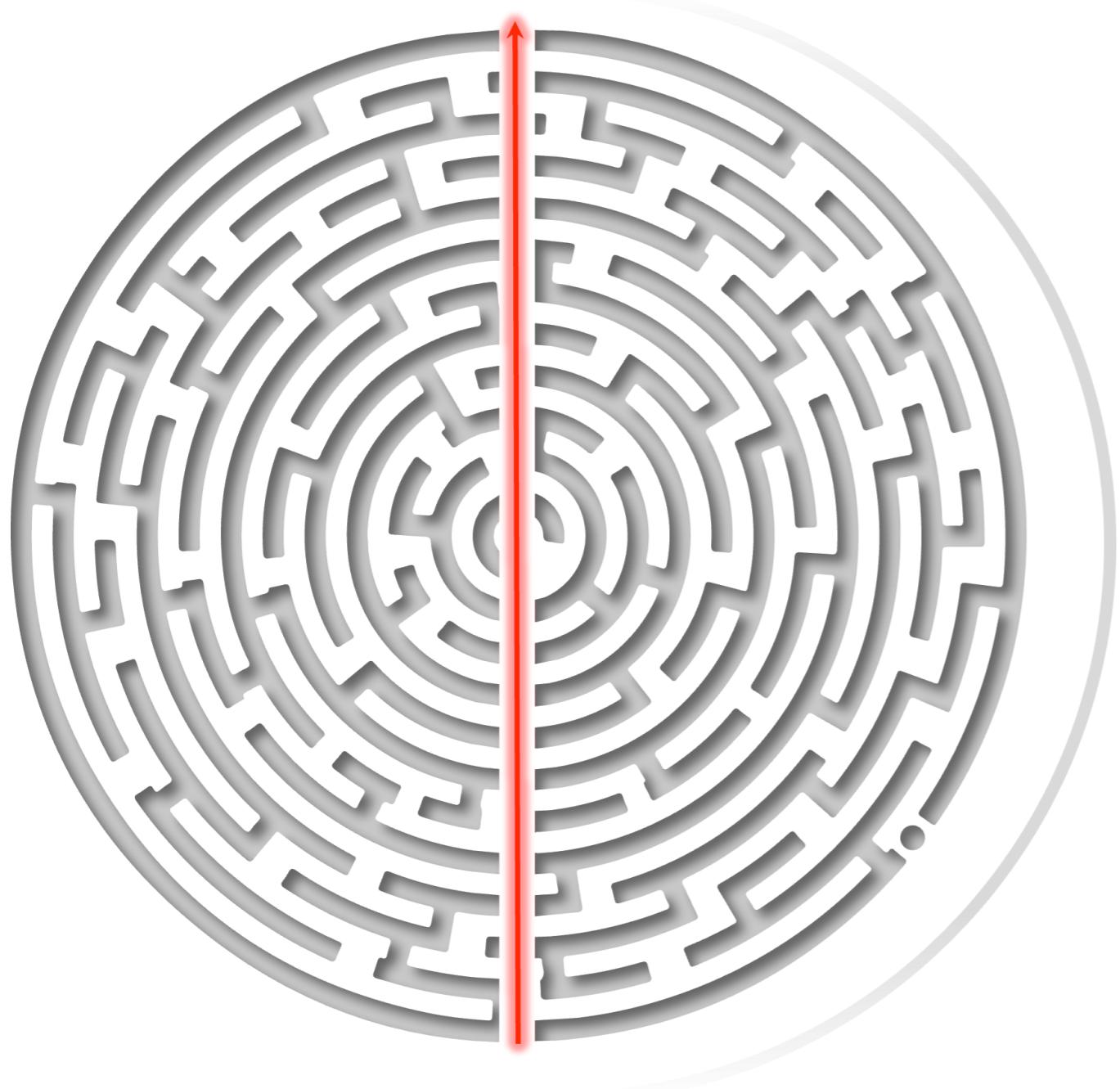
Relevant facts, figures, and insights



Alternatives

Diverse options

Decision factors



Objectives

Clarity in purpose and goals



Information & data

Relevant facts, figures, and insights



Alternatives

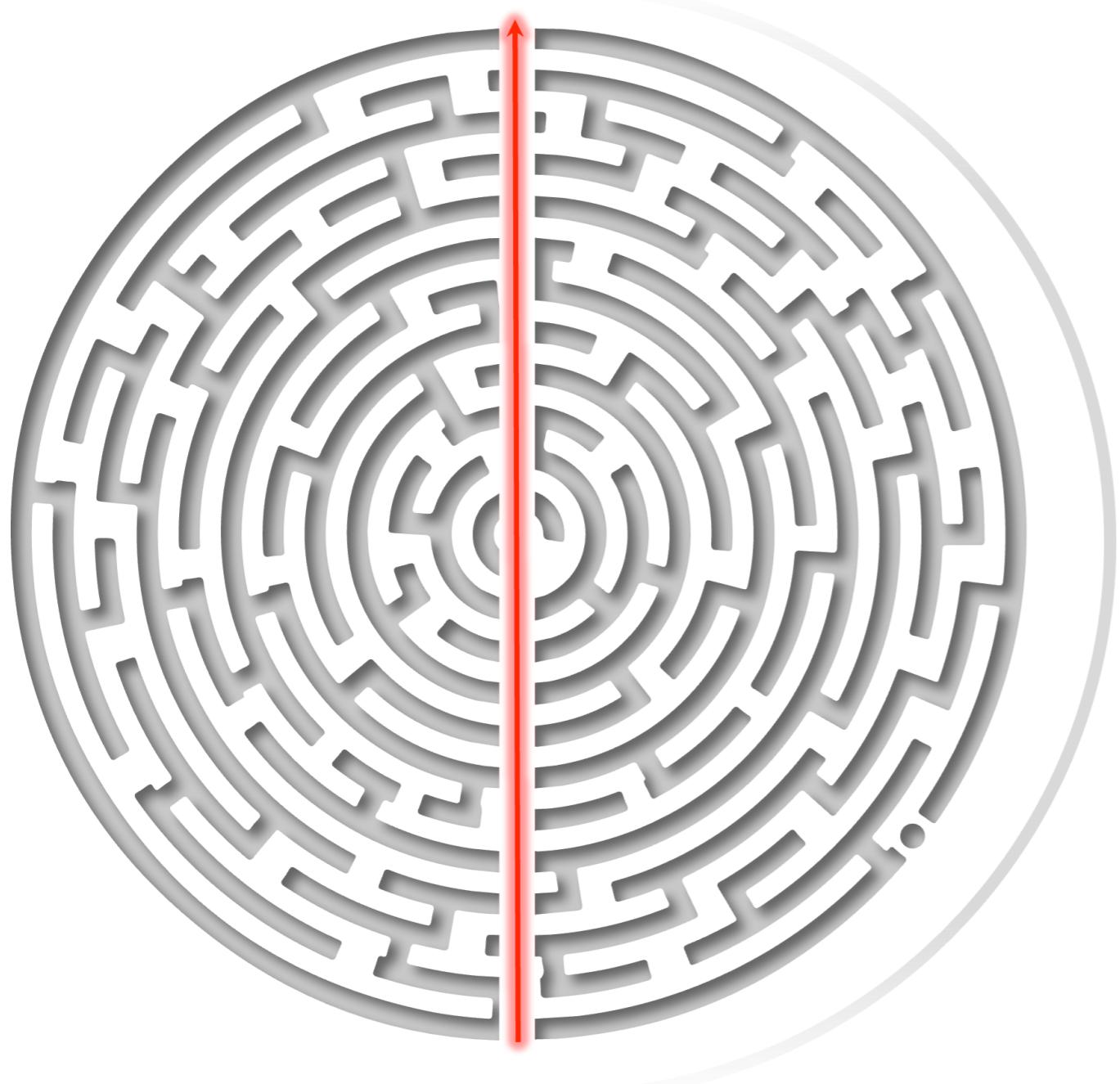
Diverse options



Constraints

Limitations or restrictions

Decision factors



Objectives

Clarity in purpose and goals



Information & data

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Alternatives

Diverse options



Constraints

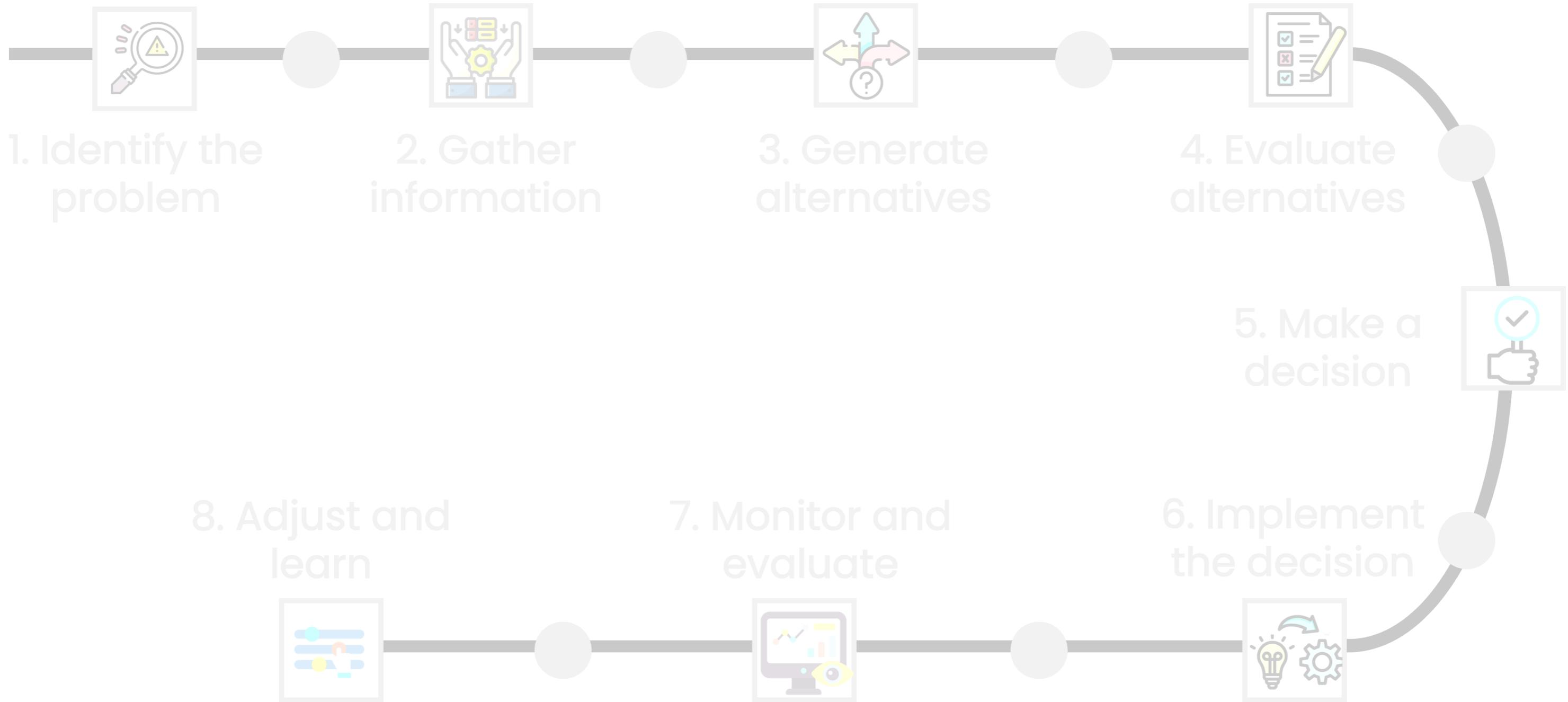
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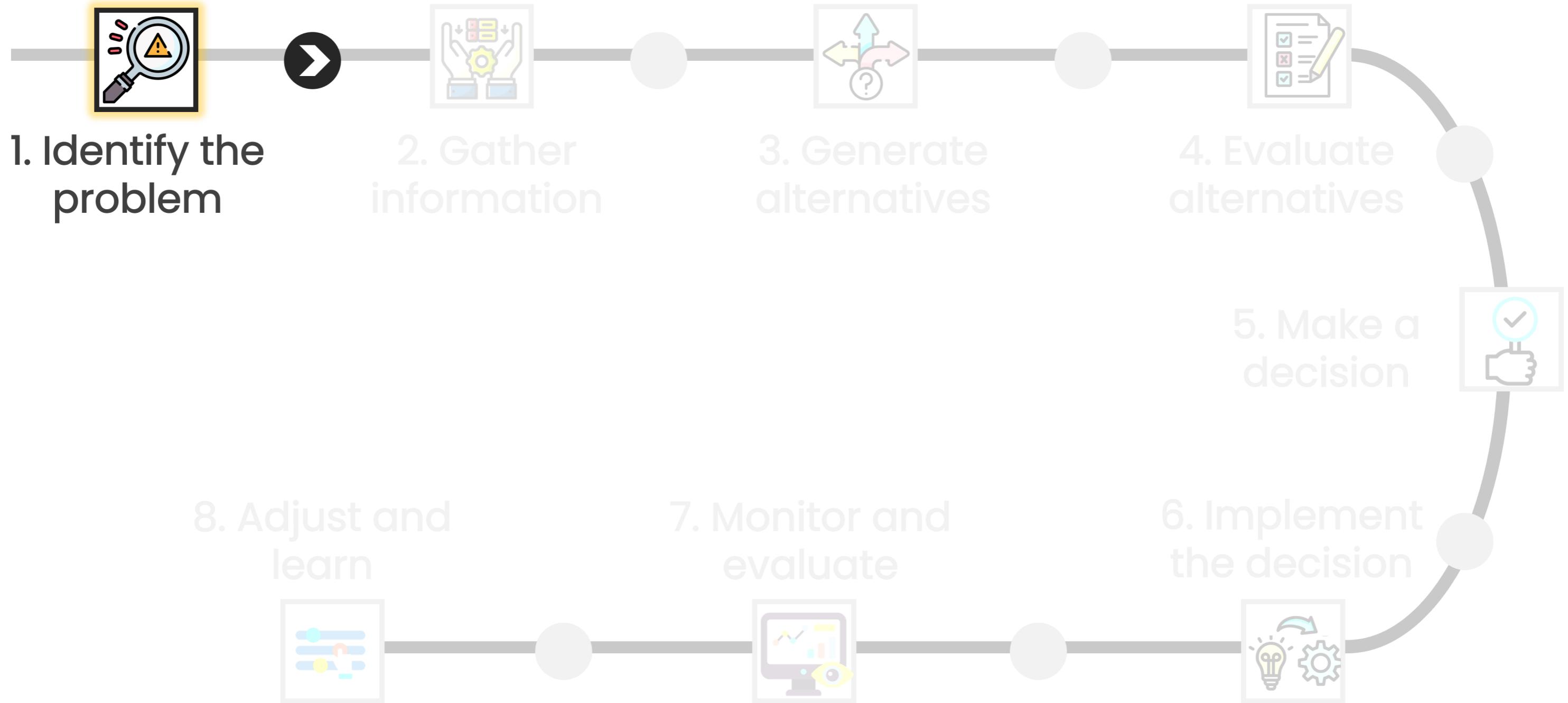
Risks & uncertainties

Anticipated challenges

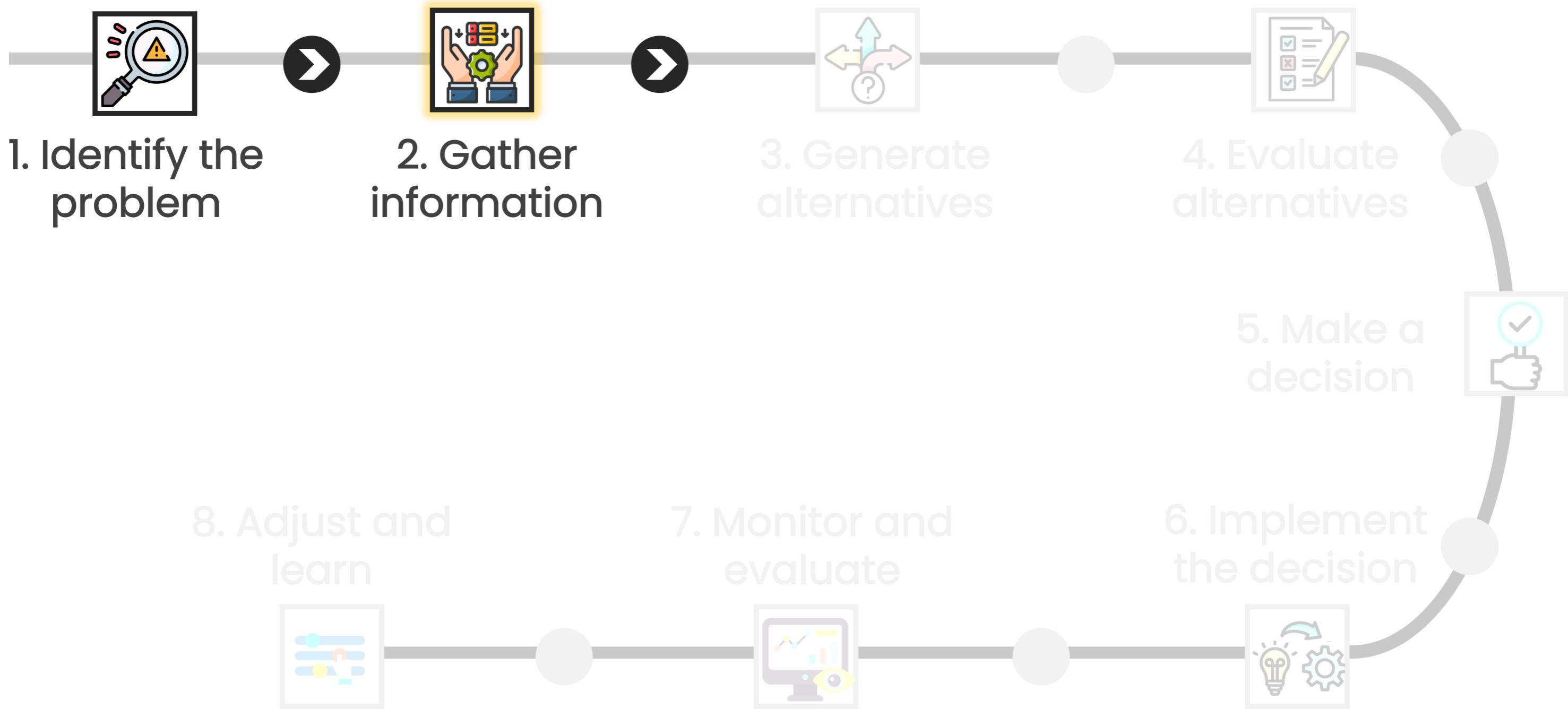
Decision-making steps



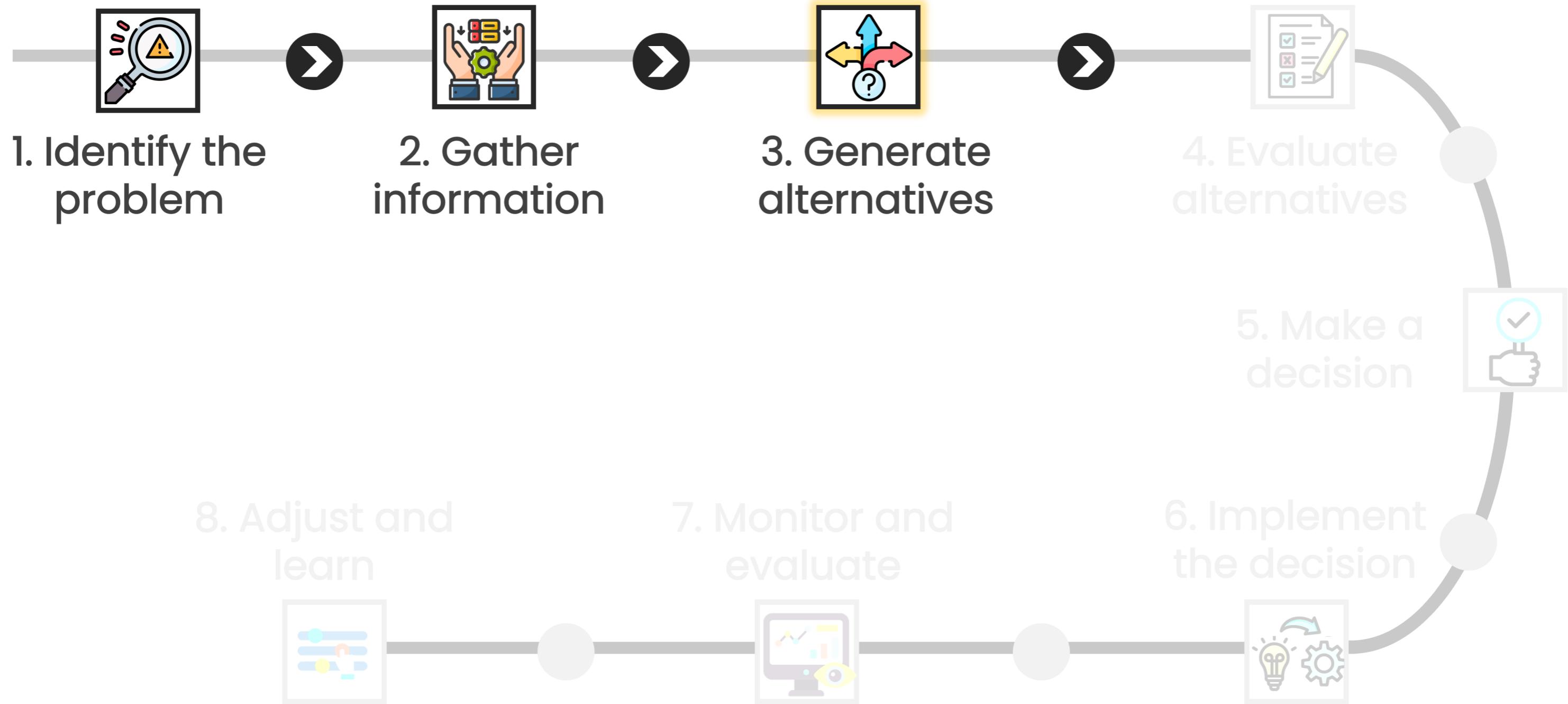
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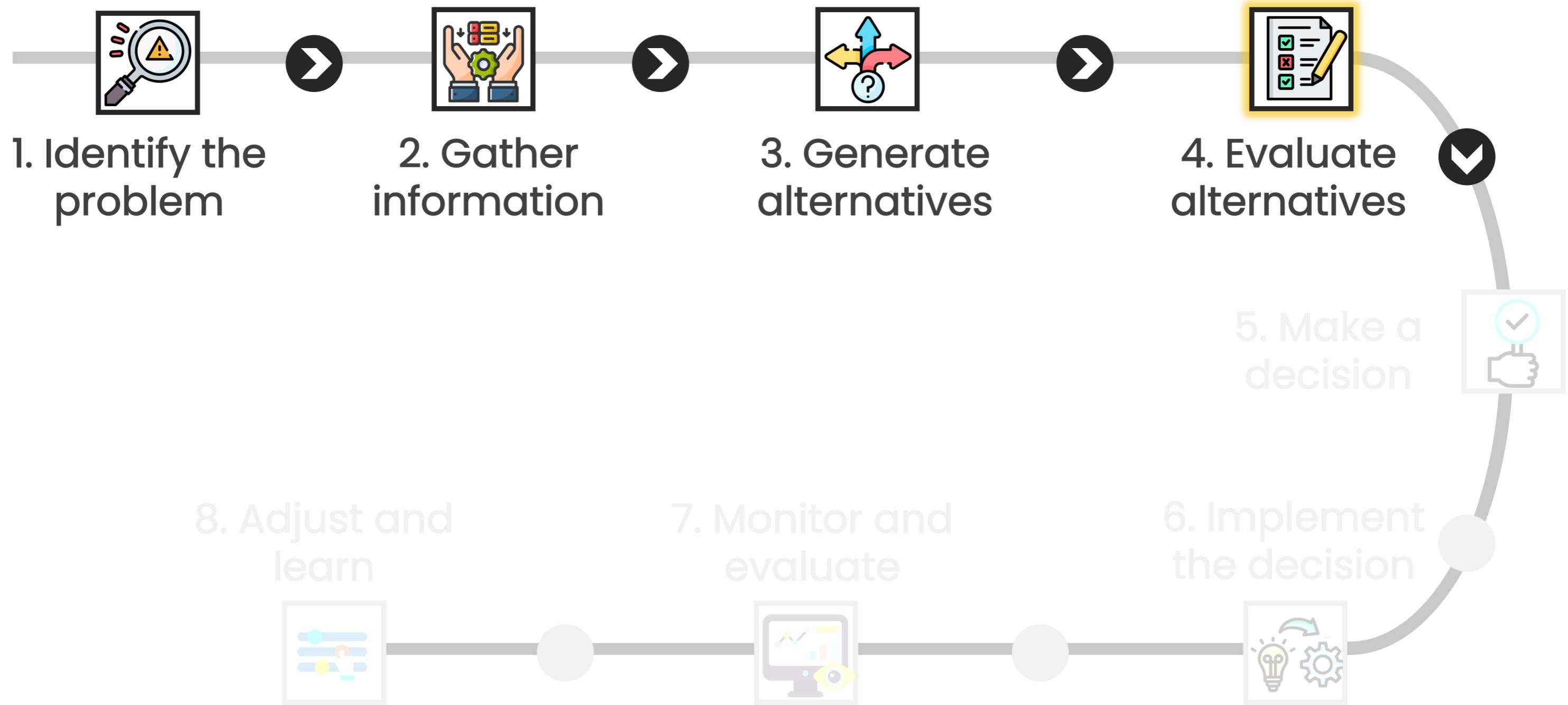
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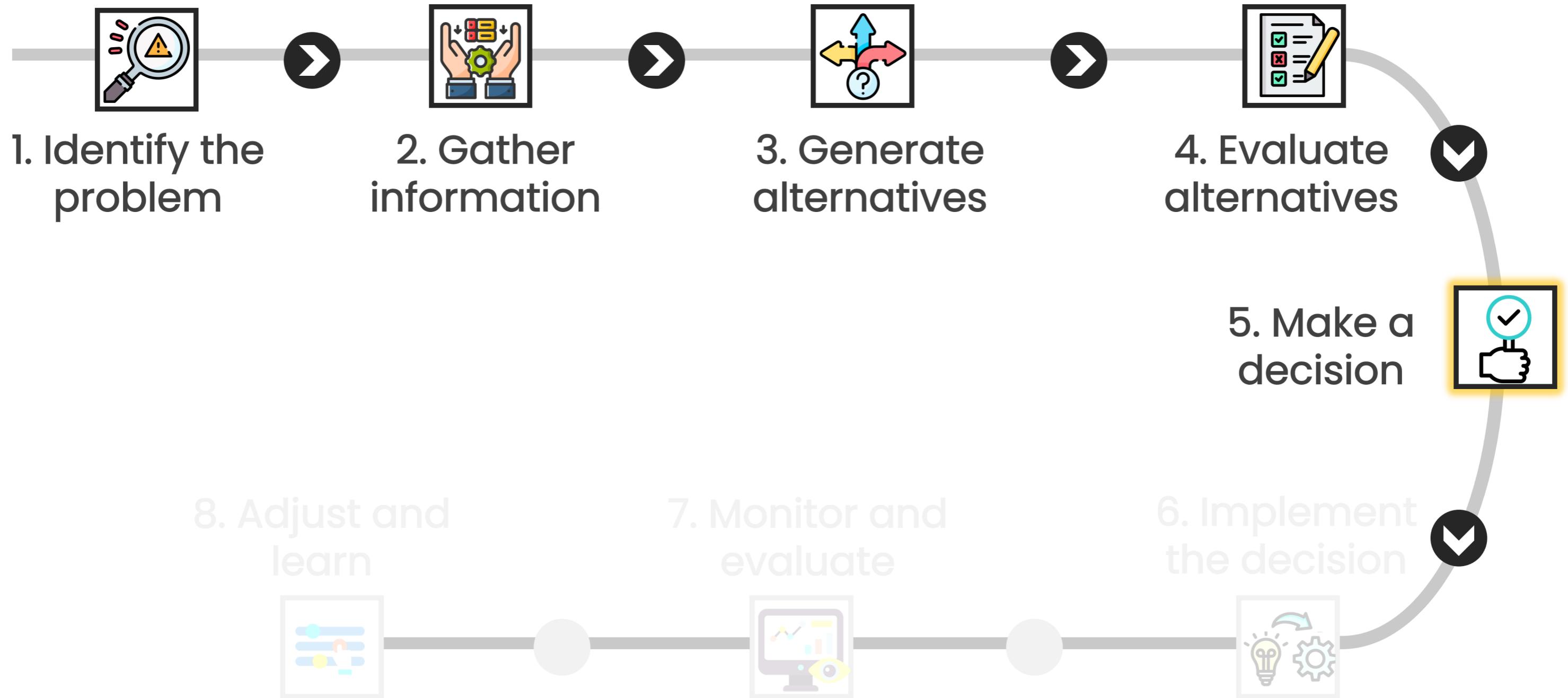
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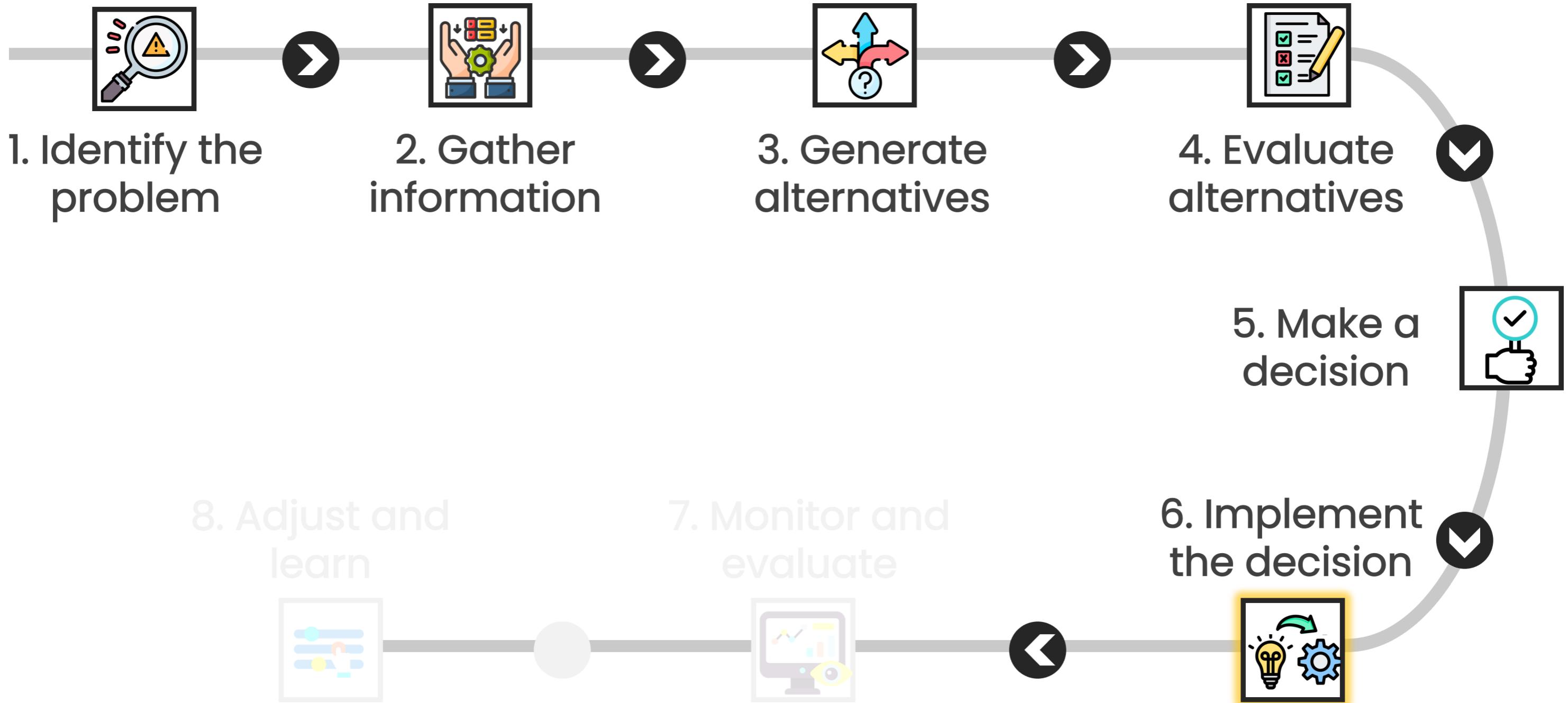
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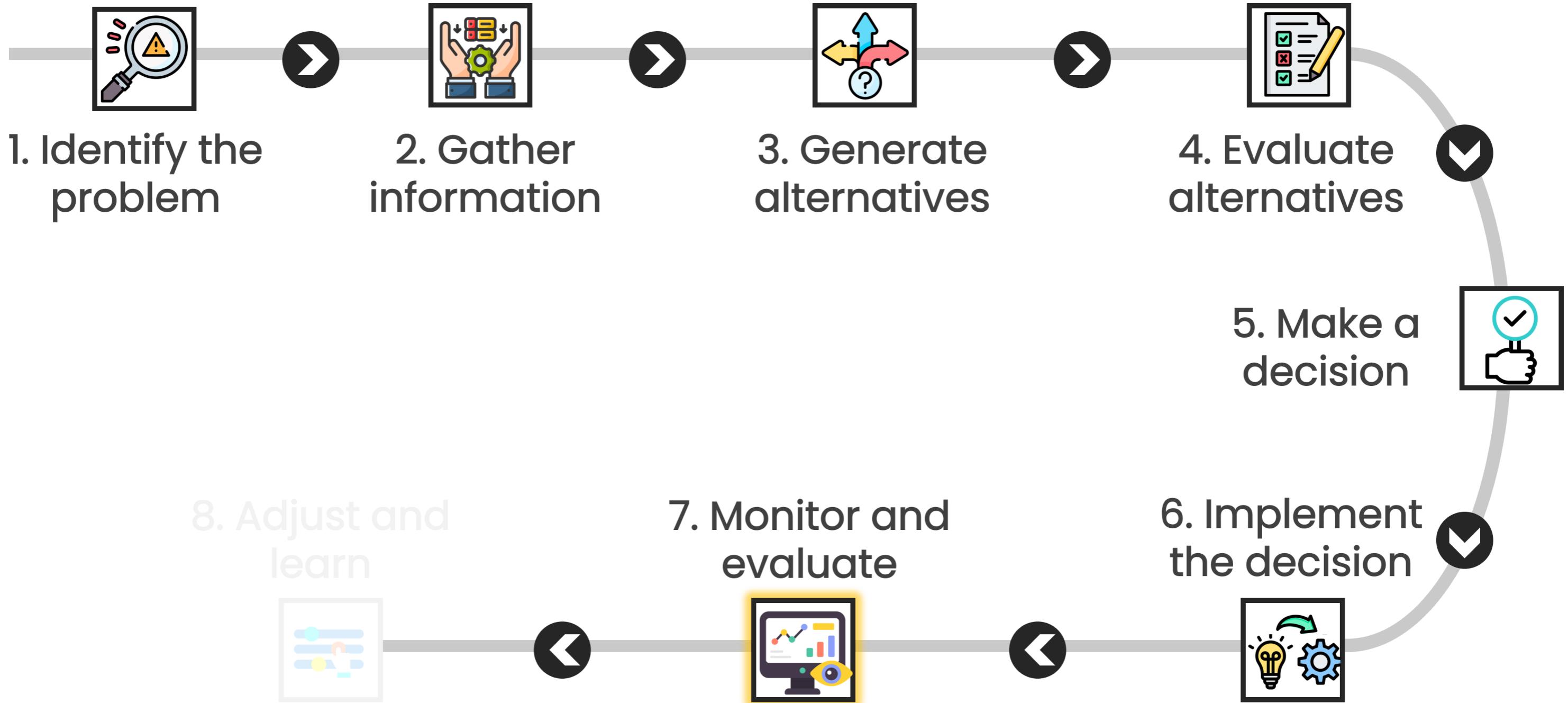
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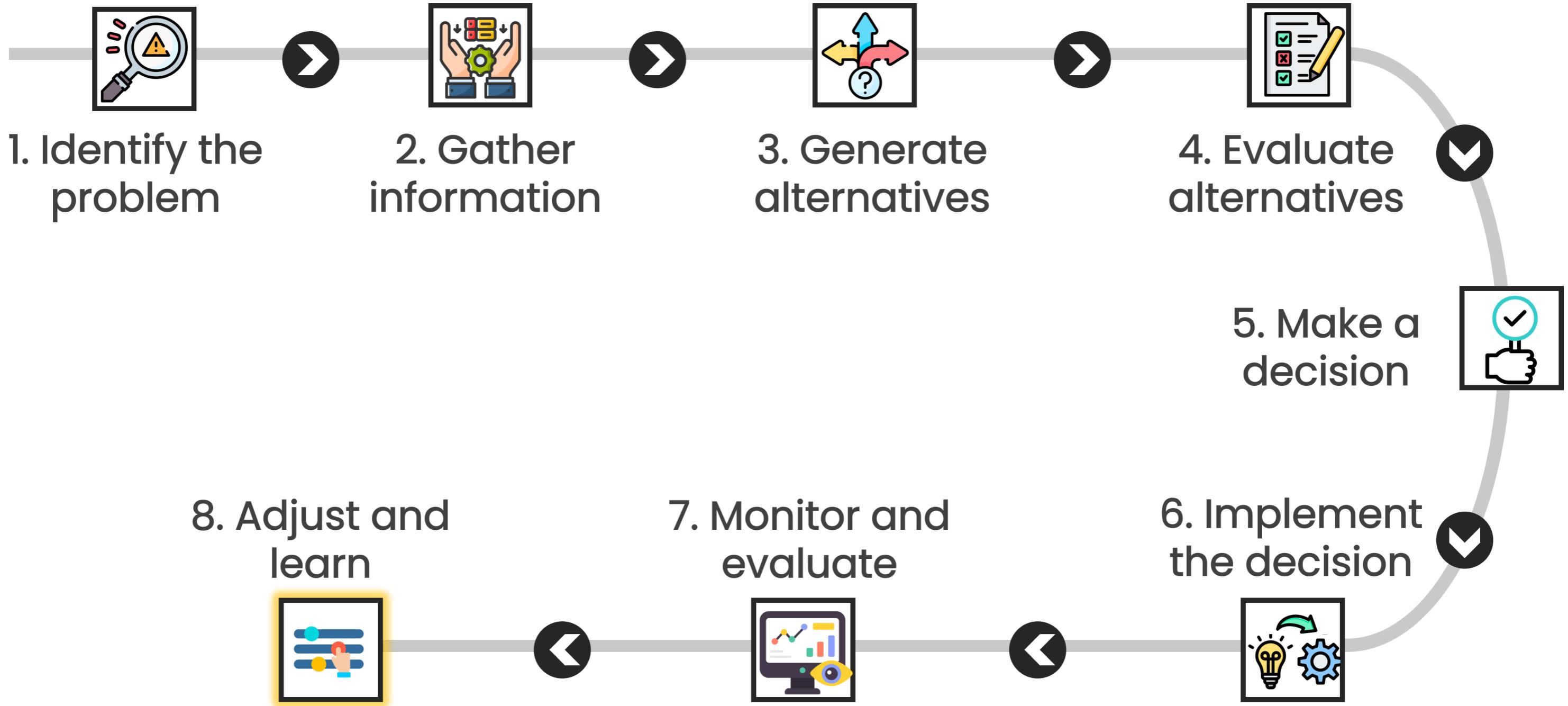
Decision-making steps



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Decision-making steps



Decision Models

Decision Models provide a systematic method to support the decision-making process.



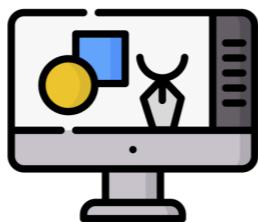
Formalization

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Formalization



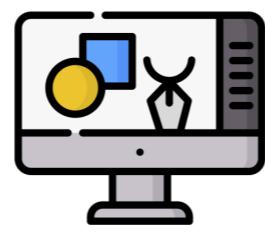
Graphical
representation

Decision Models

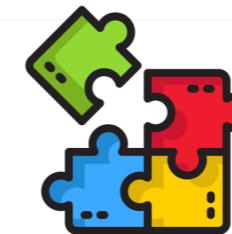
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Formalization



Graphical
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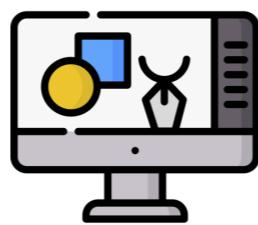
Holistic
analysis

Decision Models

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Formalization



Graphical
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Holistic
analysis



Optimization

Let's practice!

DECODING DECISION MODELING

Introduction to Decision Science

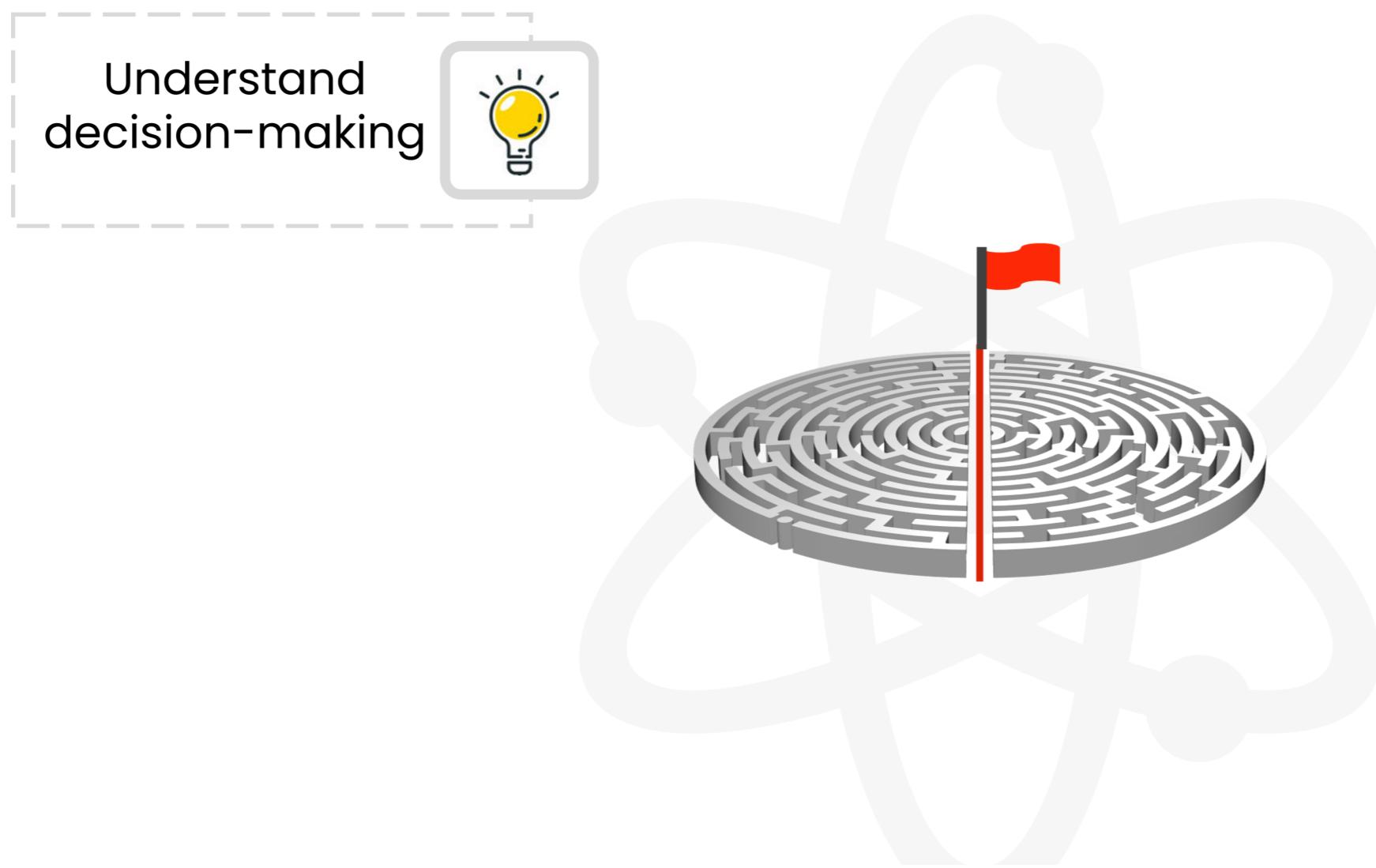
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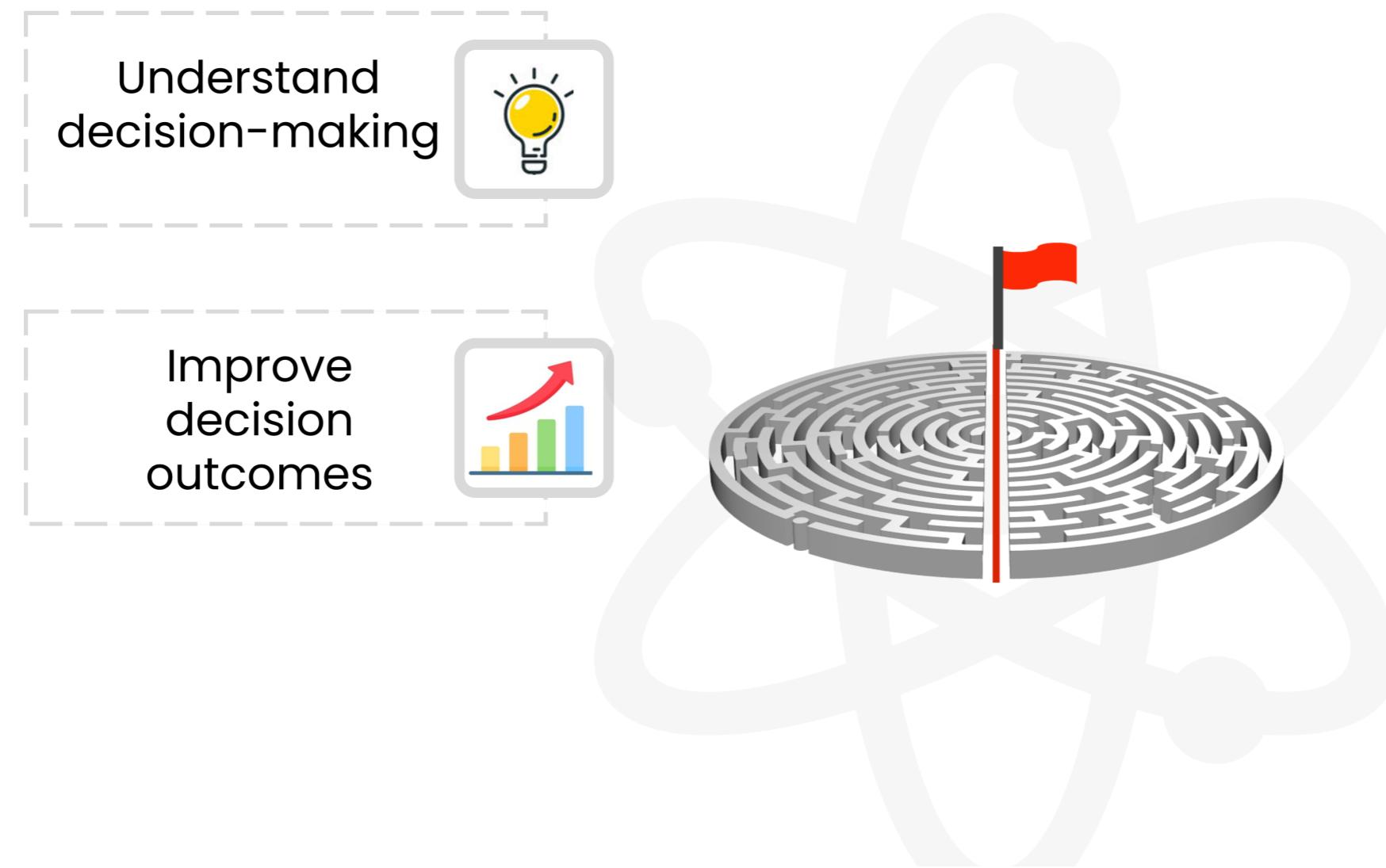
Decision Science

Decision science is a field of study that involves **various disciplines to understand and improve decision-making processes.**



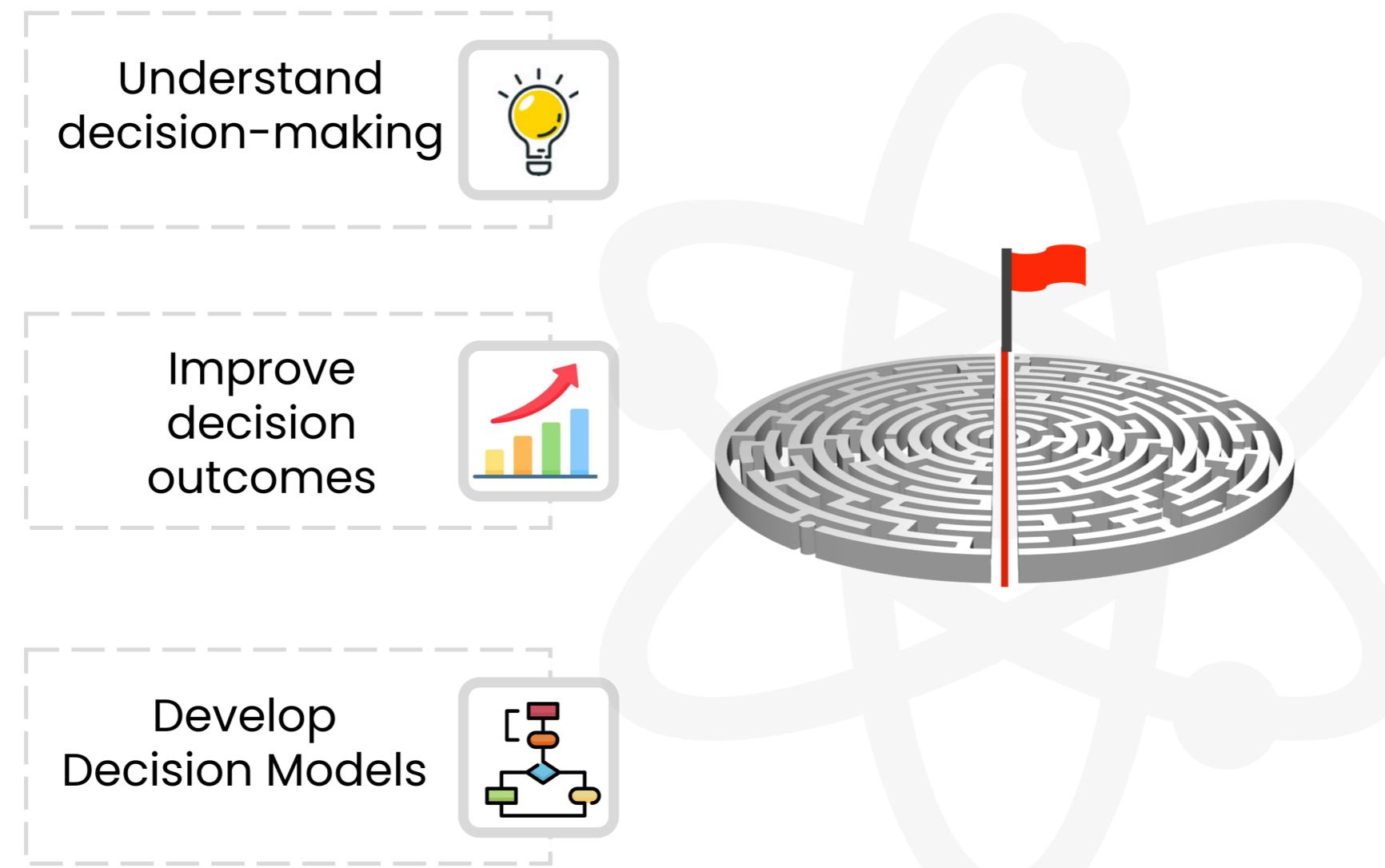
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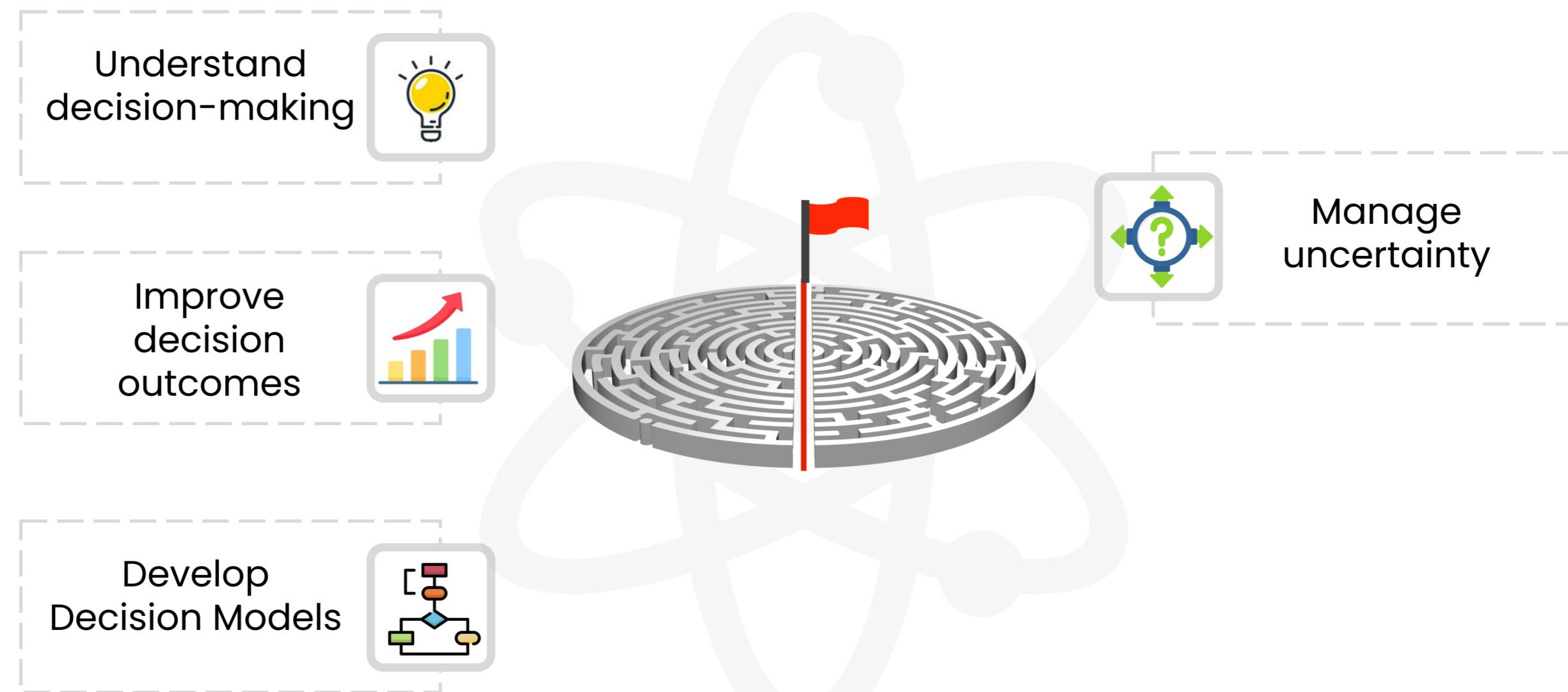
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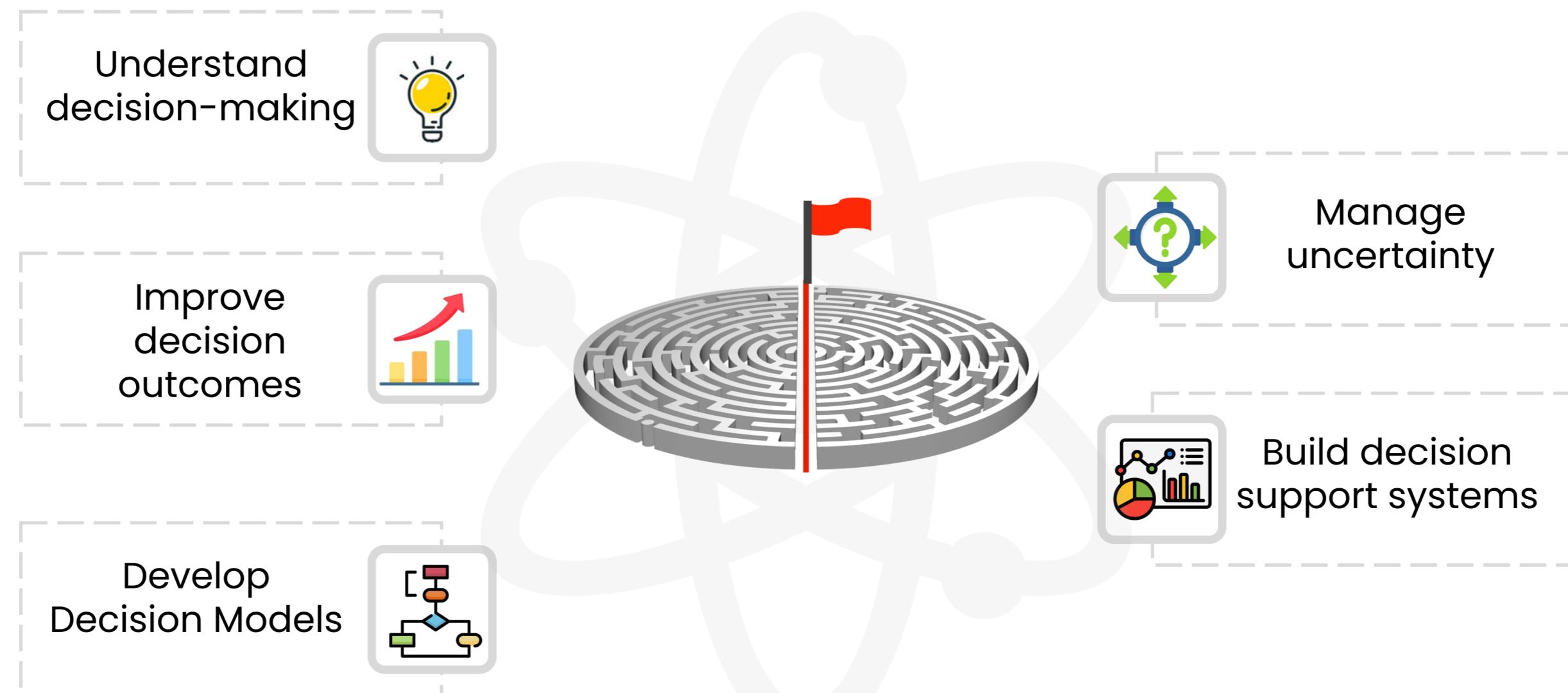
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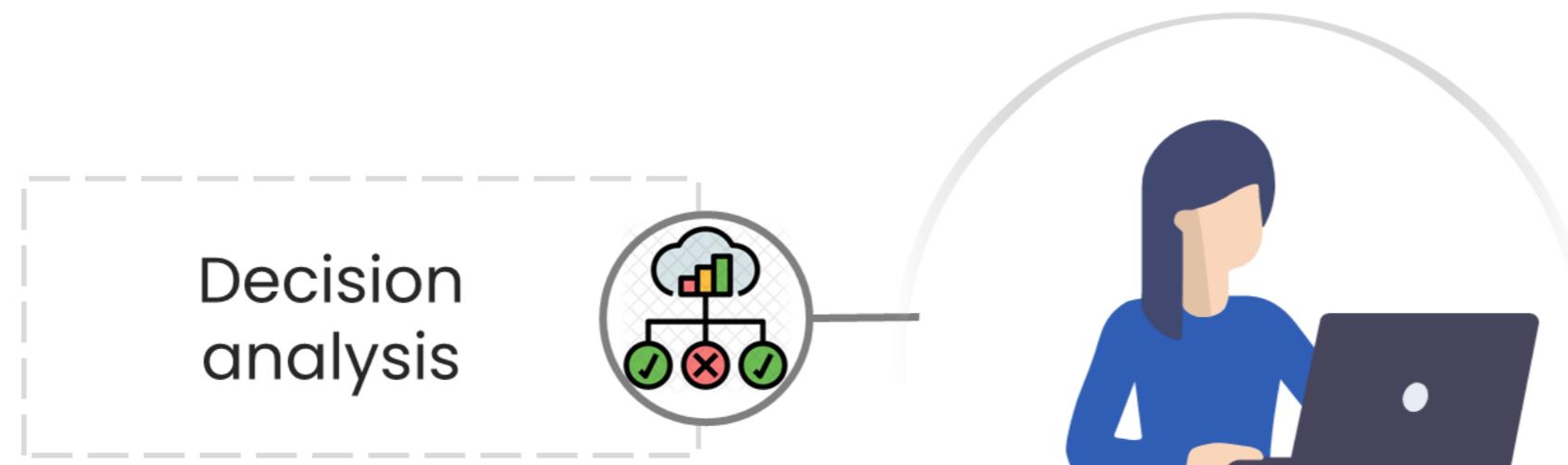
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Fields in Decision Science

Decision Science integrates **concepts and techniques from various disciplines**, including mathematics, statistics, economics, psychology, and computer science.



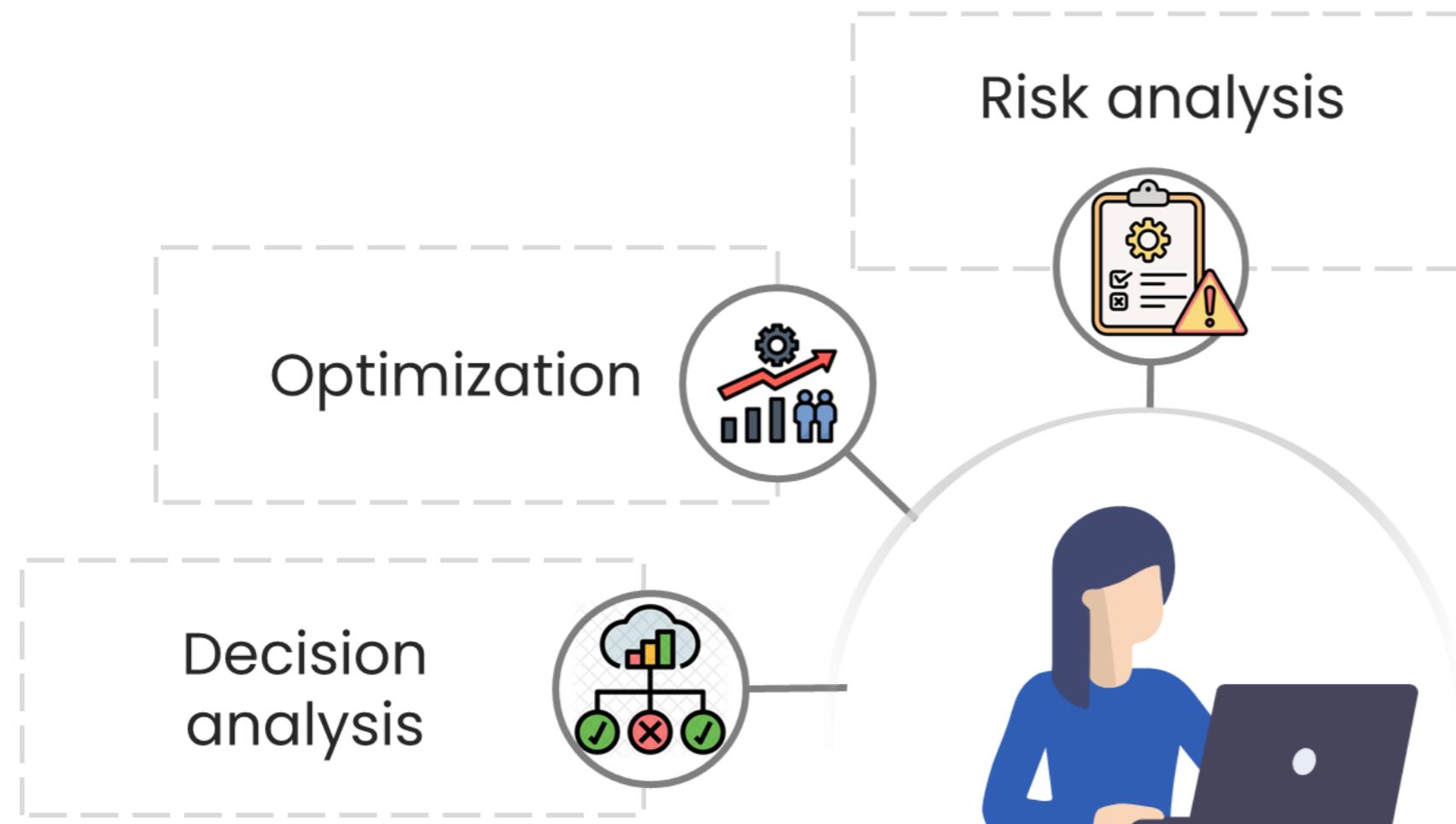
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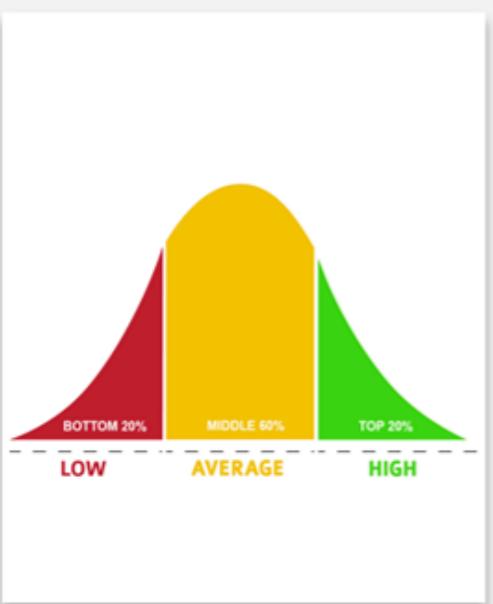
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Statistics in Decision Science

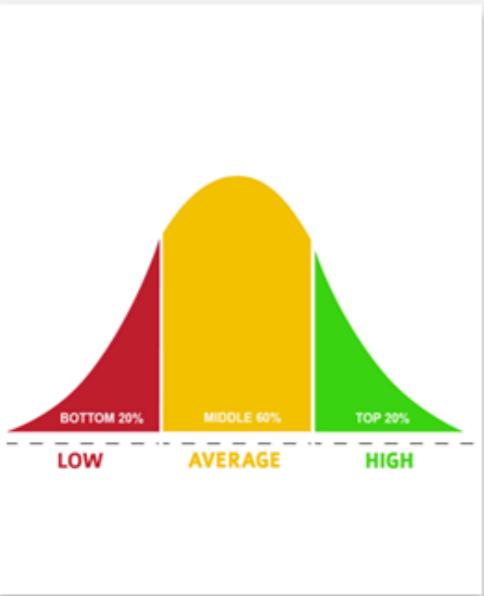
Statistics is crucial in Decision Science for analyzing data, modeling decision problems, making predictions, and optimizing outcomes.



Mean

Statistics in Decision Science

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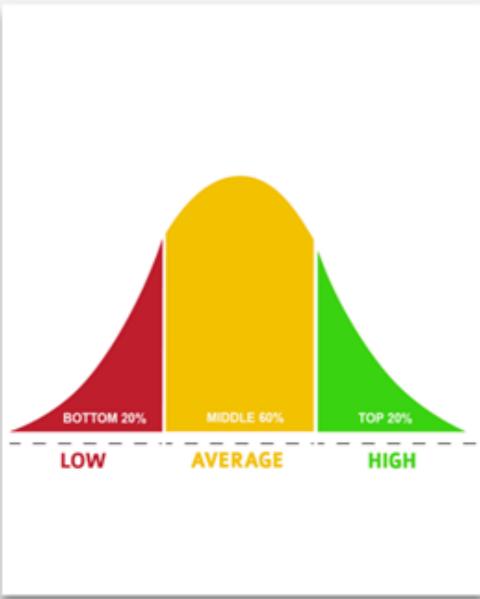
Mean

{2, 1, 2, 2, 3}
{1, 2, 2, 2, 3}
↓
the median

Median

Statistics in Decision Science

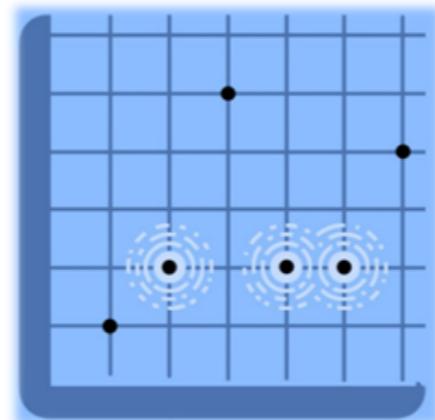
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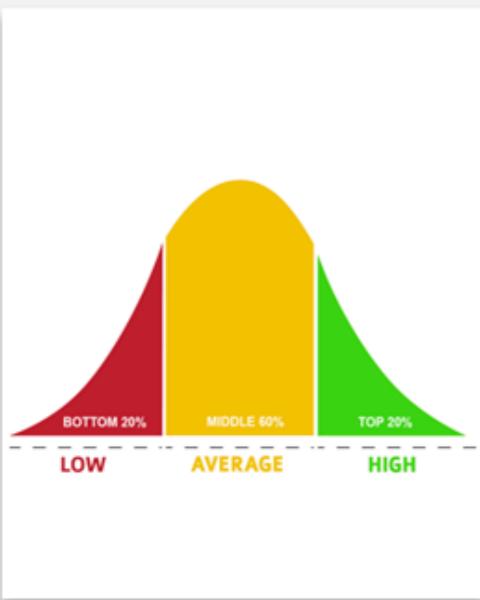
Median



Mode

Statistics in Decision Science

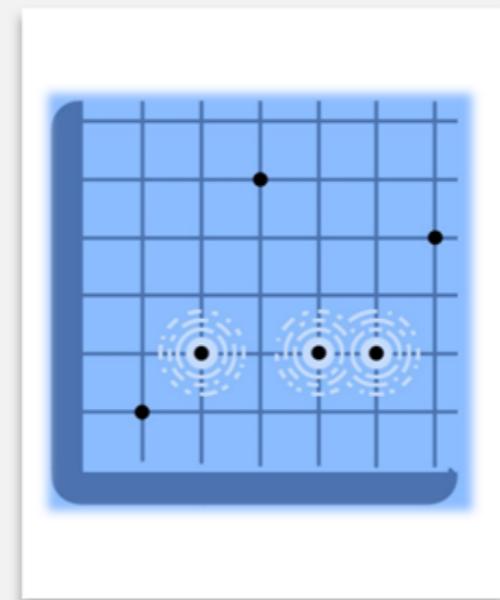
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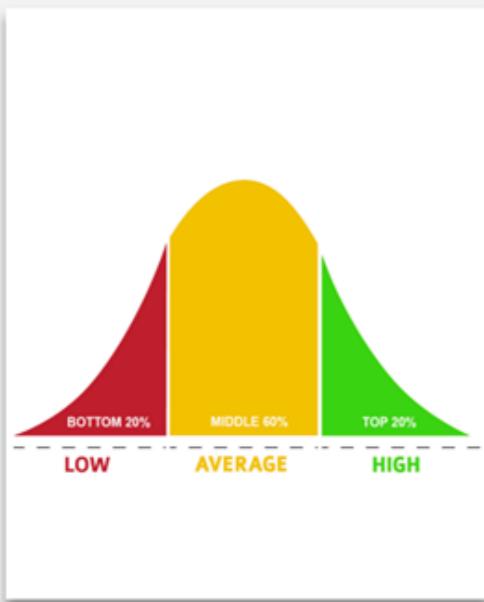
Mode



Standard deviation

Statistics in Decision Science

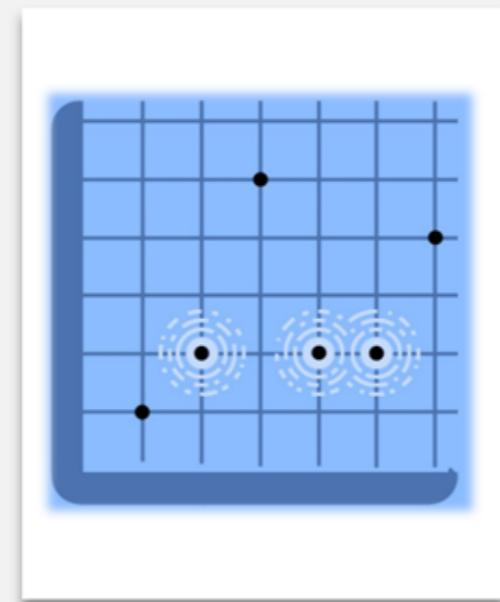
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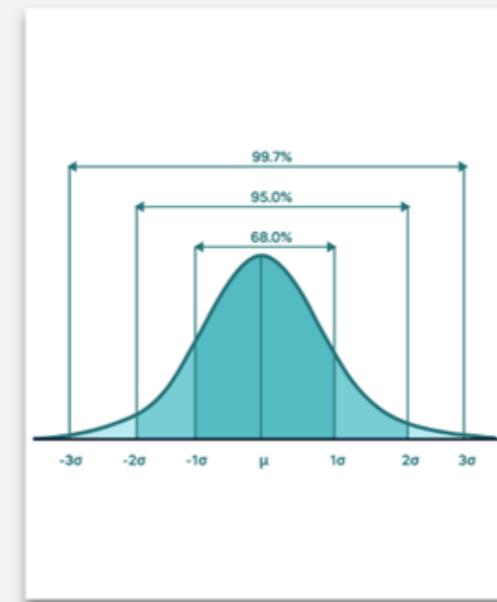
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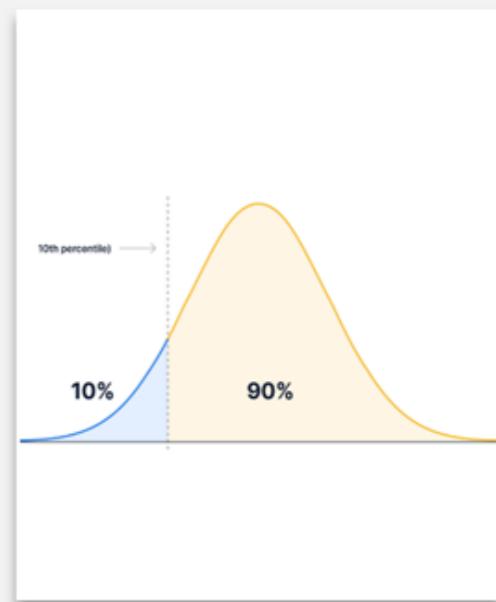
Median



Mode



Standard deviation



Percentile

Let's practice!

DECODING DECISION MODELING

Introduction to analysis methods

DECODING DECISION MODELING

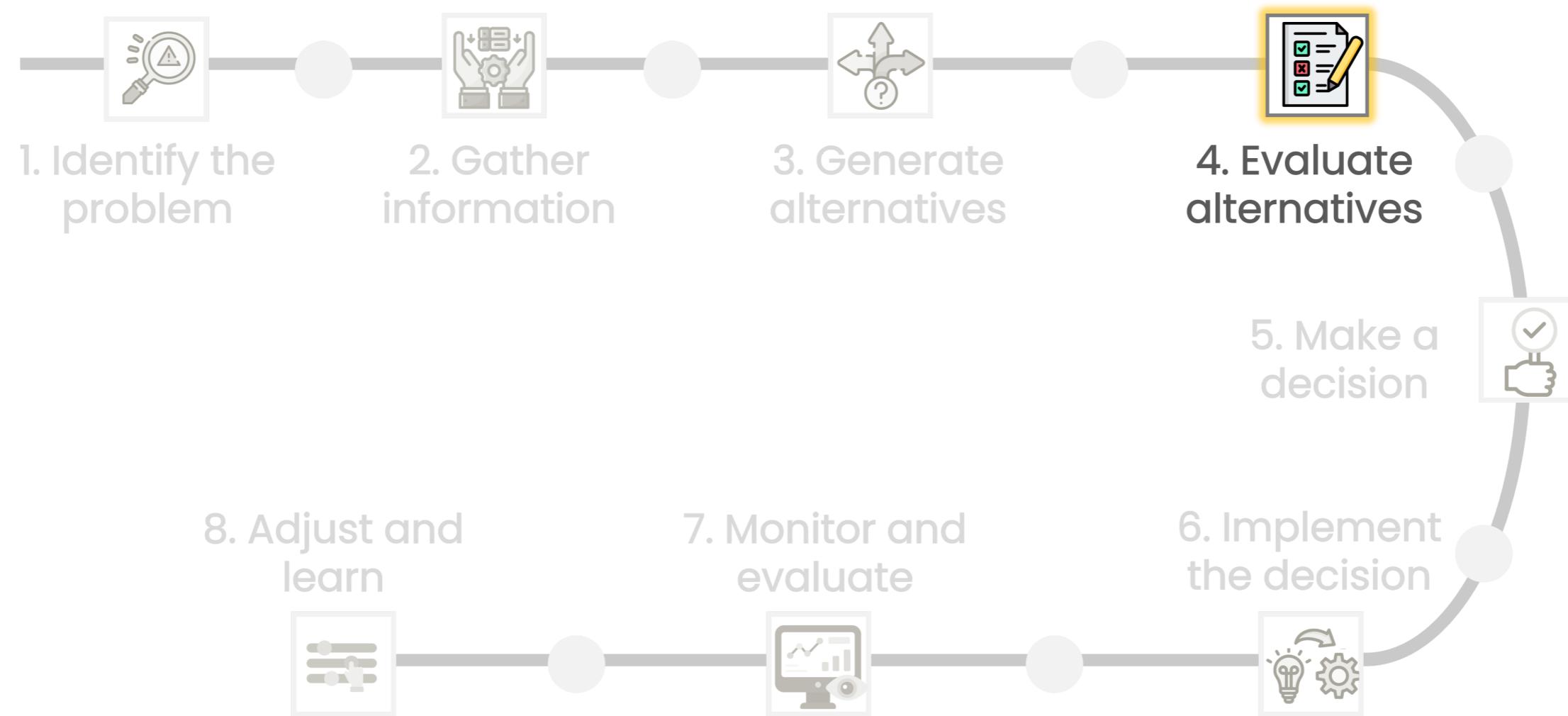


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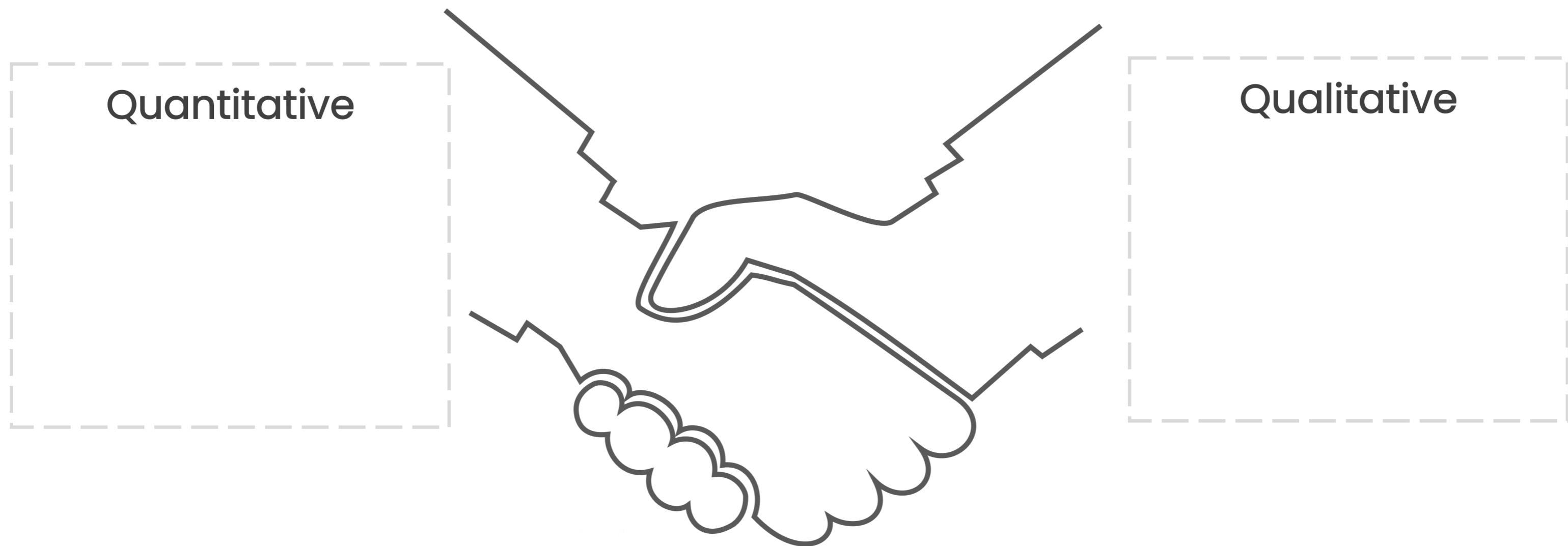
Analyze to thrive

Analysis is crucial in decision-making as it provides insights into relevant data, uncovers patterns, identifies trends, evaluates alternatives, and their potential outcomes.



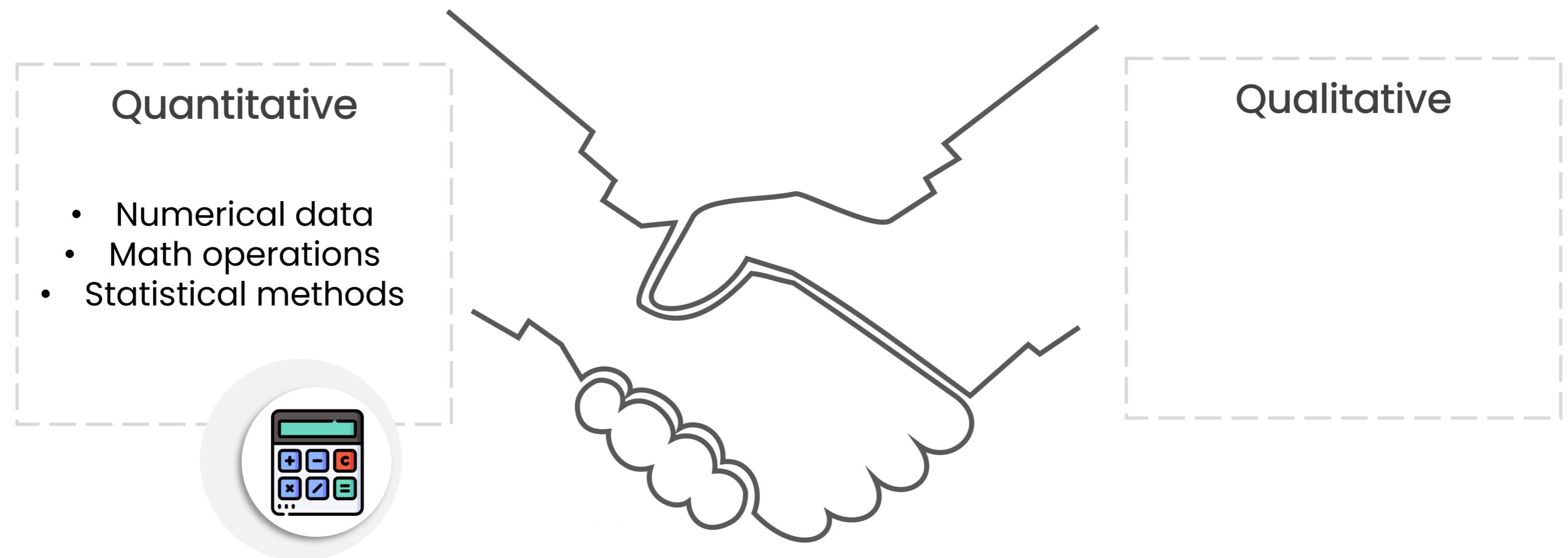
Types of analysis

The combination of **quantitative** and **qualitative** methods provide a comprehensive approach to analysis during the decision-making process.



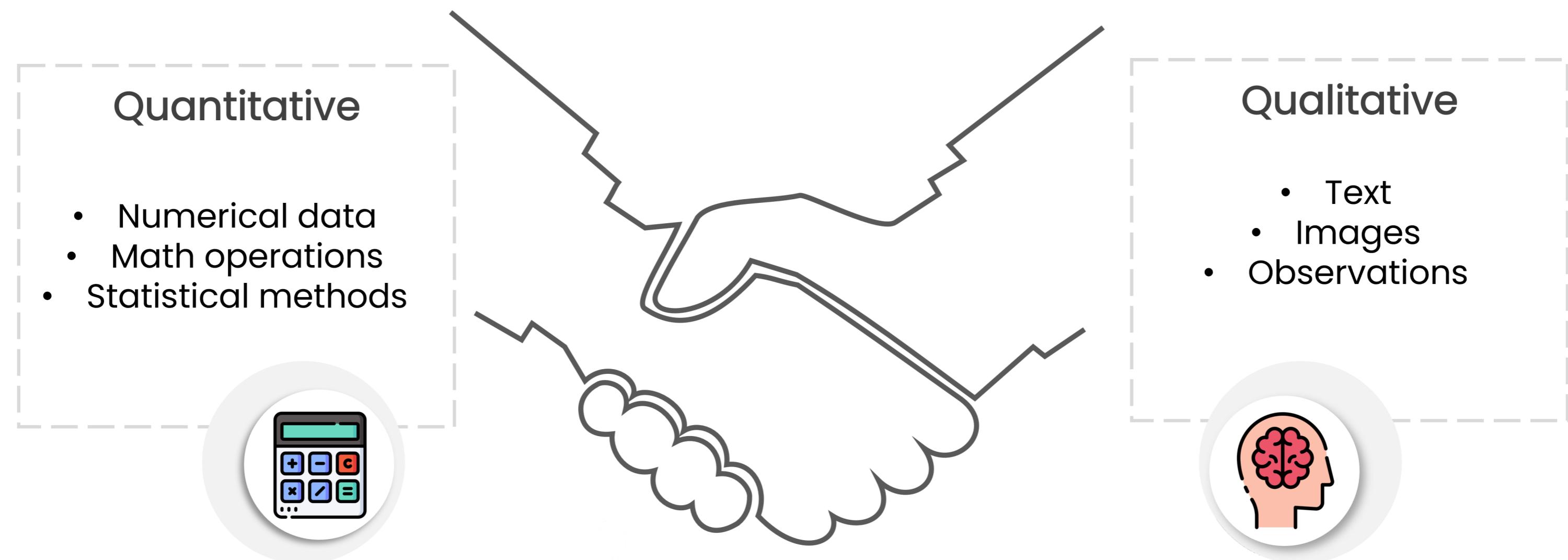
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Quantitative analysis



Descriptive statistics

- Characterizing data through mathematical concepts such as:
 - Average, medium, mode, max/min etc.

Quantitative analysis



Descriptive statistics

- Characterizing data through mathematical concepts such as:
 - Average, medium, mode, max/min etc.



Inferential statistics

- Analyzing relationships
 - Testing hypothesis
 - Estimating parameters
 - Making conclusions

Quantitative analysis



Descriptive statistics

- Characterizing data through mathematical concepts such as:
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Inferential statistics

- Analyzing relationships
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Probability distributions

- Mapping probabilities
- Quantifying likelihood
- Generating forecast

Qualitative analysis

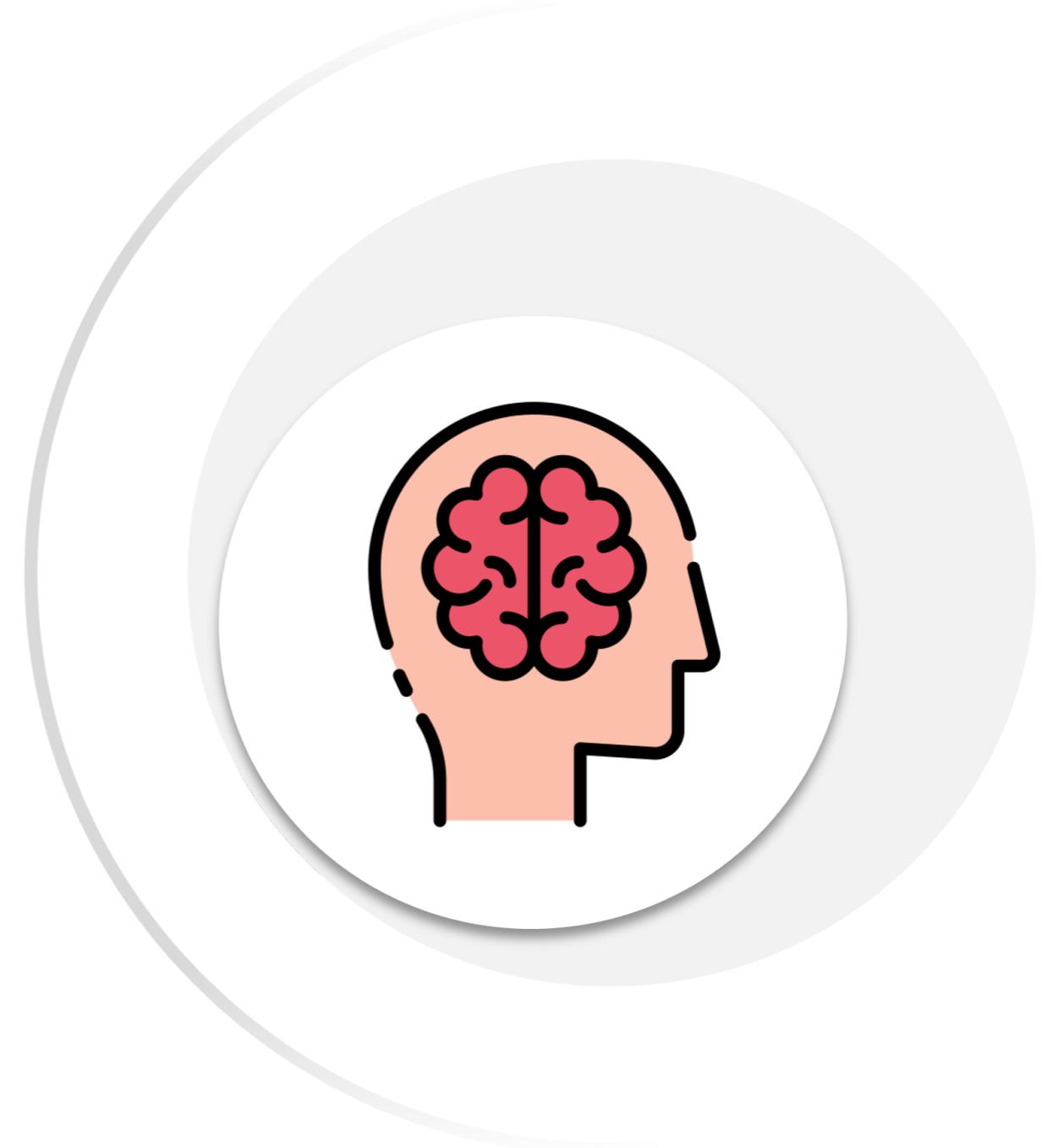
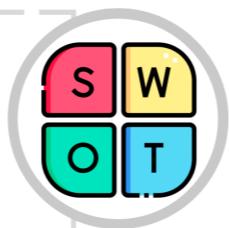
SWOT analysis

Internal analysis

- Strengths
- Weaknesses

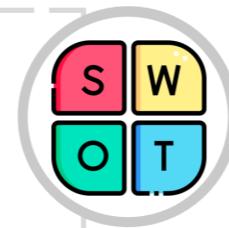
External analysis

- Opportunities
- Threats



Qualitative analysis

SWOT analysis



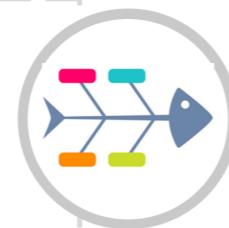
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Fishbone diagram

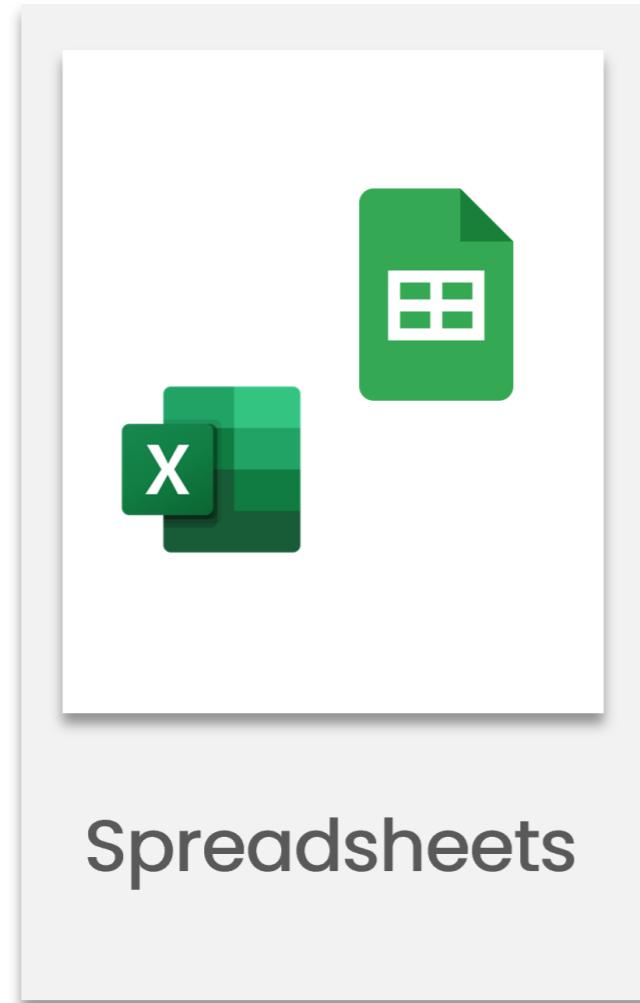


- Visual tool to identify and explore the potential causes of a specific phenomenon



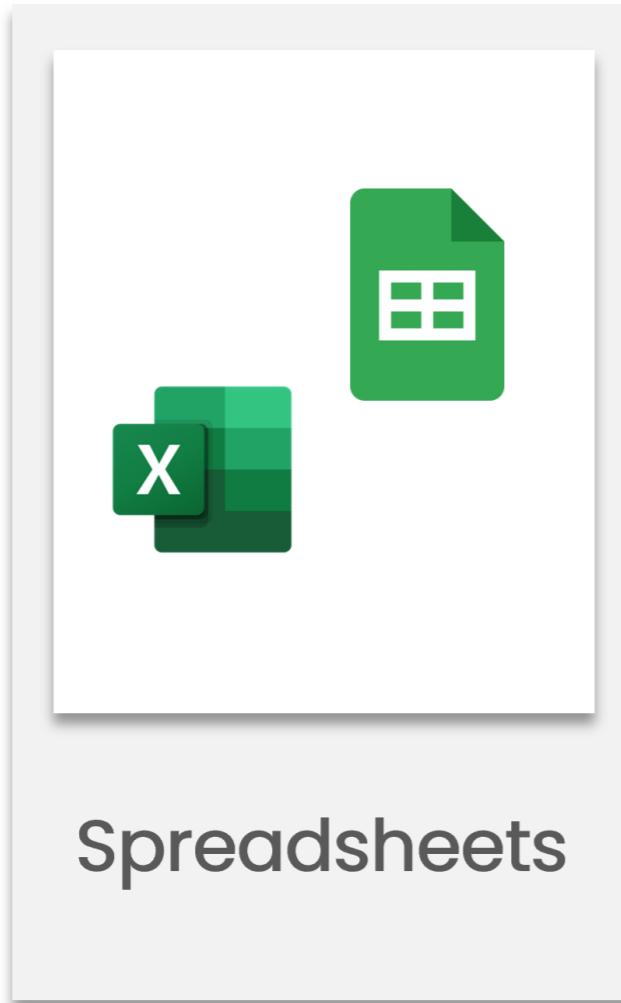
Analysis tools

The use of tools increases efficiency, accuracy, and scalability in handling data and conducting investigations during an analysis.

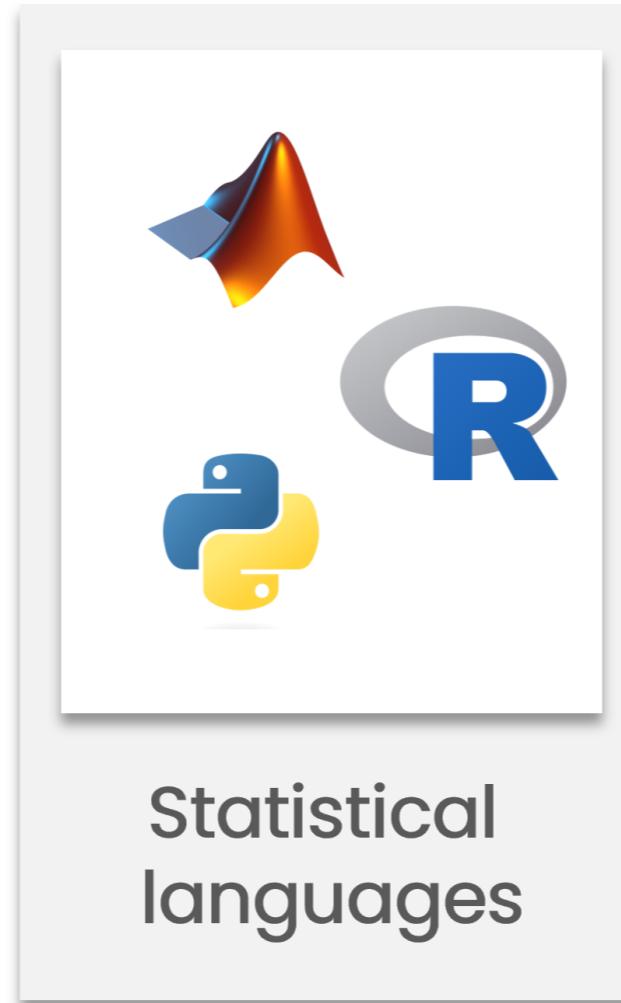


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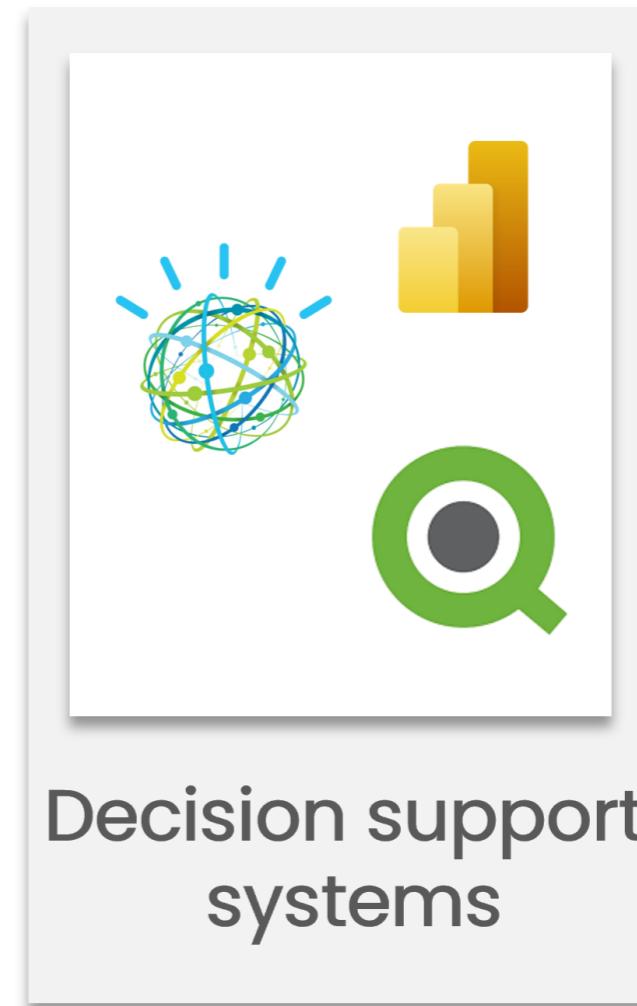
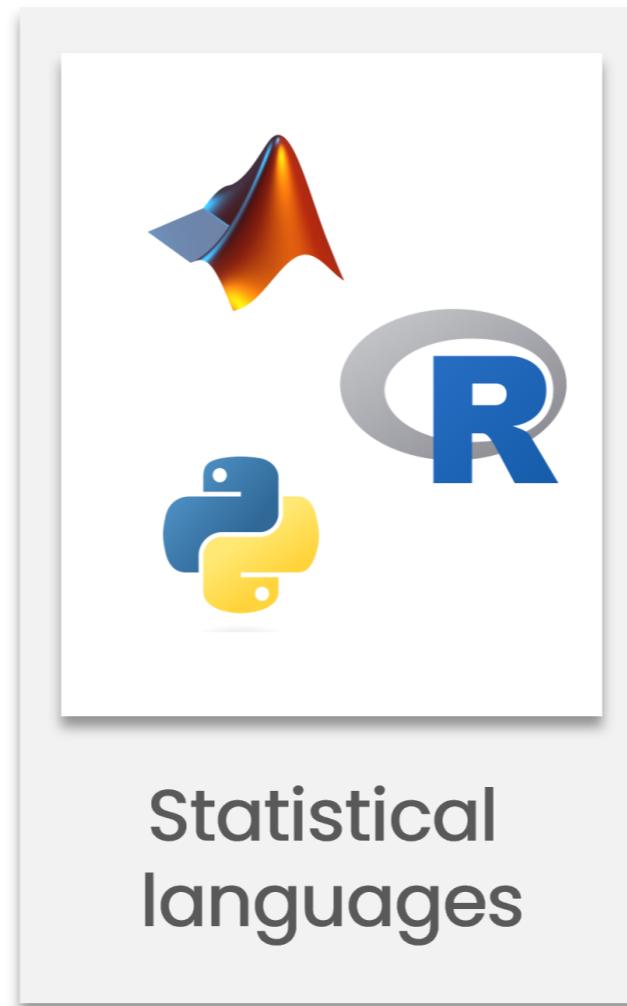
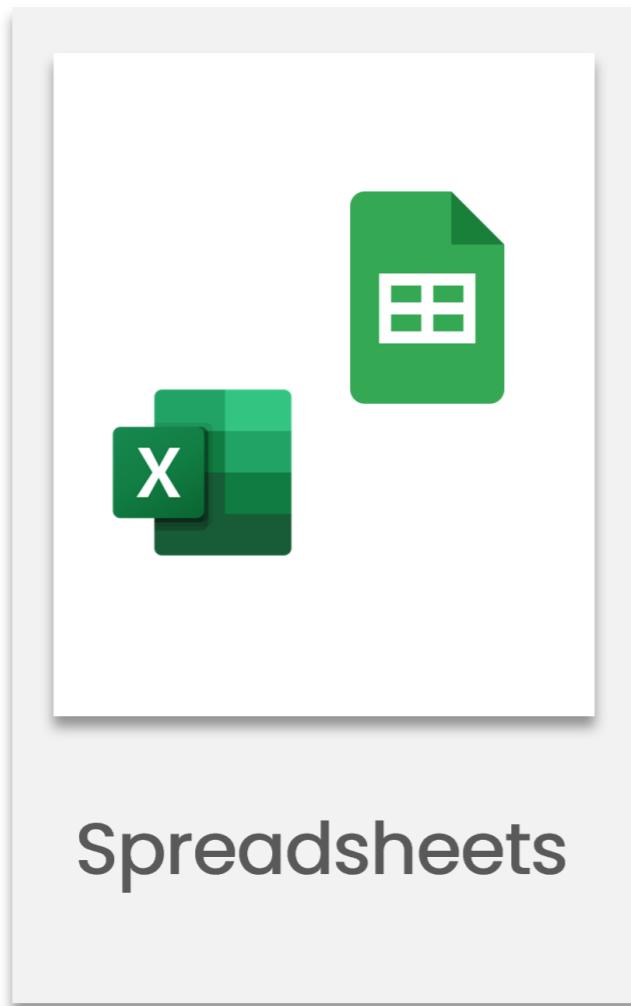
Spreadsheets



Statistical
languages

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Let's practice!

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