THE UNIVERSITY OF MELBOURNE

ISYS90049 Digital Business Analysis

Week 5
Problem Analysis

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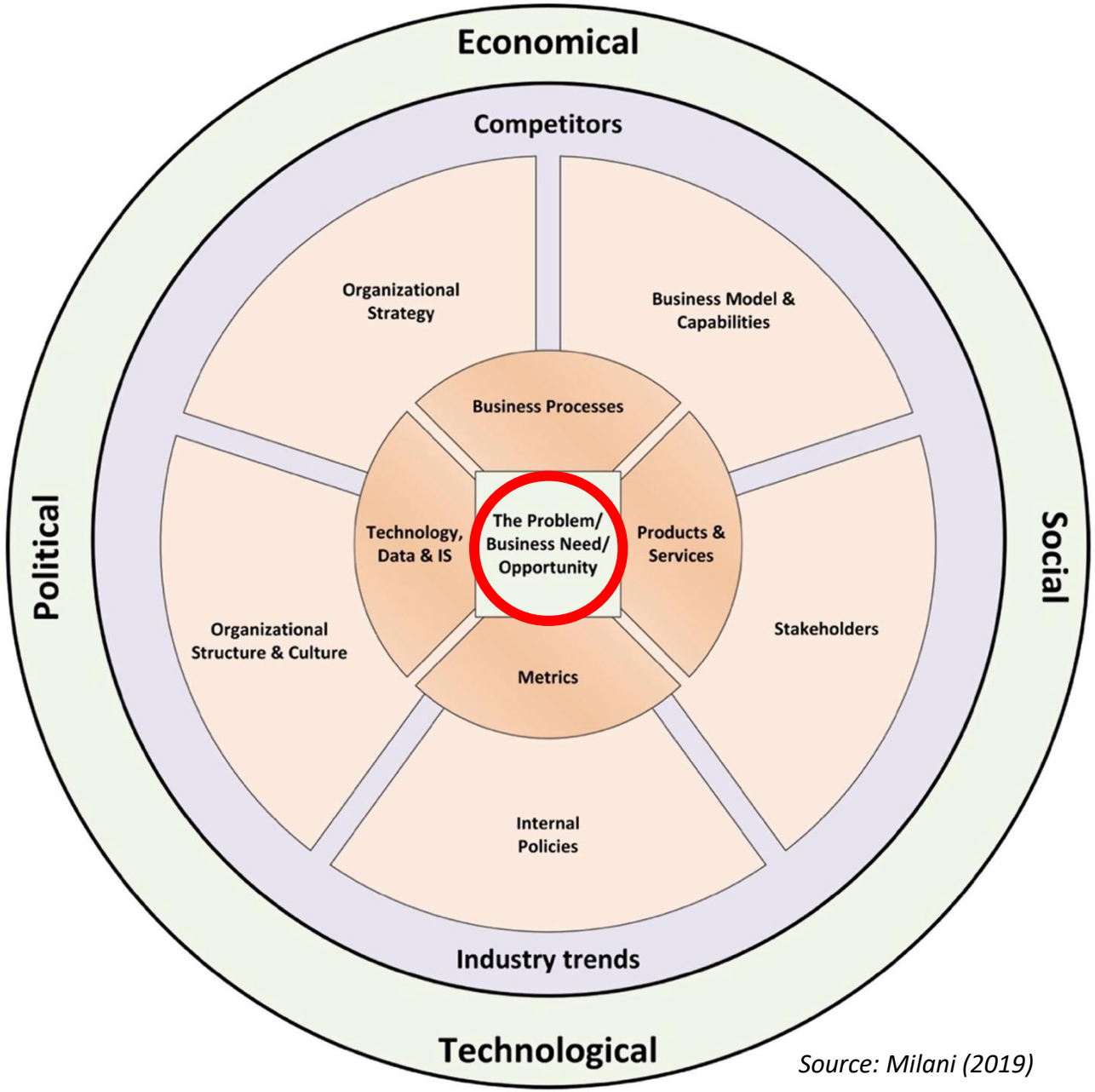
What is Digital Business Analysis?

Pair up with the student next to you. Explain to each other.

What is Digital Business Analysis?

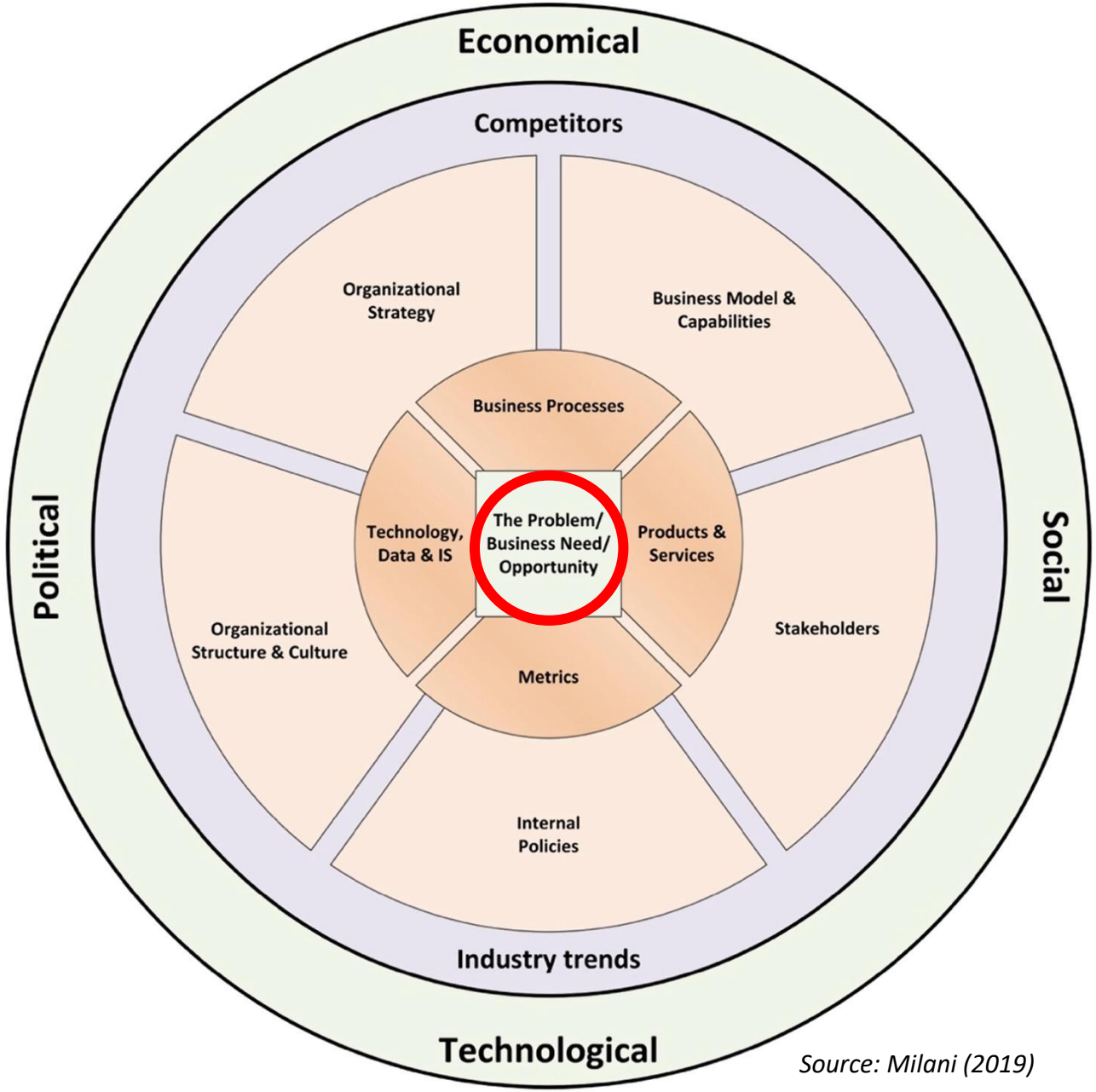
- **Business analysis** is the work of **finding** _____ that address the _____ for the purpose of **delivering** _____ to some entity.



Source: Milani (2019)

What is Digital Business Analysis?

- **Business analysis** is the work of **finding digital solutions** that address the **needs** for the purpose of **delivering value** to some entity.



Source: Milani (2019)

Explain the business analysis process

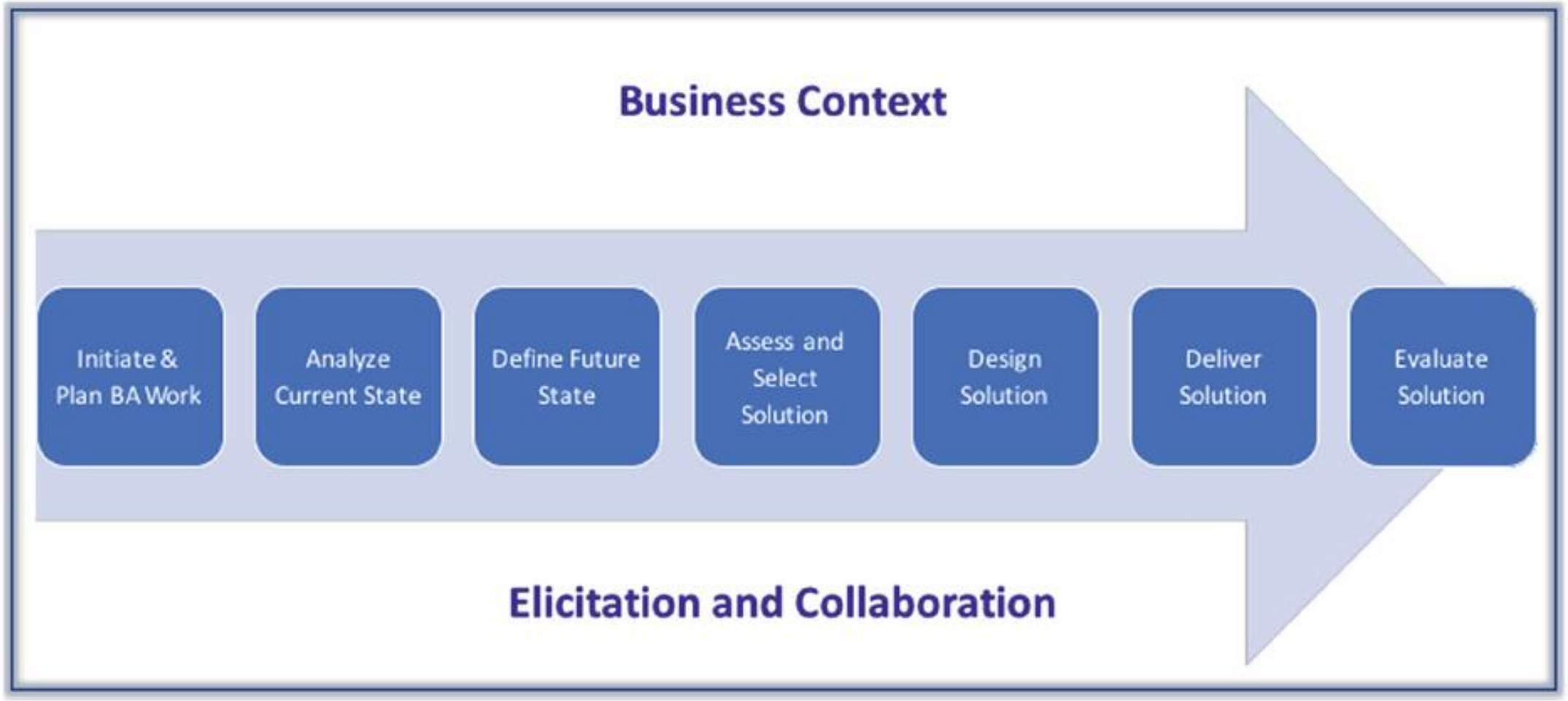


Fig. 1.4 Business analysis process

Source: Milani (2019)

What have you learnt so far?

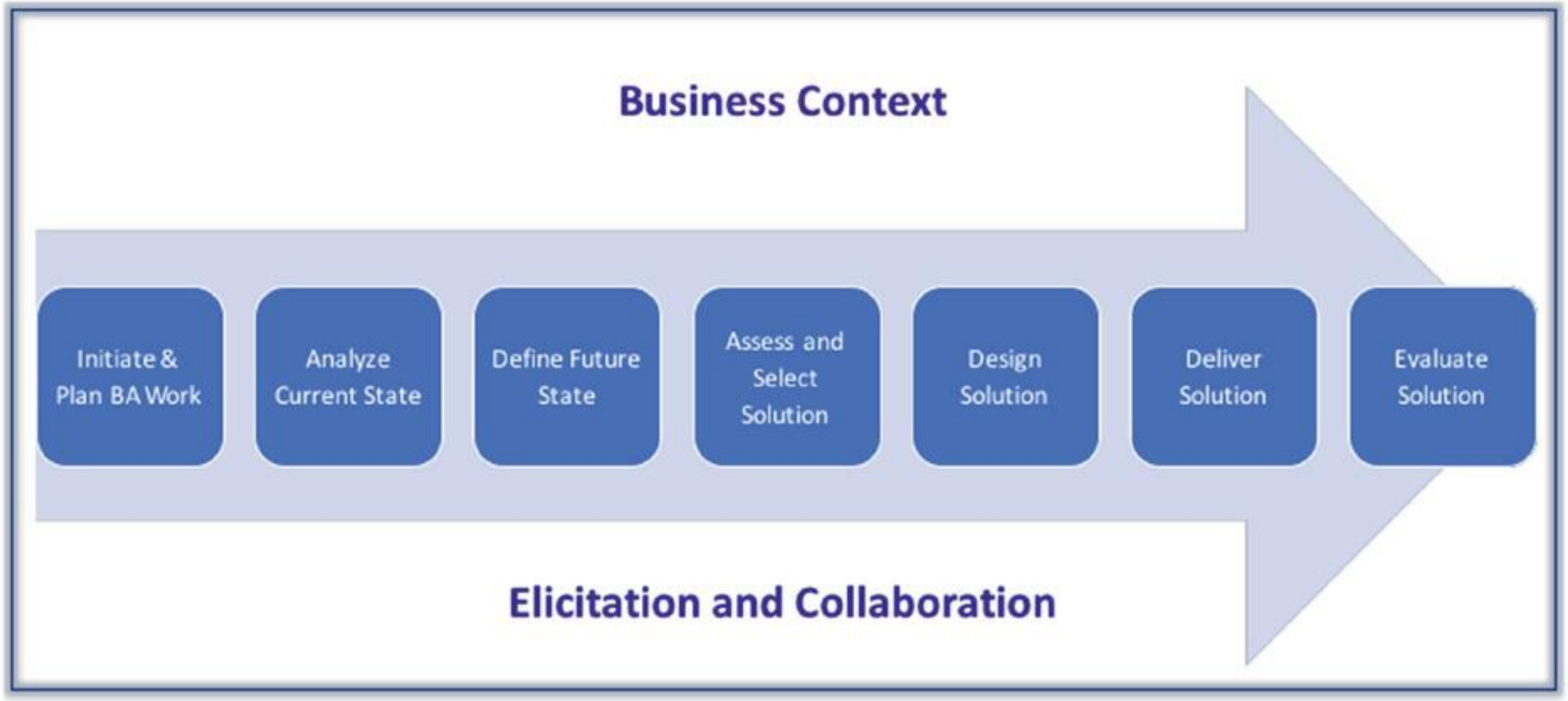


Fig. 1.4 Business analysis process

Source: Milani (2019)

Where are we?

What is the problem?

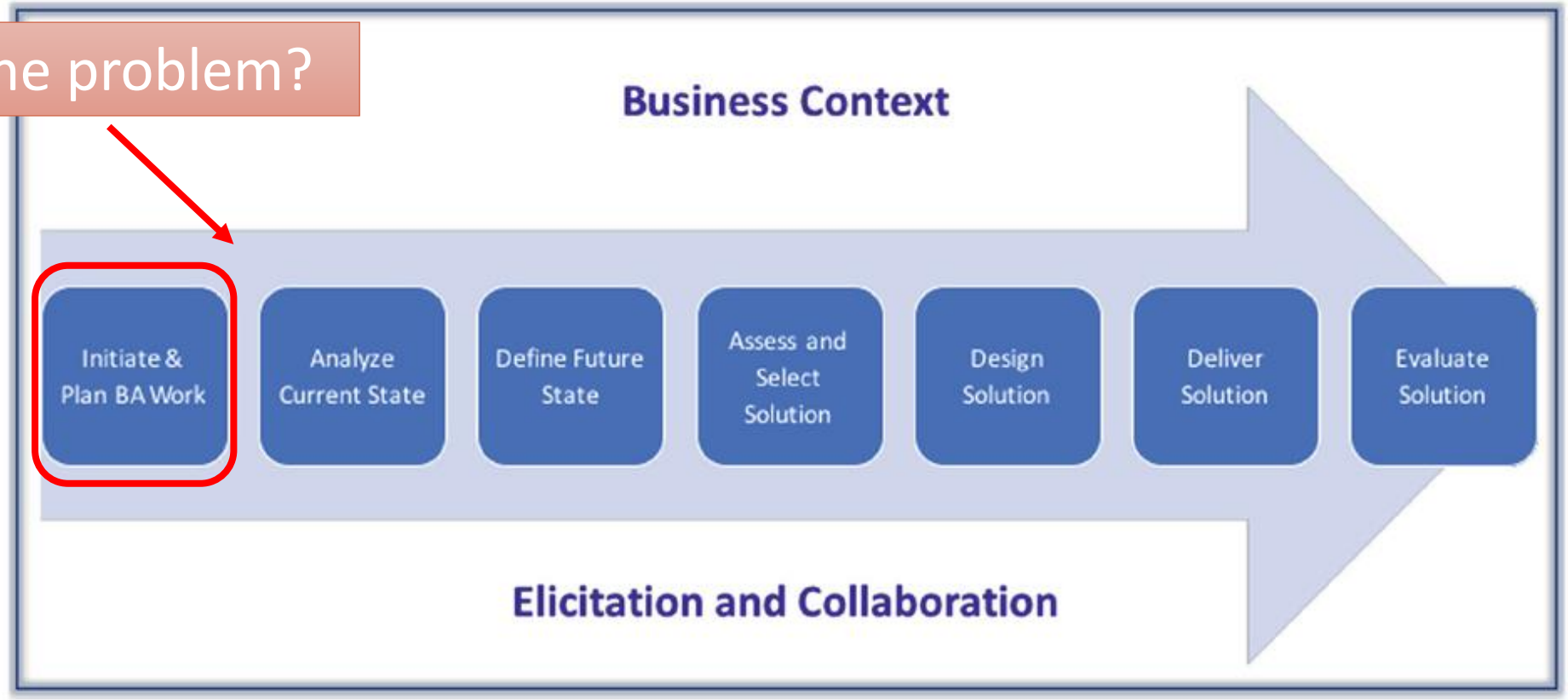
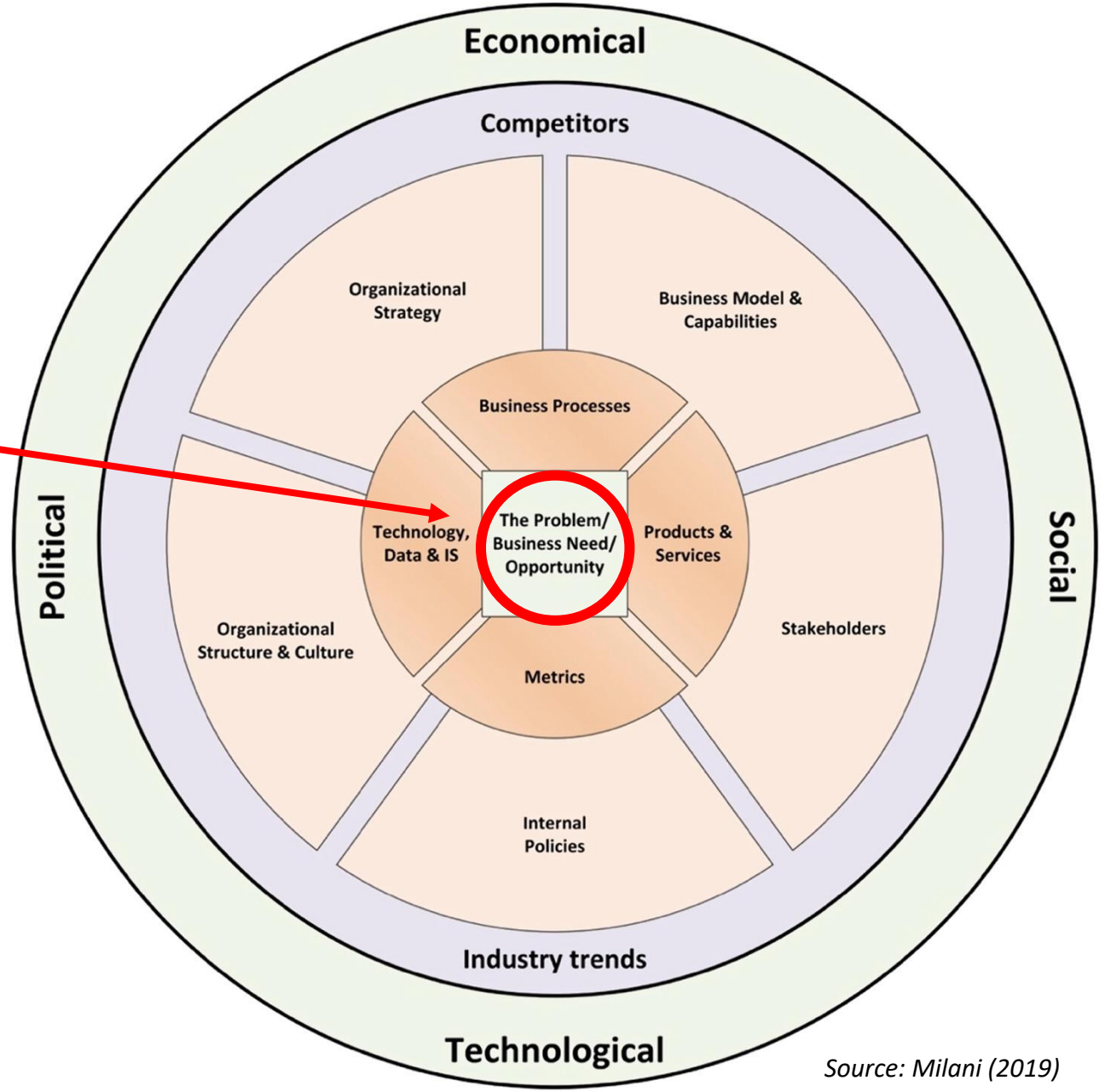


Fig. 1.4 Business analysis process

Source: Milani (2019)

Problem analysis

What is the reason behind a need or an issue?



Source: Milani (2019)

Problem analysis is identifying and evaluating the **reasons** for the **existence of a problem** or a set of issues.

Problem analysis

- When performing analysis, **many people** will present their **views on the problem**, their **perception** of **why issues exist** and **how it should be solved**
- Although stakeholders are aware of the main problems one also needs to understand which aspects are **causes** and **what are the effects**

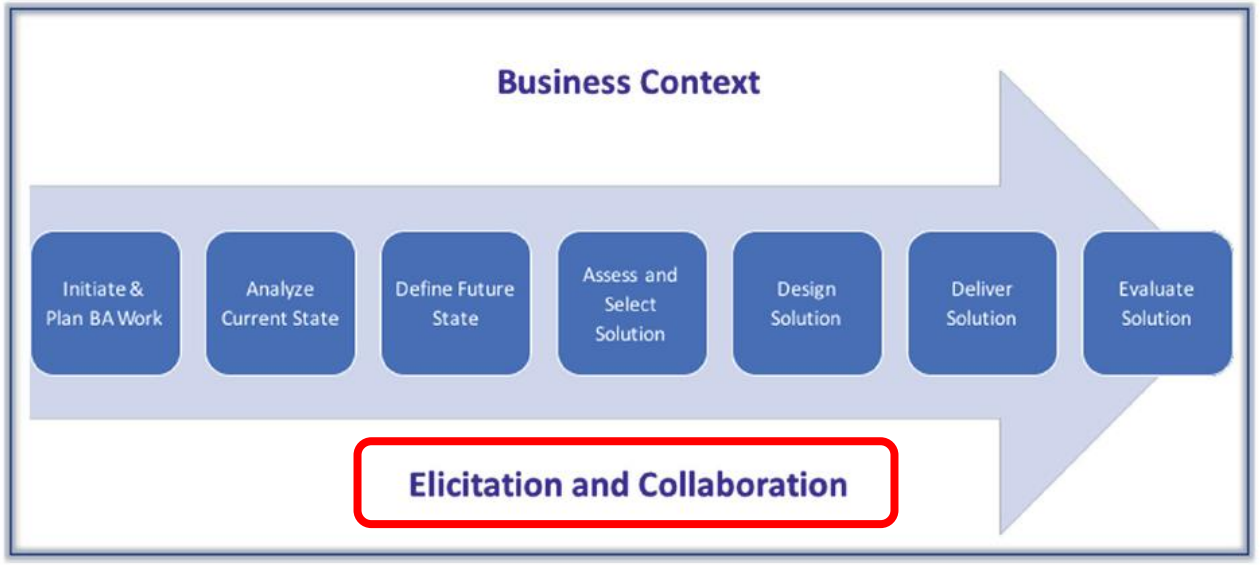


Fig. 1.4 Business analysis process

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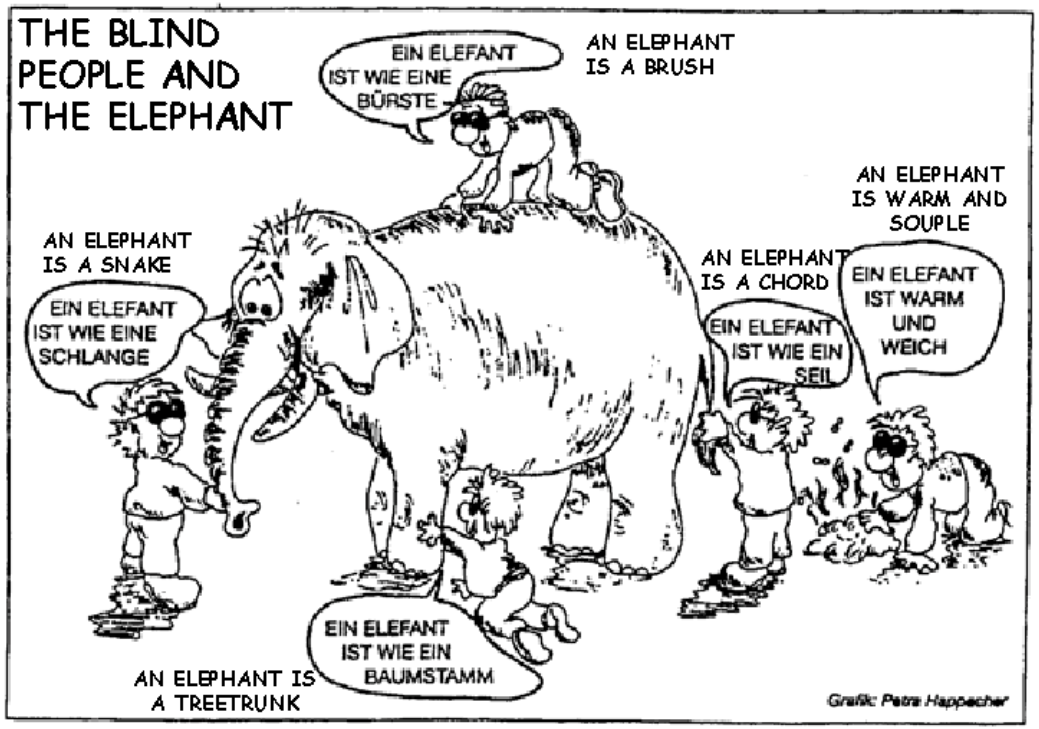


Source: https://www.semanticscholar.org/paper/2-AN-ELEPHANT-IS-A-SNAKE-AN-ELEPHANT-IS-A-BRUSH-AN-Arzarello-Bosch/68d5e85386bdd6d95bba855ecd90422735b9f8b6

Problem analysis

- Lacking a **solid understanding of the problem and the causes** can easily lead to a path where **solutions look good** but do **NOT solve the problems.**

Solution

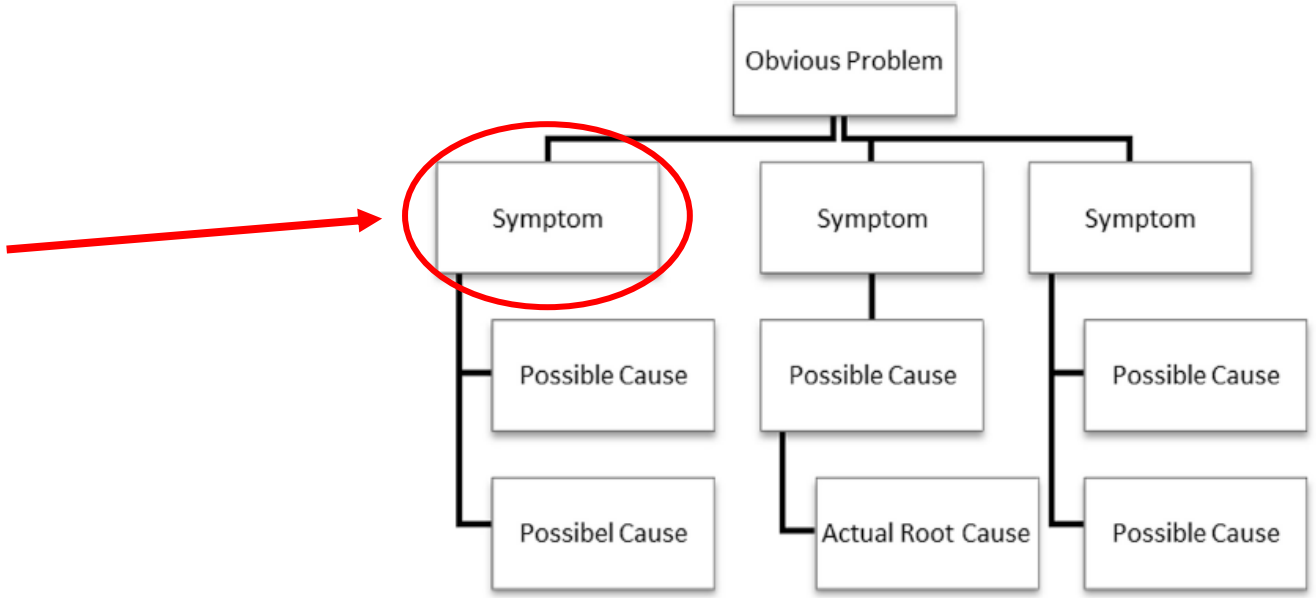
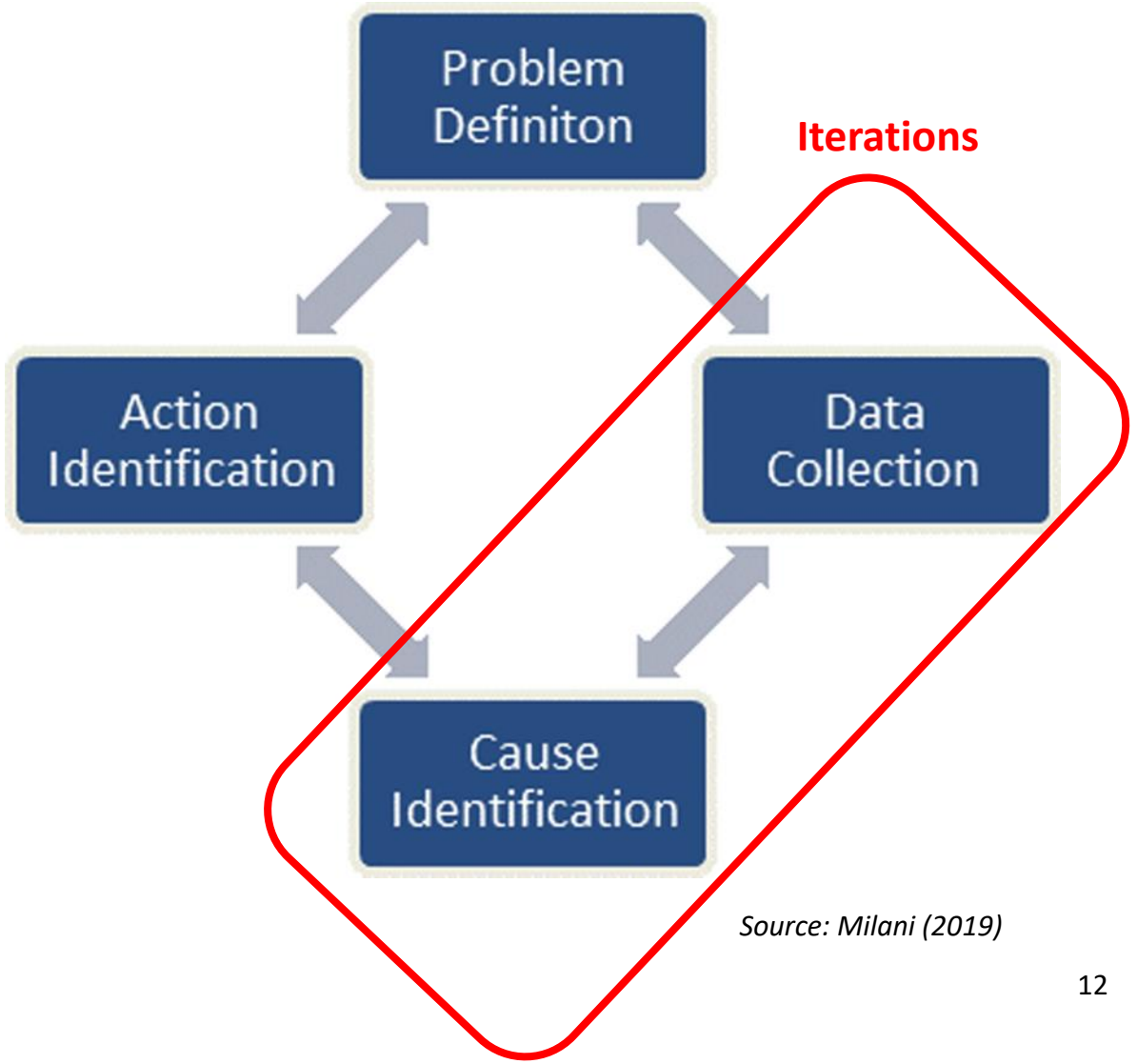


Fig. 12.2 Tree diagram of root causes

Source: Milani (2019)

Problem analysis process

- The first step is to **define the problem** and then **collect data** to **identify the cause**
- It is not always easy to know **what data to collect** when identifying the root causes
- Note that these different steps are seldom executed in a linear manner but can be **re-visited iteratively**



Source: Milani (2019)

Problem definition

- It is important to have **agreement** on what the actual problem is.
- Begin with a **problem statement** and review it with **all relevant stakeholders**.
- Some **conflict** or **different perspectives**.
- A **problem statement**:
  - A description of the **problem** (e.g. *inaccurate sales orders*)
  - A description of **who** the problem **affects** (**stakeholder**) (e.g. *sales order division, shipping, customers, etc.*)
  - A description of **how** the problem **impacts** the stakeholders and their activities. (e.g. *higher handling costs, dissatisfied customers, etc.)*

Cause identification

- "Why the problem exists?"
- By asking the **right questions**, the relevant problems can be **identified**, its **real causes unravelled**, and **solutions designed to resolve** them
- Identifying a **root cause** can be difficult because:
  - The issue can be a **mixture of several causes**
  - **Not** all causes of a problem are **equally "causing" the problem**
- There is a difference between a **cause (e.g. COVID)** of a problem and a **symptom (e.g. fever)**

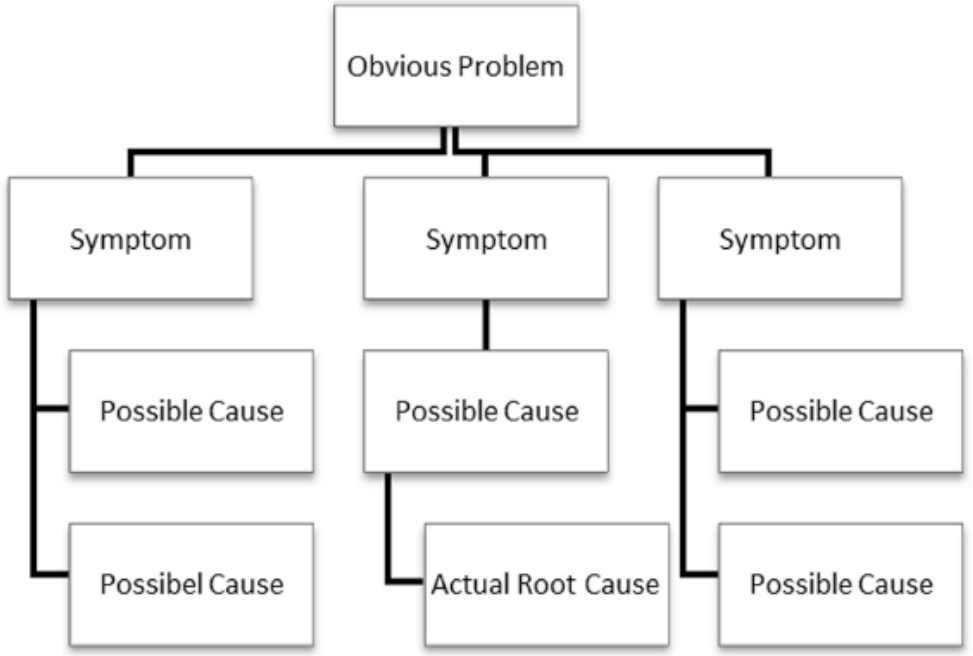


Fig. 12.2 Tree diagram of root causes

Problem analysis

- Problem analysis can also be used for "**preventive analysis**".
- "What do we need to do in order to achieve X?"
- *For example, if a company wishes to increase its volumes, they could look at what is lacking to enable such an increase.*

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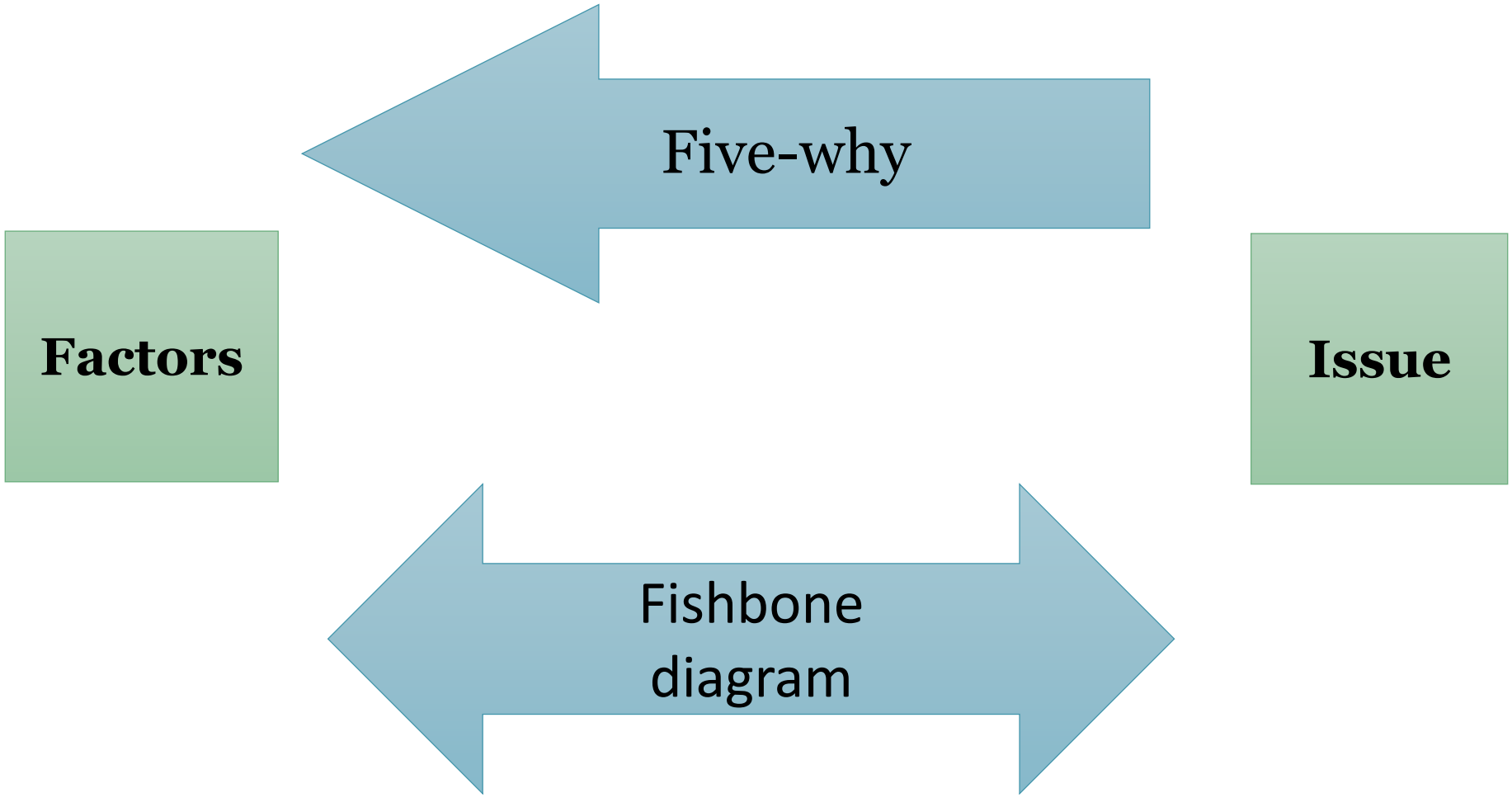
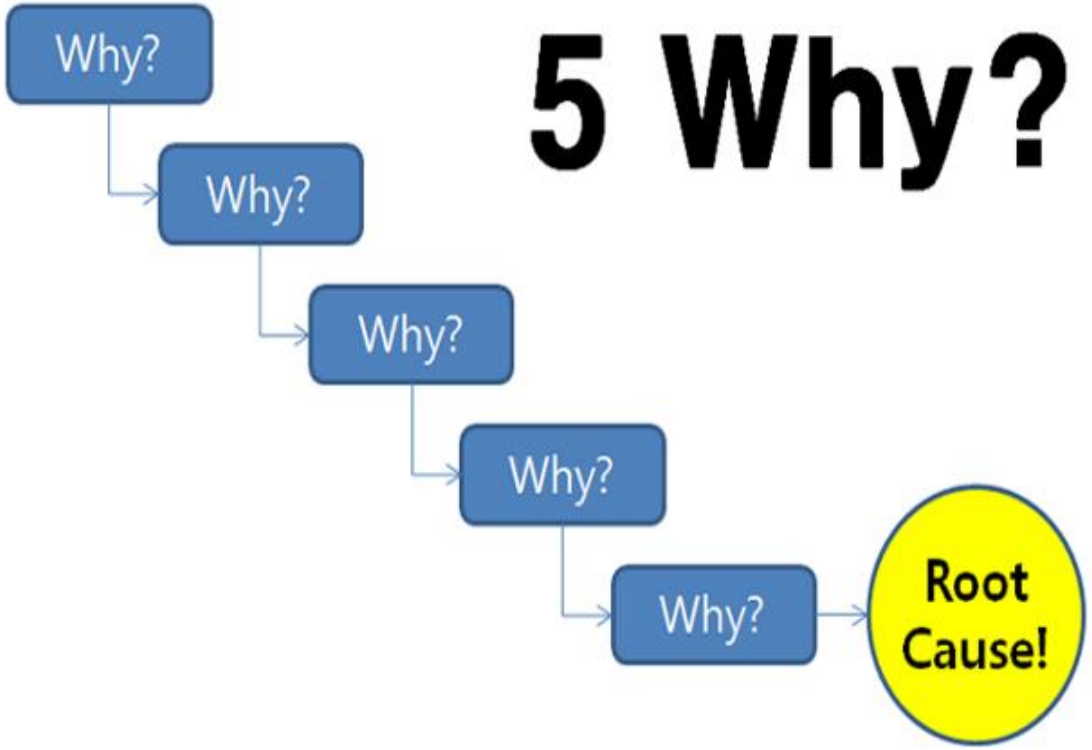
Techniques

Root-cause analysis



5-why diagram

Five levels of nesting - “Five Why’s”



Source: https://www.taproot.com/5-whys-and-a-who-do-we-fire/

The Five Why Method

- Very simple technique, you **ask yourself what the problem is five time** and try to ask a **deeper question** each time. For example:

1. Why are they returning the product?

Answer: Most of them return the laptop because it is scratched or dented.

2. Why are there scratches or dents on the laptop?

Answer: We inspect them before shipping, so it must have happened during the shipping process.

3. Why are they damaged during shipment?

Answer: Because they are not packaged according to the specifications.

4. Why are they not being packed according to the specifications?

Answer: Because they do not have the specifications.

5. Why doesn't shipping have the specifications?

Answer: Because shipping specifications are not included in the product release process.

Discuss with your peer

- Why are you studying problem analysis?

Discuss with your peer

- What are the limitations with 5-why?

The Five Why Method (cont.)

- The “five why” method is not a perfect method and has limitations
- How do we know **the answer is valid**?
- There can be **many answers**.
- We need **fact**.
- It is all too easy to **stop at a symptom** because it **seems to be enough**
- Finding the root cause can prove to be difficult, especially if the **root cause lies beyond the knowledge area of those participating**
- Have the **right person**

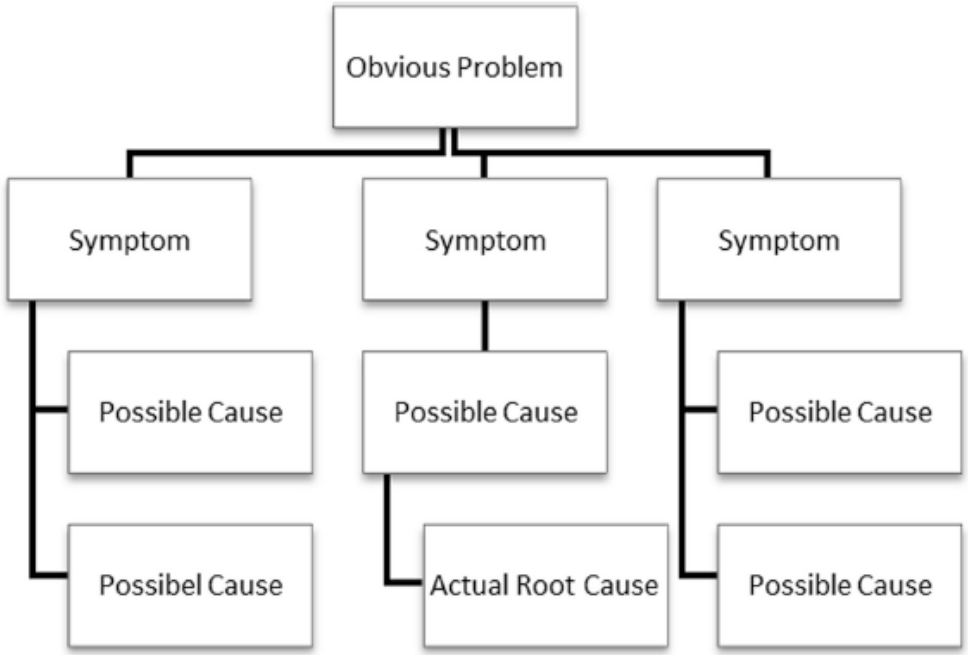


Fig. 12.2 Tree diagram of root causes

Data in problem analysis

- Problem analysis should be a combination of **qualitative** and **quantitative analysis**.
- **Facts** are supported by **data**, but **opinions** are ideas that are **NOT supported by data**.

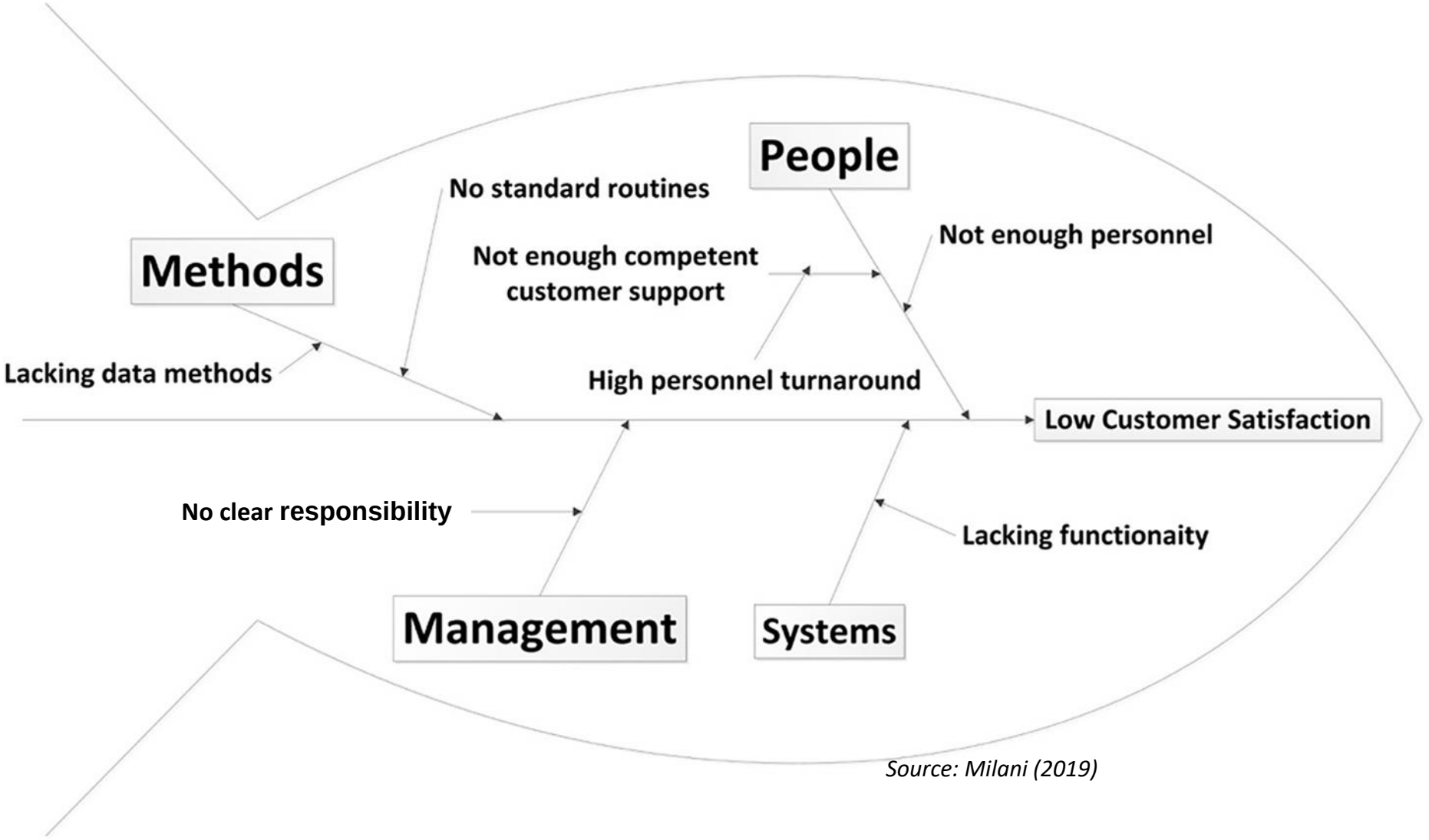
Table 12.1 Count of complaints per category

Customer survey results	Count	Cumulative count	Cumulative count in %
Customer support did not know how to resolve the issue	186	186	44.08
Took a long time to get hold of customer support	146	332	78.67
Could not find info on web page	29	361	85.55
I got my answers several days later	15	376	89.10
I was not notified when the issue was resolved	12	388	91.94
Links do not work	11	399	94.55
My issue was bounced between several persons	9	408	96.68
Site crashed	8	416	98.58
I had to describe my issue several times	6	422	100.00

The Five Why Method (cont.)

- You can also ask **different questions** to reach the root cause.
  - *"how come"*
  - *"what makes you think that"*
  - *"how does that work"*
  - *"what is the relation there"*
  - *"how often"*
  - *"occur at specific times or random"*
  - *"any warning signals"*
  - *"who are involved"*
- The **objective** is to find the **root causes** that once **removed**, will result in the **error not occurring again**.

What is this?

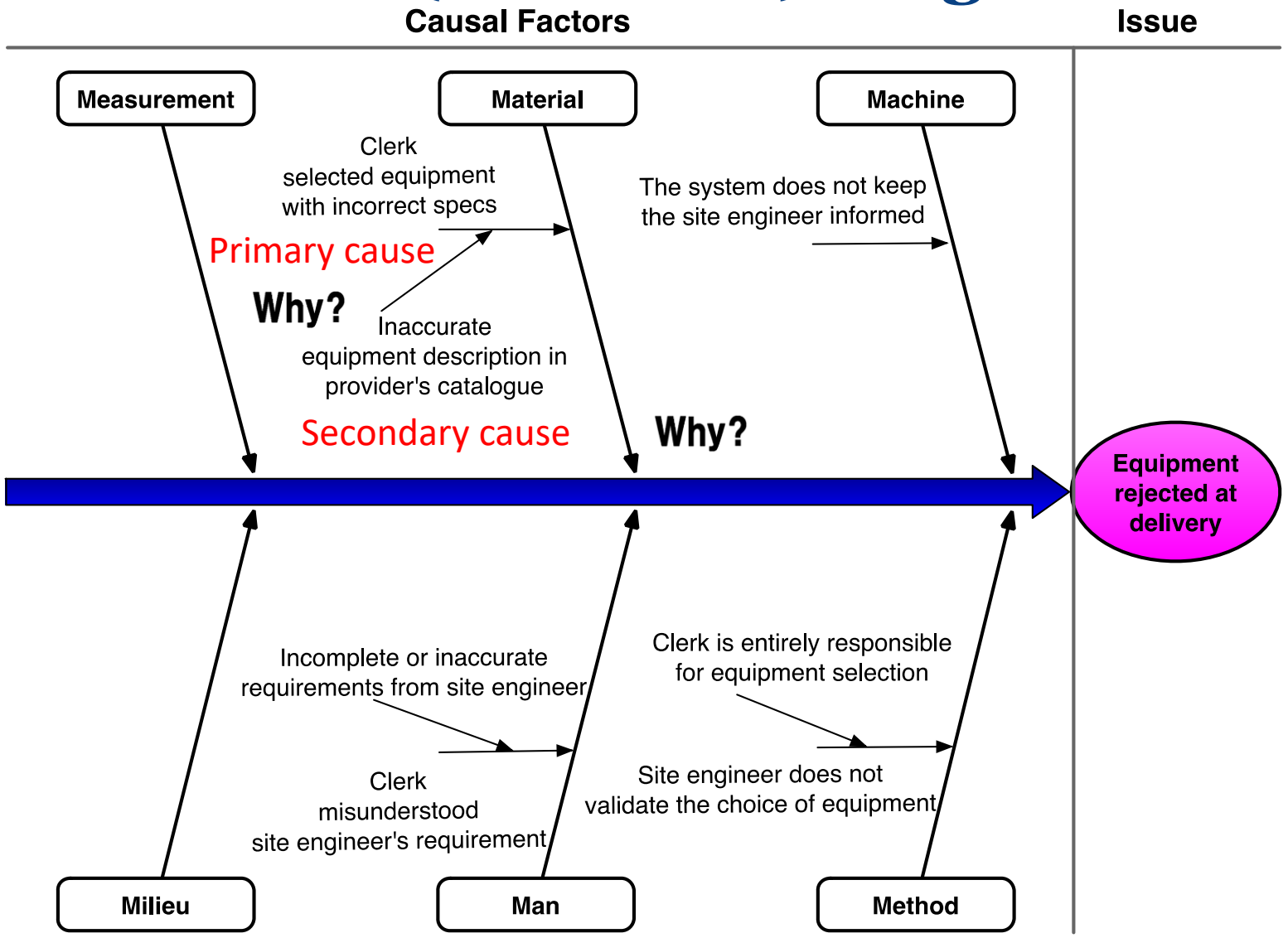


Source: Milani (2019)

Fishbone diagram

- A better way to deal with situations with **multiple root causes** is called a "**fishbone diagram**" due to its shape
  - Also known as the "**Ishikawa diagram**" or "**cause and effect diagram**"
  1. The **different causes** are discussed and are listed under the **relevant main category**
  2. At the "**head" of the fish** you place the **target problem** and from there **identify reasons** it's occurring, grouping into **categories**
- This method can be used without a problem, such as to **target an opportunity**
  - The problem becomes the **goal** and the causes become **requirements** to achieve the aim
  - *"What do we need to achieve a higher customer conversion rate?"*

Cause-effect (Fishbone) diagram



Explain to your peer

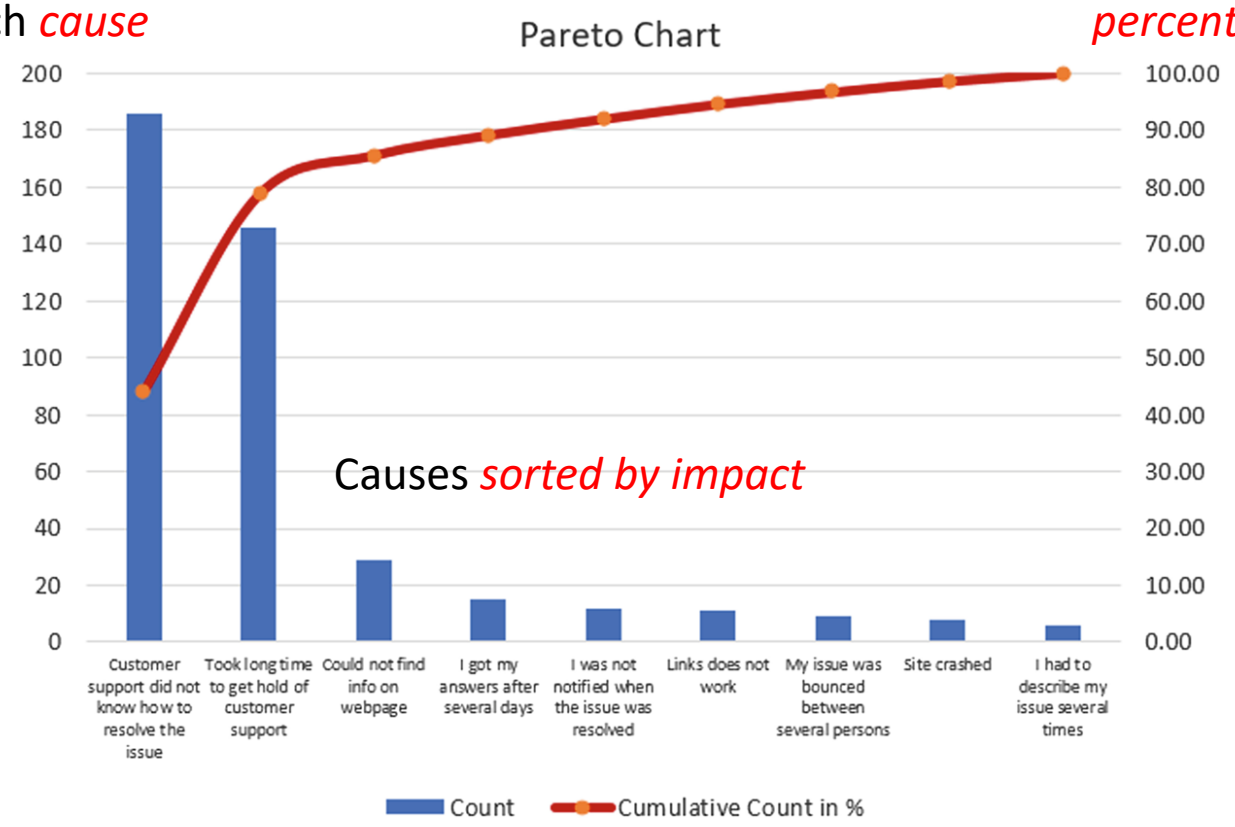
- How is 5-why different from fishbone diagram?

What is this?

Useful to *prioritize* a collection of causes

Bar chart where the *height of the bar* denotes the *impact* of each *cause*

Superposed curve of *cumulative percentage (%) impact*



Source: Milani (2019)

Which cause(s) should be looked into first?

Discuss with your peer

- What is the “80/20” role?

Pareto analysis

- Also known as the **“80/20 rule”**, it simply states that **80% of any given output is determined by 20% of its input**
- In the context of **root cause analysis**, it is highly likely that **20% of the root causes make up for 80% of the problem**
- This method can be useful in helping you understand **which cause to focus most of your effort**
- The analysis aims at finding what constitutes the 20% that causes 80% of the problem
  - Once the data is gathered, creating a Pareto chart is quite straightforward with Excel or Google Sheets
  - If you can find a way to **quantify** the number of times a possible cause occurs, you can then sort by **frequency** and calculate **cumulative frequency**
  - This will help you **visualise the impact of the cause**

Work with your peer

- Apply Pareto analysis to the following scenario

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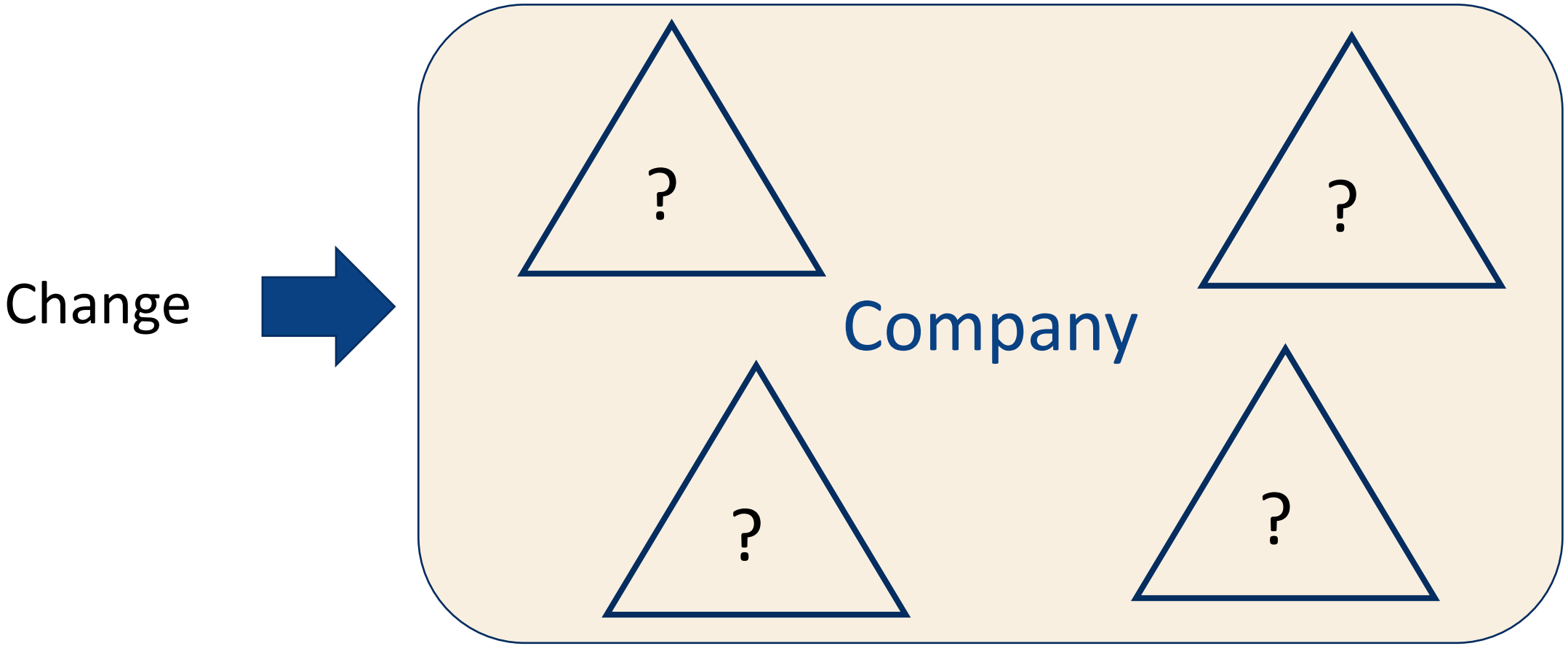
Discuss with your peer

- What are the key elements of a company ?

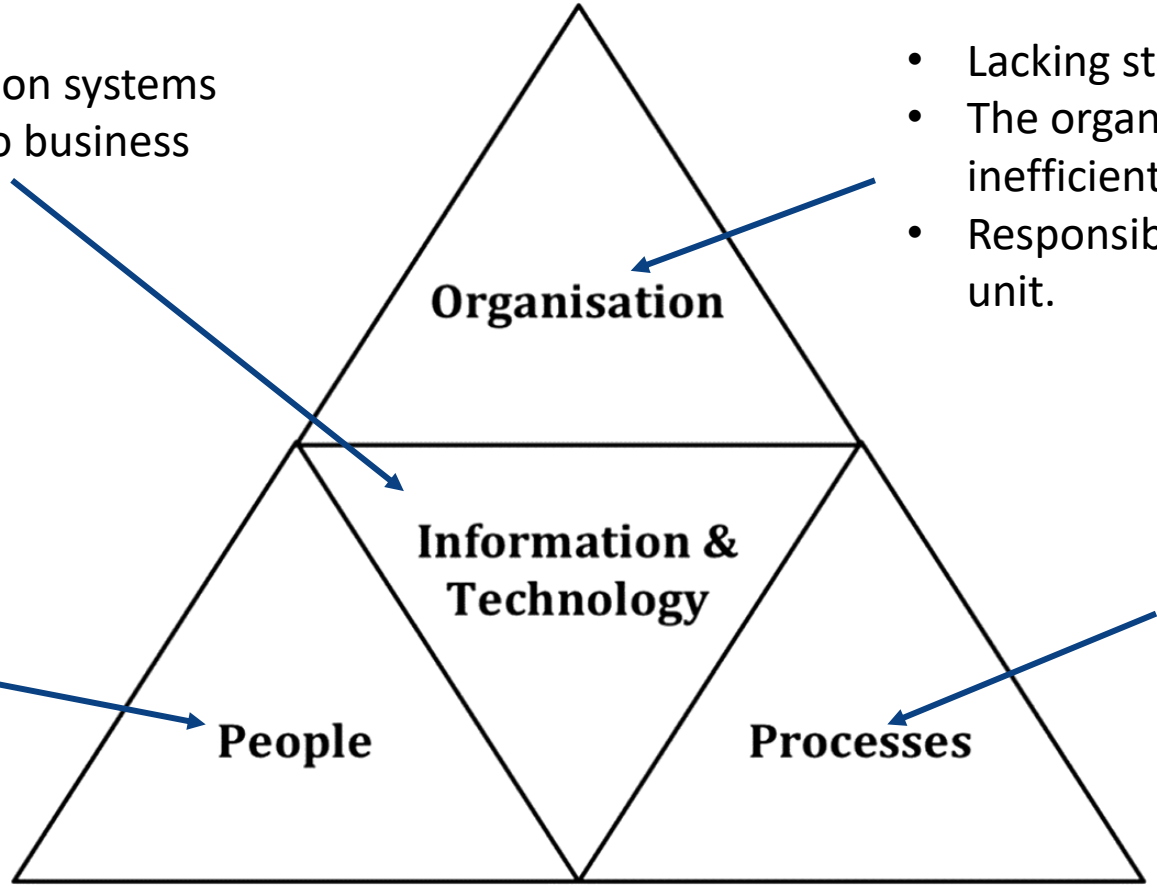


POPIT model example

Consider the implementation of a new process in one of the business units of a company.

- The data and information systems are not well adapted to business need.

- Staff lack training.



- Lacking staff.
- The organisational structure is inefficient.
- Responsibilities are in wrong business unit.

- Process not well defined.

POPIT model

- A technique used for identifying the **elements** that need to be considered when working with **business changes**.
  - **Process: The way organisations create value** in the form of products and services for customers (value chains or value streams). It also covers the support and management processes enabling the core processes to work.
  - **Organisation:** The **business model, organisational structure, management structure, roles, and responsibilities**.
  - **People:** Those who carry out the work, **their skills, competencies, job designs and the culture** of the organisation.
  - **Information Technology:** Encompasses all the **hardware and software** used to support the work of the organisation.
- It is important to use a **holistic method** to capture all aspects of change in an organisation and not narrowly focus on just the technical aspects of the change.

References

IIBA (2015). *BABOK A Guide to the Business Analysis Body of Knowledge* (3rd ed.). IIBA.

Milani, F. (2019). *Digital Business Analysis*. Springer.