

Why data literacy is an essential skill

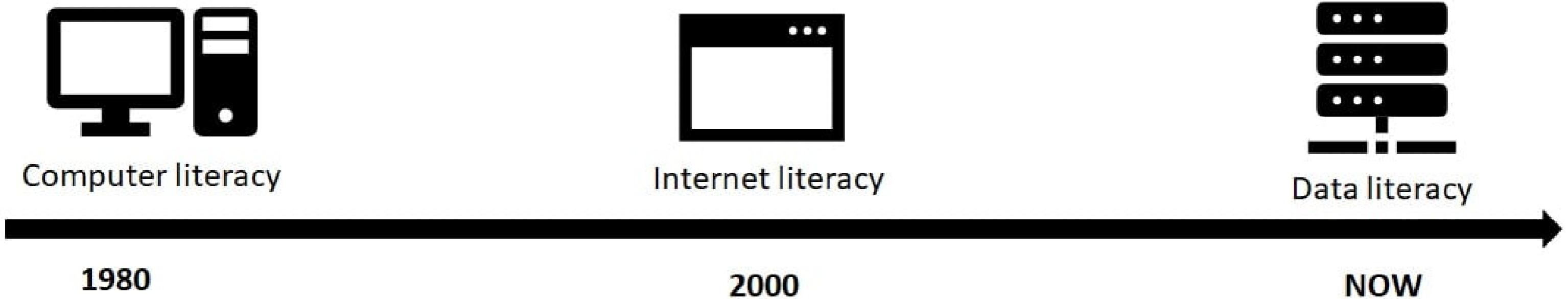
INTRODUCTION TO DATA LITERACY



Jess Ahmet

Content Developer, DataCamp

We live in the data era



Data literacy is a life skill

- We can learn about the world through data
- Problem: lots of information, often complex
- How do we get from information to valuable insights?

Data literacy can help us learn how data can be used to connect the dots and create value



A skill even for non-data jobs

- Data literacy is **not** about technical skill
- It **is** about learning how to critically think about and interact with data and its analysis
 - Understanding its relevance
 - Placing it into context
 - Knowing both its potential and its limits

The definition of data literacy

- The ability to read, work with, analyze, and communicate insights with data.
- Reading data
- Working with and analyzing data
- Communicating insights with data

Reading data

- Identify data sources
- Collect data
- Manage data
- Tools you might already know:
 - Databases
- Learn more in Chapter 2



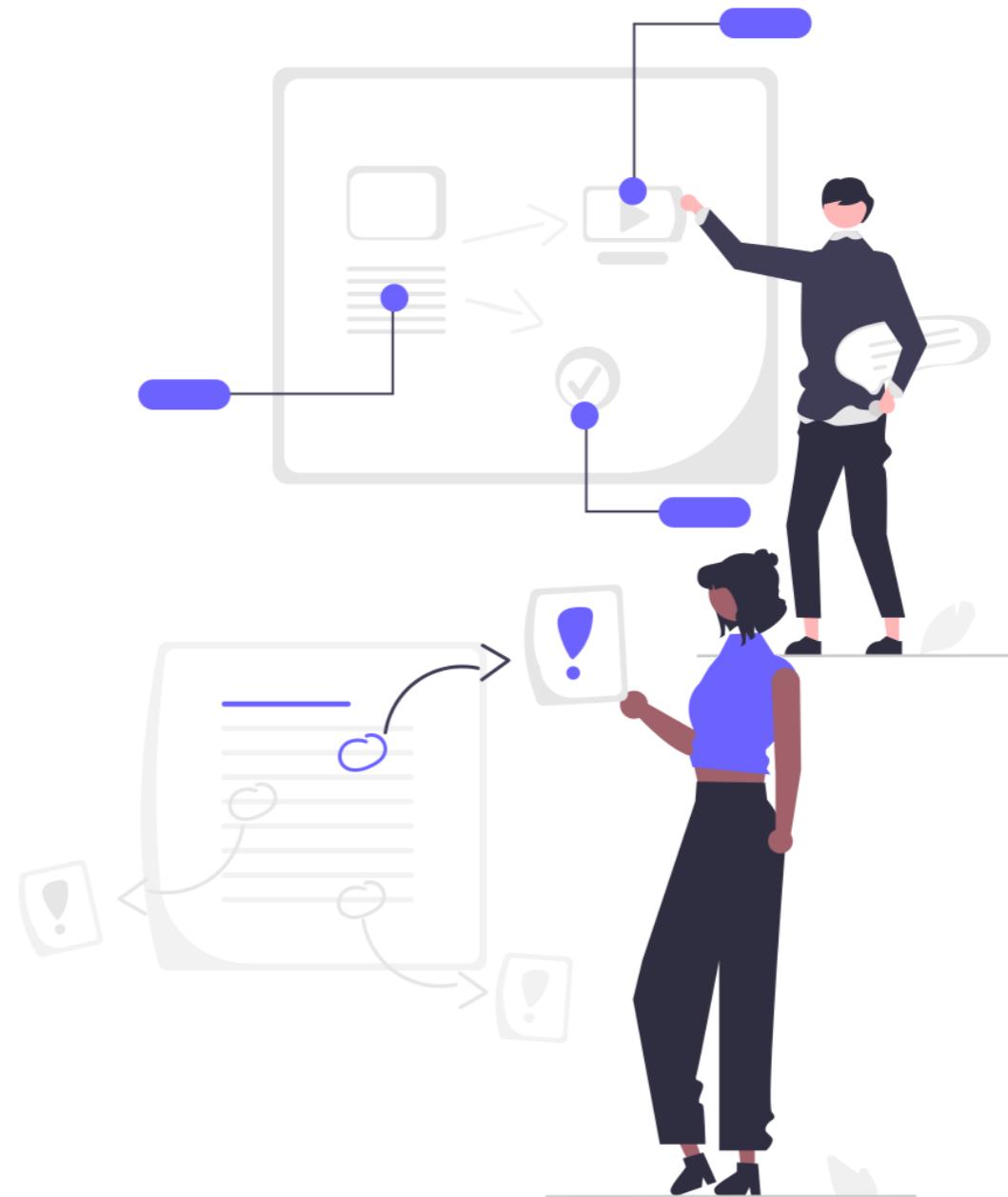
Working with and analyzing data

- Turn data into insights
- Data analytics:
 - Descriptive analytics
 - Predictive analytics
- Learn more in Chapter 3



Communicating insights with data

- Demonstrate your insights
- Present possible actions
- Tools you might already know:
 - Visualizations
 - Storytelling
- Learn more in Chapter 4



Let's practice!

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From data to insights

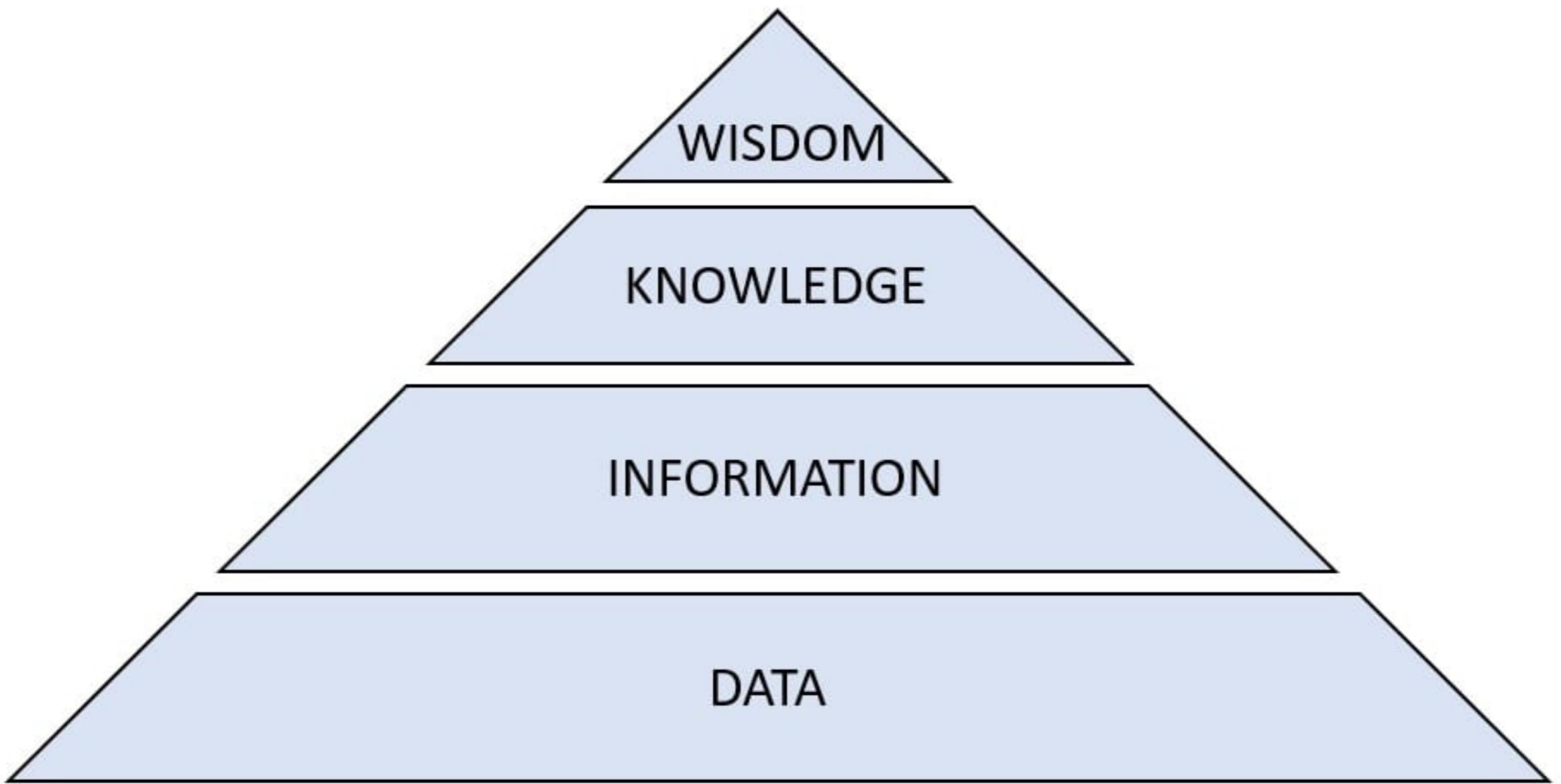
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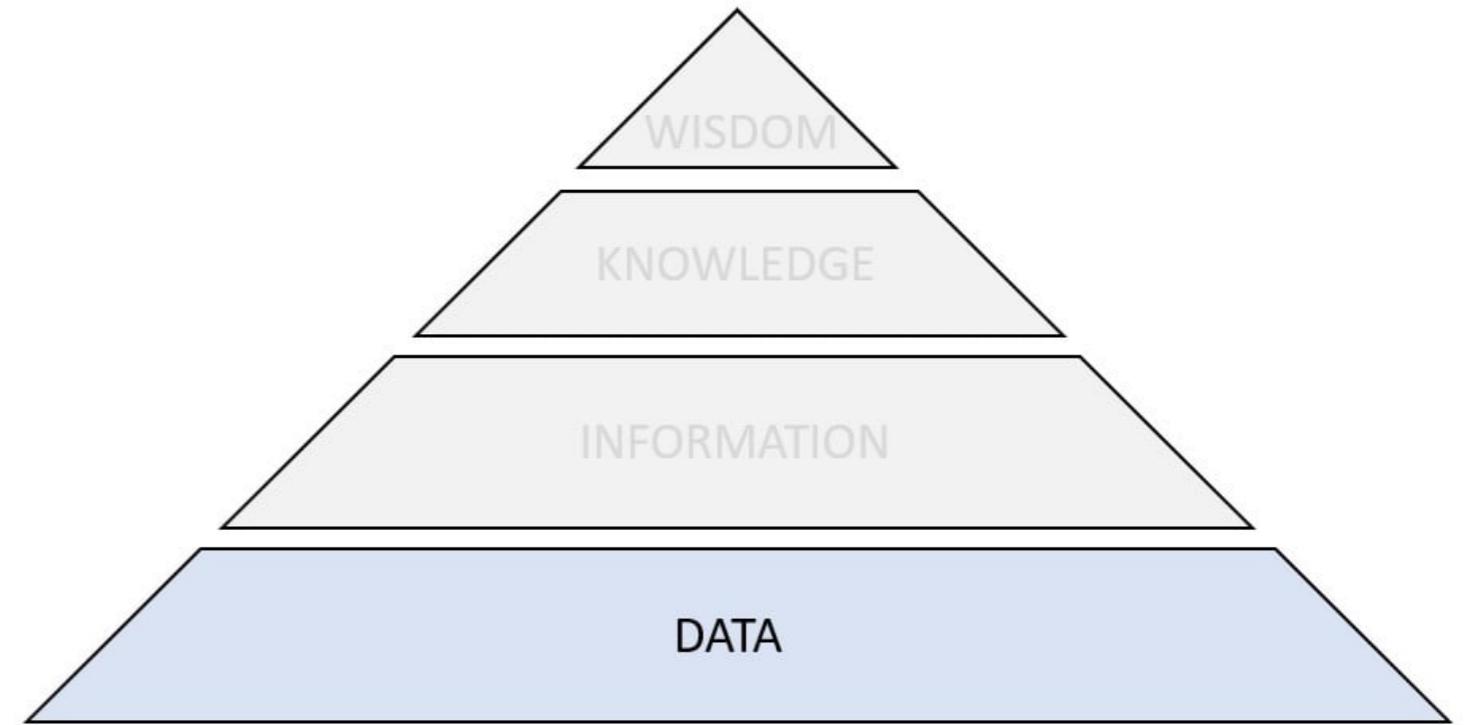
The DIKW pyramid



DIKW pyramid: Data

- Collection of raw observations or measurements
- Unorganized, unprocessed, does not have meaning (yet)

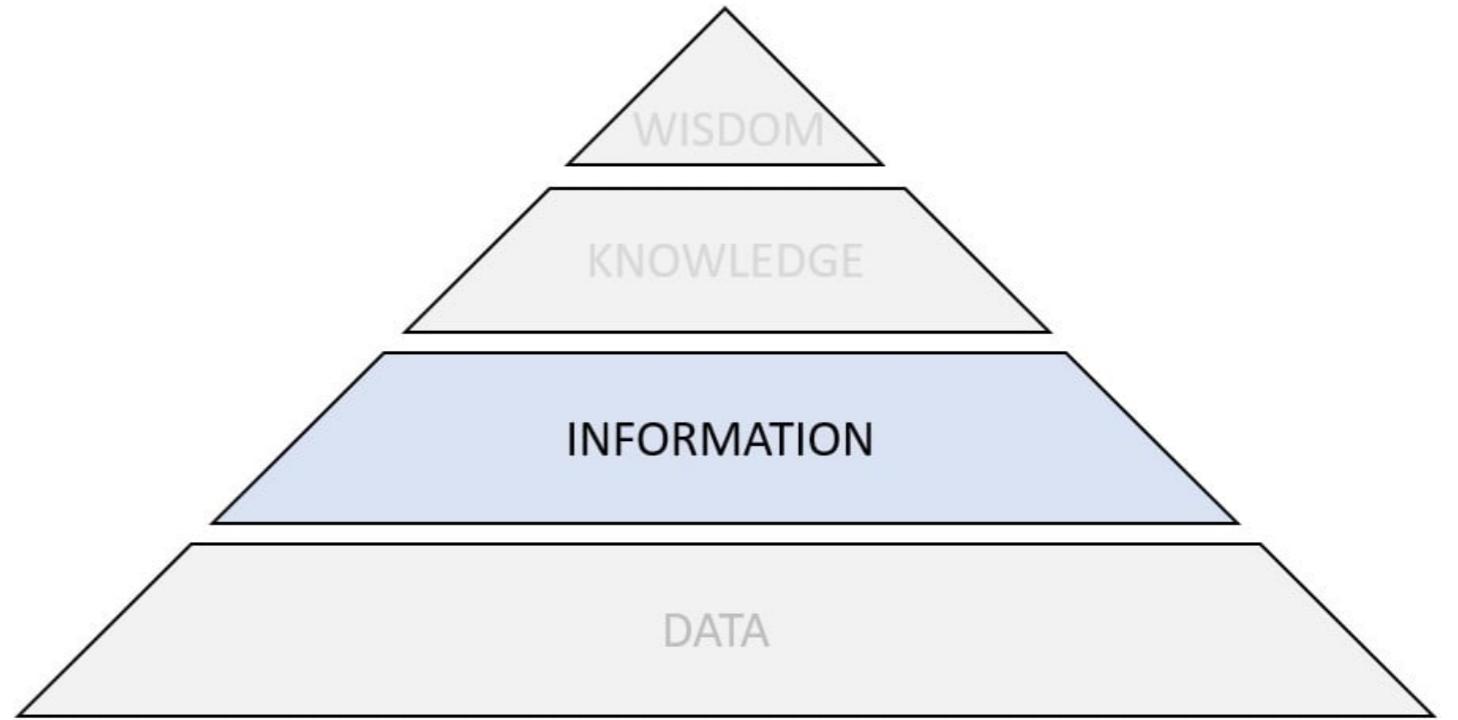
The thermometer shows 15°C/59°F and there are dark clouds. It is starting to rain.



DIKW pyramid: Information

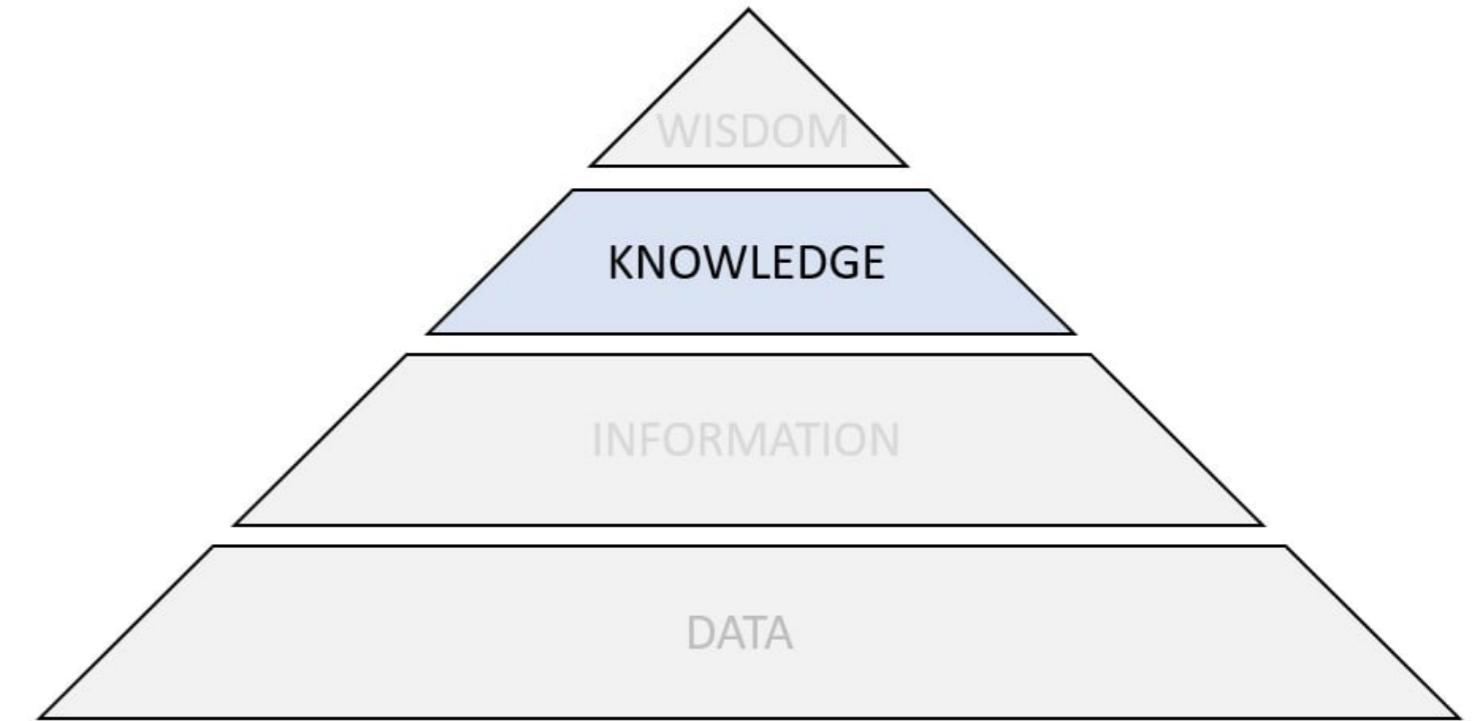
- Raw data placed into context
- Typically done by organizing or aggregating data

First the temperature dropped several degrees, then it became cloudy and then it started to rain.



DIKW pyramid: Knowledge

- Combine information and make connections to learn and gain meaning
- Typically done by detecting patterns, making generalizations or predictions

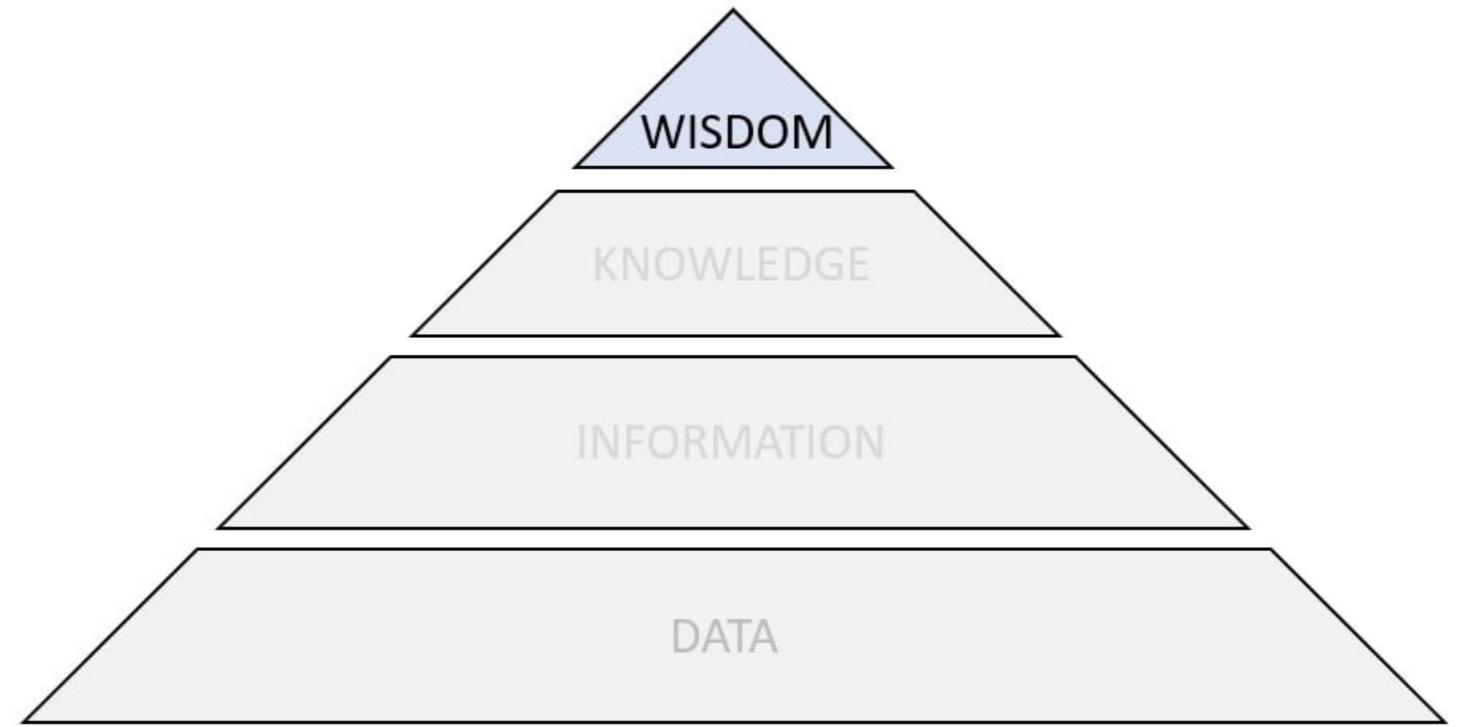


A drop in temperature followed by the formation of dark clouds, predicts that it is likely going to rain.

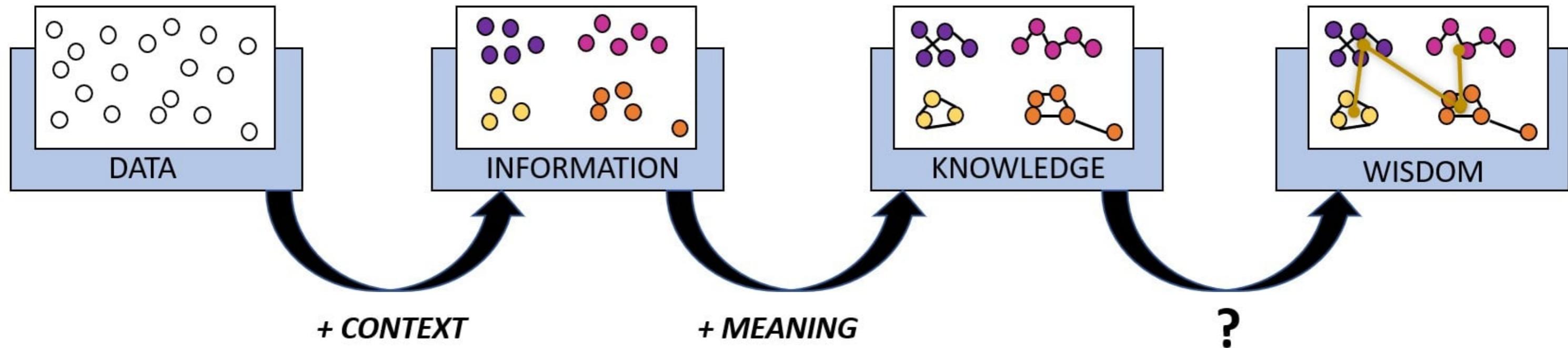
DIKW pyramid: Wisdom

- Applied knowledge to act proactively
- Typically done by combining knowledge logically to determine the course of action

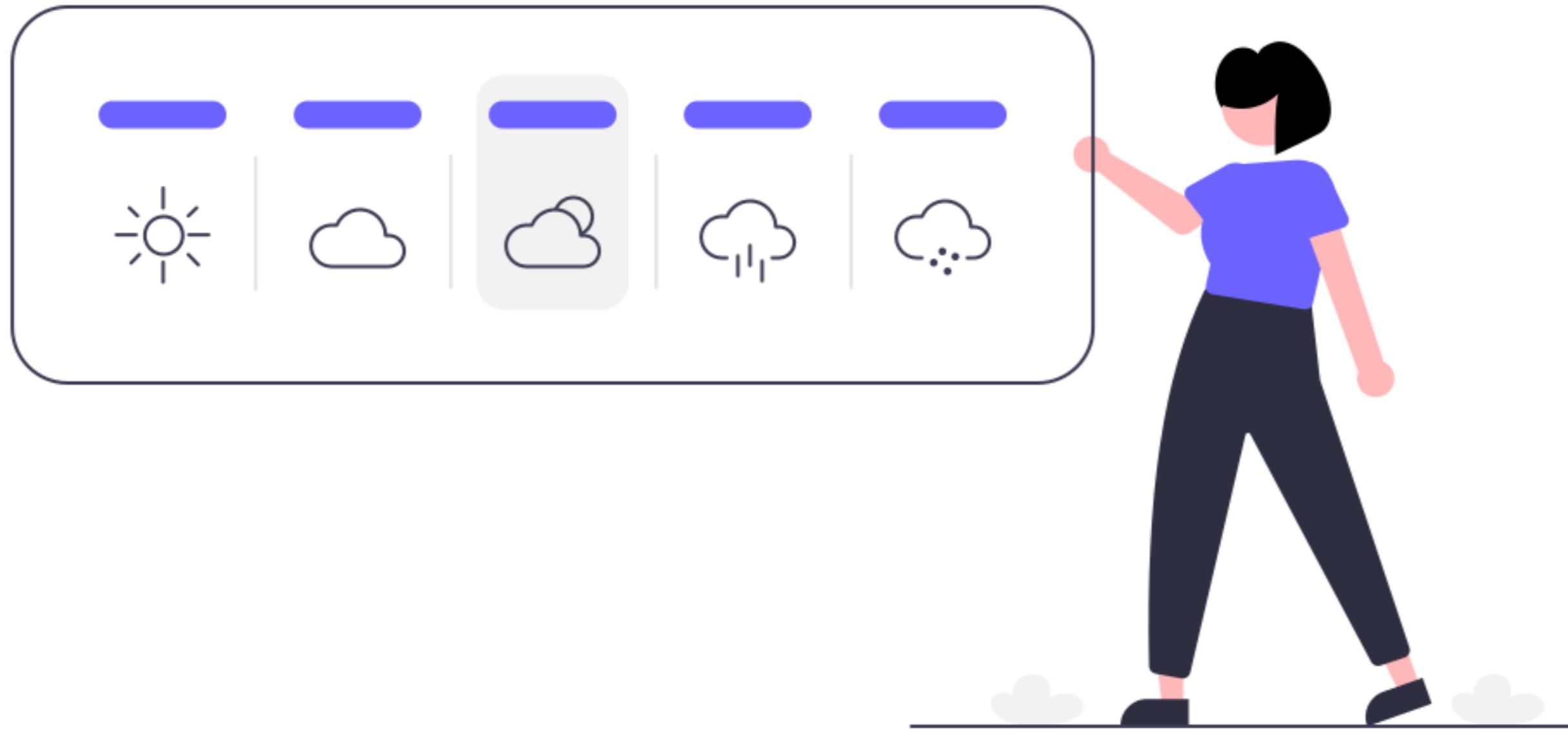
Based on my knowledge of the weather, I know when it is going to rain and can bring my umbrella.



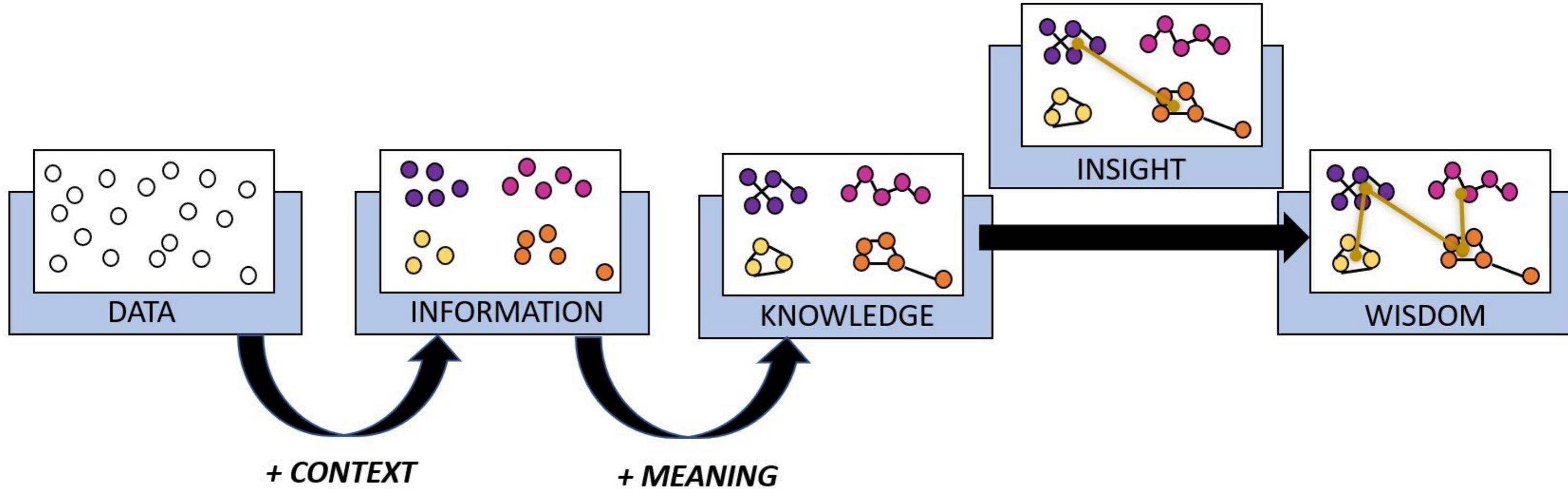
The path to wisdom



The path to wisdom



Insights are the key



Insights are the key



Let's practice!

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Data-driven decision making

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Why data-driven decisions matter

Data-driven decision making is the process of using data to make an informed decision about a specific problem and acting upon it.

- Optimize performance
- Gain a better understanding
- Protect against risks
- Determine the best course of action

Misconceptions about data-driven decision making

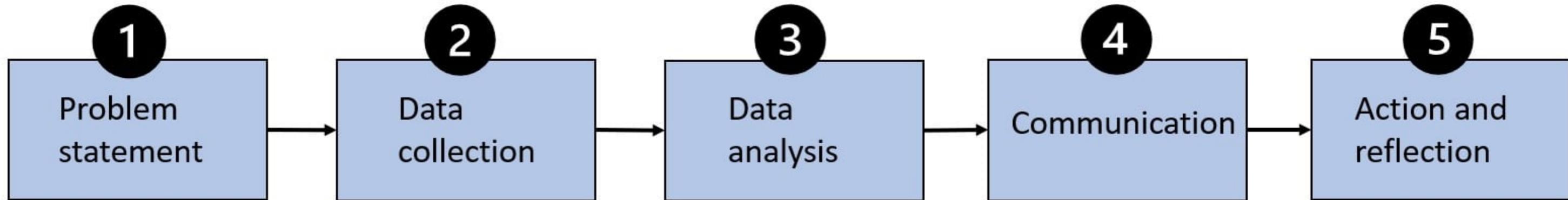
- Data-driven decision making is **not** just for large organizations
- It is **not** only the responsibility of the data team
- It is **not** the only or the best answer to solve problems

*The Evolution of Decision Making:
How Leading Organizations Are
Adopting a Data-Driven Culture*

3 Ways to Build a Data-Driven Team

The world's most valuable resource is no longer oil, but data

Data-driven process



- 5 main steps that underpin every data-driven process
- Defining the problem statement is very important
- Taking action based on insights is the end goal

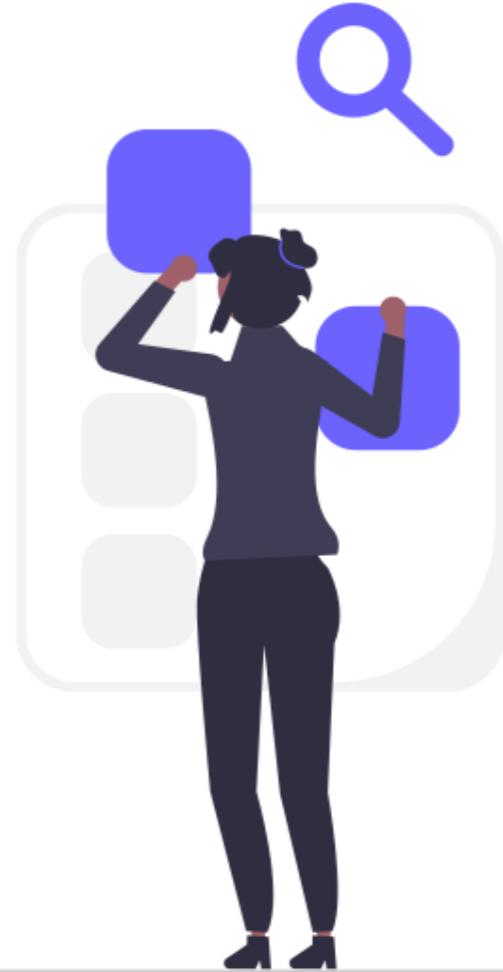
Problem statement

- What is the problem you want to solve?
- Guides the data-driven process
- Typical problem categories:
 - Describing the state of an organization or process
 - Diagnosing causes of events
 - Detecting anomalies or predicting events



How to define a problem

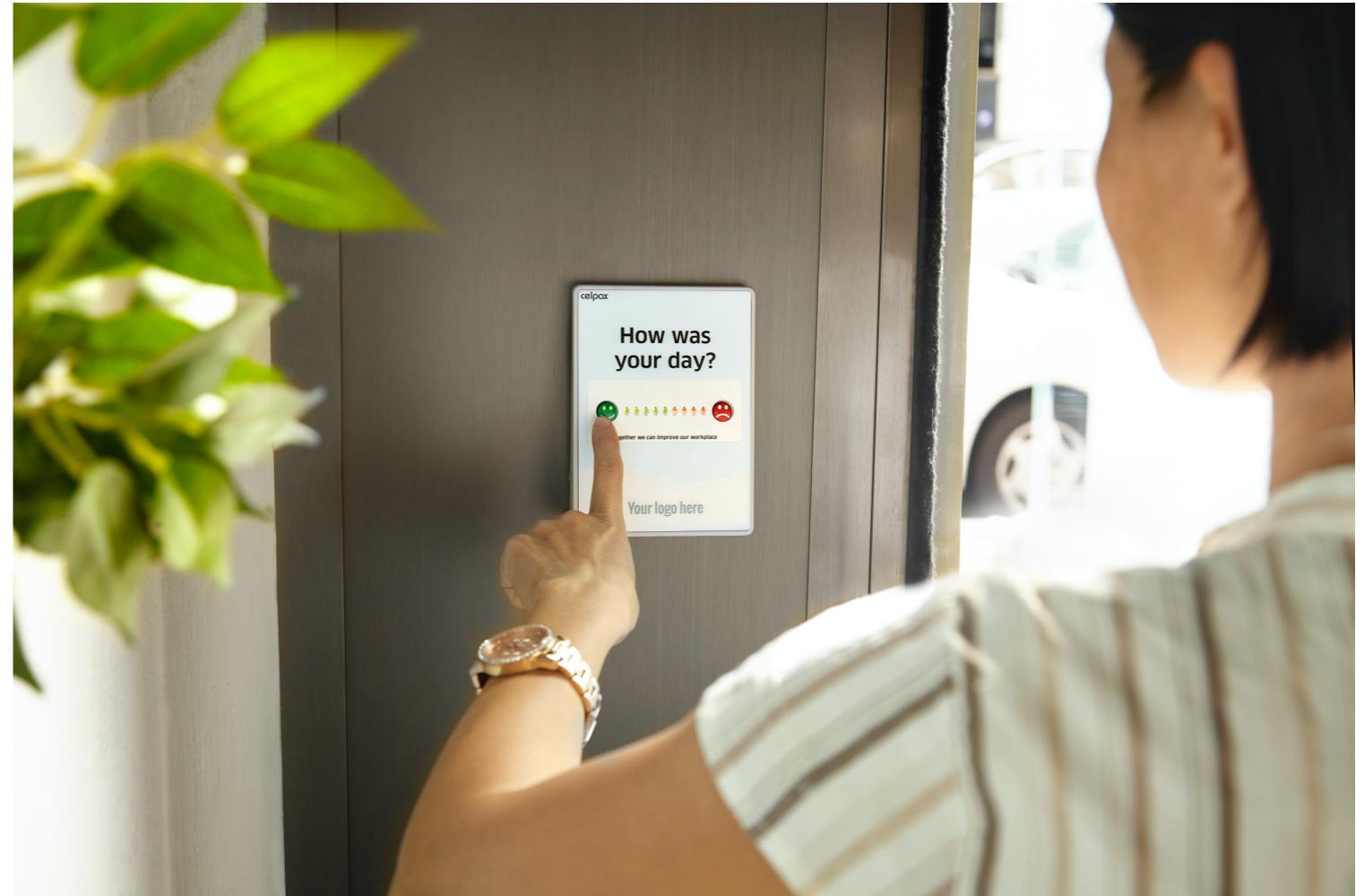
- Guiding questions:
 - What is the current situation?
 - What do we need to know?
 - Where do we want to be?
- A good problem statement is:
 - Clearly defined
 - Actionable
 - Realistic
- It can help to start from a question that needs to be answered



Example: customer satisfaction

How can we improve customer satisfaction?

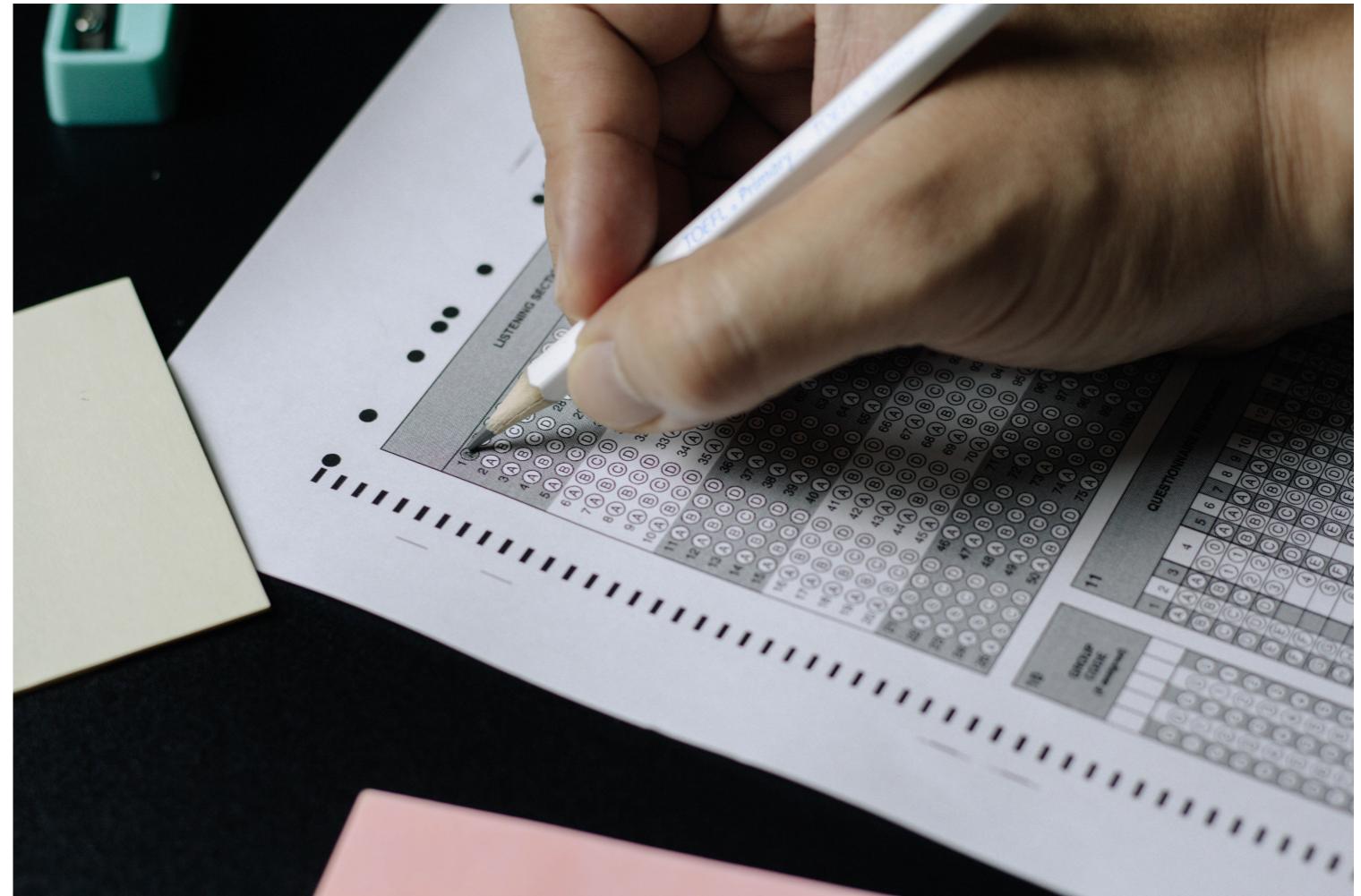
Customer satisfaction is currently under our target. We need to know the main reasons for a negative score so we can take measures to improve customer satisfaction.



Example: student performance

Why are average math scores of students in decline for the last three years?

The last three years math scores of students have declined. We need to know what the main causes are of this decline so we can take measures to counter it.



Let's practice!

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