FACULTY TRAINING INSTITUTE
Growing Knowledge Professionals

Business and Process Analysis [BPA]

Extra Material Module 1: sessions BPA1 – BPA6

Version v24-1

Information Gathering & Questioning

INFORMATION GATHERING ACTIVITIES

Problem solving success is dependent on the quality and value of information gathered

- Determine information needed
- Identify likely sources of information
- Determine appropriate techniques
- Document information gathering plan
- Collect information
- Organise and collate information
- Integrate into existing knowledge
- Review
- Publish

DETERMINE WHAT INFORMATION IS NEEDED

- About the Organisation?
  - Geography
  - Mission and Goals
  - Business Drivers
  - Culture
  - People and Structure
  - Business Cycles
  - Stakeholders
- About Business Environment?
  - Legal
  - Scope
  - Constraints
  - Interfaces
  - Industry Characteristics
- Future plans and trends?
  - Strategic plans and organisational change
  - Technologies
  - Shifts in business environment
- Existing systems?
  - Problems
  - Architecture/platforms
  - Available documentation
- New system?
  - Objectives
  - Scope
  - Functional Requirements
  - Non-functional requirements
  - Budget and other constraint
- Business intelligence?
  - Current Information used
  - Reports and Forms used
- Processes?
  - Transactions
  - Business Processes
  - Events
  - Volumes and timing
- Keep adding your own.

IDENTIFY LIKELY SOURCES OF INFORMATION

DETERMINE INFORMATION GATHERING TECHNIQUES

- Interviews
- Requirement workshops (JAD)
- Observation / shadowing
- Document analysis and review
- Forms tracing
- Questionnaires
- Diary technique
- Role playing
- Scenario analysis
- Brainstorming
- Focus group
- Interface analysis
- Prototyping
- Reverse engineering

RECORDING TECHNIQUES

- Hand-written (or typed) notes
- Voice recording / video
- Directly into models
- Mind-maps
- Predefined questionnaire (structured interview)

Hints:

- Don’t underestimate the value of technology in helping with data gathering (take a laptop, or use a cell-phone camera)
- Use a *skilled* scribe to assist you.

Effective Questioning

QUESTIONING PROCESS

Open question

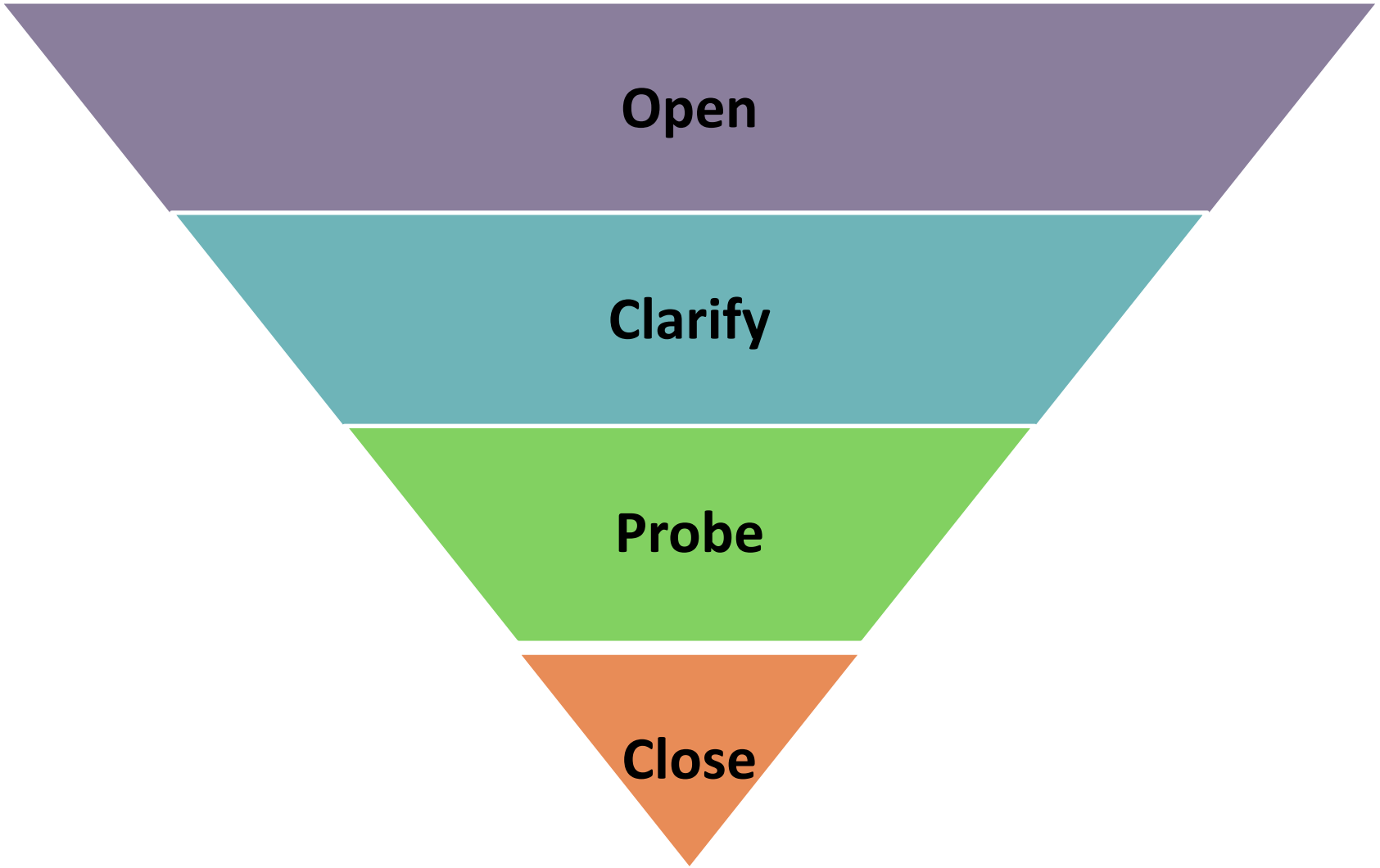
Clarifying question

Probing question

Closing question

Questions to test for consensus

QUESTIONING TYPES FUNNEL



Test for consensus

THE QUESTIONING PROCESS

Type	Description	Example	Use
Open	• One that invites a wide range of responses	• How can we improve the monthly billing statement? • What happens when you receive a statement?	• To open up a new topic of conversation and elicit information • To focus on the next area.

THE QUESTIONING PROCESS

Type	Description	Example	Use
Clarify	• One that either repeats what has been said before, or restates a previous statement in other words, and asks whether that restatement is correct.	• Are you saying that…? • 'Does this mean that…?	• To ensure that the interviewer understands the previous contribution. • In the process it might also help to ensure that all the other people understand the contribution as well.

THE QUESTIONING PROCESS

Type	Description	Example	Use
Probe	• A question that challenges the meaning of a previous contribution • One that prompts the person to think further about a topic	• So are are saying that the customer never uses the telephone? • Who uses this information? • If that is the case, what happens next?	• Get people to understand the implications of what they are saying and highlight flaws in their logic • To get them to justify their statement • To fill in gaps in the answers that have already given • To ensure that all angles have been covered • To ensure a complete model is being built by the answers being given.

THE QUESTIONING PROCESS

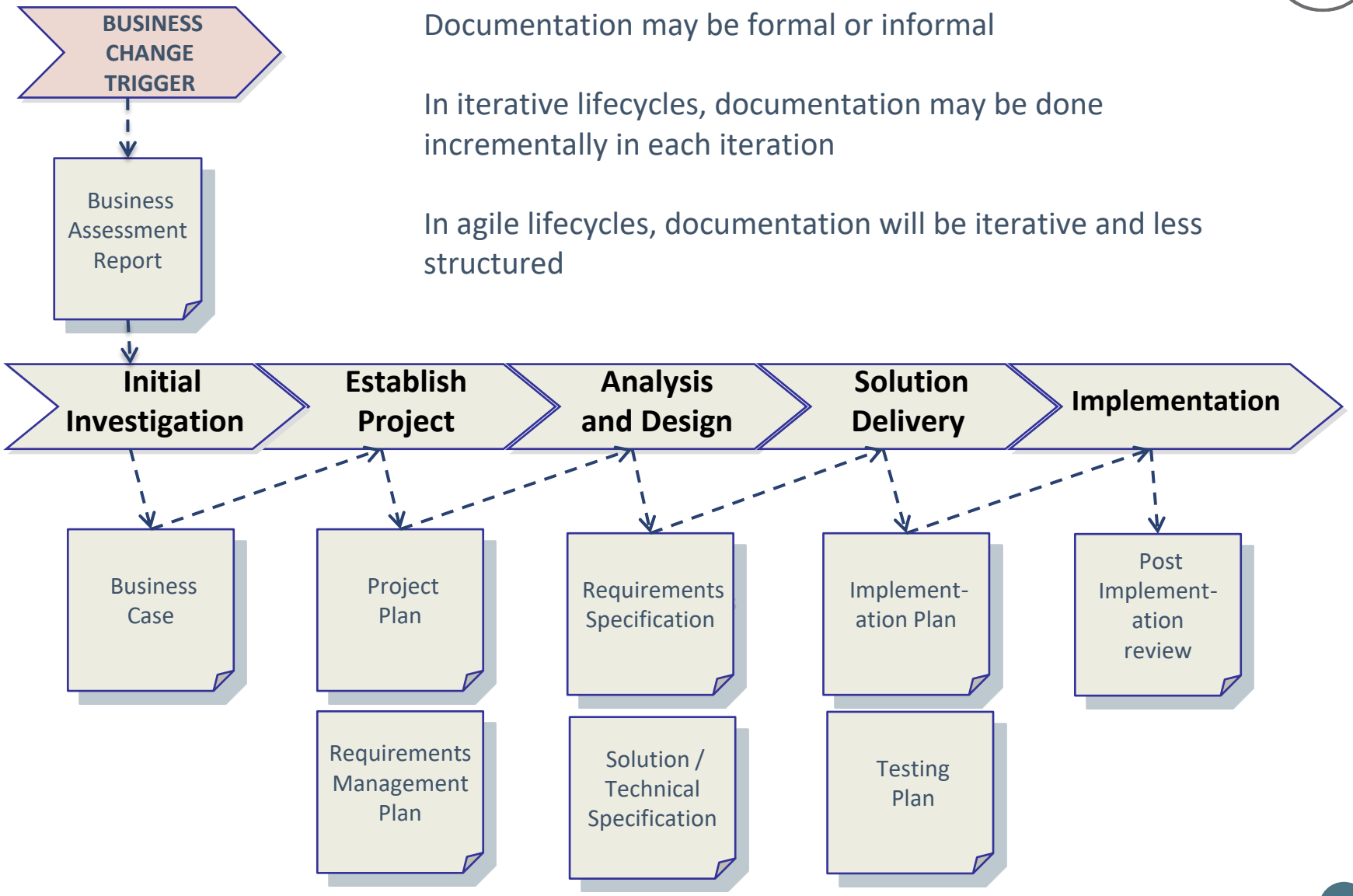
Type	Description	Example	Use
Close	• One that allows only a single answer question e.g. yes or no, true or false, a numeric value	• Shall we call it 'Customer Response'? • Do we need two flows? • How many times did you call the call centre?	• To get specific, clear results, information and answers • To bring a satisfactory sequence of questioning to a close. • To summarise the perceived thinking an individual or a group on a particular issue, so that progress can be made.

THE QUESTIONING PROCESS

Type	Description	Example	Use
Test for consensus	• Actively asking whether or not there is agreement with the discussion.	• Do you agree with this decision? • Any objections to the decision? • Will you support this action outside of this group?	• To ensure consensus, objections and buy in.

The IT Project Lifecycle

TYPICAL STAGES AND DELIVERABLES IN AN SDLC



Documentation may be formal or informal

In iterative lifecycles, documentation may be done incrementally in each iteration

In agile lifecycles, documentation will be iterative and less structured

TYPICAL TASKS IN PROJECTS

Initial Investigation

- Review Business Assessment Report
- Gather initial information
- Identify Problems
- Identify Goals and Objectives
- Define Scope
- Document Business Requirements
- Identify candidate solutions
- Perform Cost Justification
- Perform Risk and Feasibility Assessment
- Produce **BUSINESS CASE**

Establish Project

- Define Project Scope
- Allocate budget and resources
- Identify Project Risks
- Compile Project Team
- Create **Project Plan**
- Produce **REQUIREMENTS MANAGEMENT PLAN**

Analysis and Design

- Do Stakeholder Analysis
- Refine Solution Scope
- Identify Solution Requirements (Functional, Informational, Non-functional) + Transition
- Produce annotated models of required solution (Processes; Information; Interface & Report designs; business rules)
- Produce **REQUIREMENTS SPECIFICATION / PACKAGE**
- Produce technical designs: Software architectures, Hardware and network architectures, Data architectures and database design, Controls and security designs
- Produce T**echnical Architecture Specification**

Solution Delivery

- Develop, acquire or customise software
- Acquire and install hardware and networks
- Implement data architectures
- Print documentation
- Develop implementation and change management plan
- Integrate solution components (workstreams)
- Produce Software release kits

Implementation

- Implement training plan
- Distribute/release software
- Perform data conversions
- Install production hardware and networks
- Print Forms and documents
- Implement Change Management Plans

KEY DELIVERABLES IN THE LIFE CYCLE

- Project-related
  - Project charter
  - Feasibility study/Impact assessment
  - Business Case
  - Project plan
  - Project reviews (including PIR)
- Specification related
  - Business requirements specification (BRS)
  - User requirements specification (URS)
  - Functional requirements specification (FRS)
  - System specification (technical specification or system design)
  - Testing plan
- System related
  - Implementation plan
  - System training (hardware, software, documentation).

KEY ARTEFACTS PRODUCED BY THE BUSINESS ANALYST

- Business Assessment Report
  - Documents initial business requirements
  - Validates a potential initiative
    - Sometimes called the Project Charter or Initiation Document
- Business Case
  - In addition to the Business Assessment Report, addresses costs, benefits and risks
  - Recommends feasibility of proceeding with the project
- Requirements Management Plan
  - Plan for BA work and managing requirements throughout the project
- Requirements Specification
  - Creates detailed specifications of key aspects of the requirements
  - Contains detail of the solution requirements of a system.

SUPPORTING ACTIVITIES THROUGH THE SDLC

Project Management

- Manage and monitor project progress, manage milestones and deliverables
- Coordinate workstreams, Review Feasibility Perform post-implementation review

Quality Assurance

- Establish Quality Metrics, Produce and implement **Quality Management Plan**
- Conduct Quality Control (testing and walkthroughs)

Configuration Management

- Documentation version management, Software version management
- Manage integration of conceptual designs and workstream products

Architecture Management

- Design architecture
- Ensure compliance to standards, review designs

Change Management

- Organisation and Stakeholder Preparedness
- Training, publicity, Marketing

CRITICAL SUCCESS FACTORS

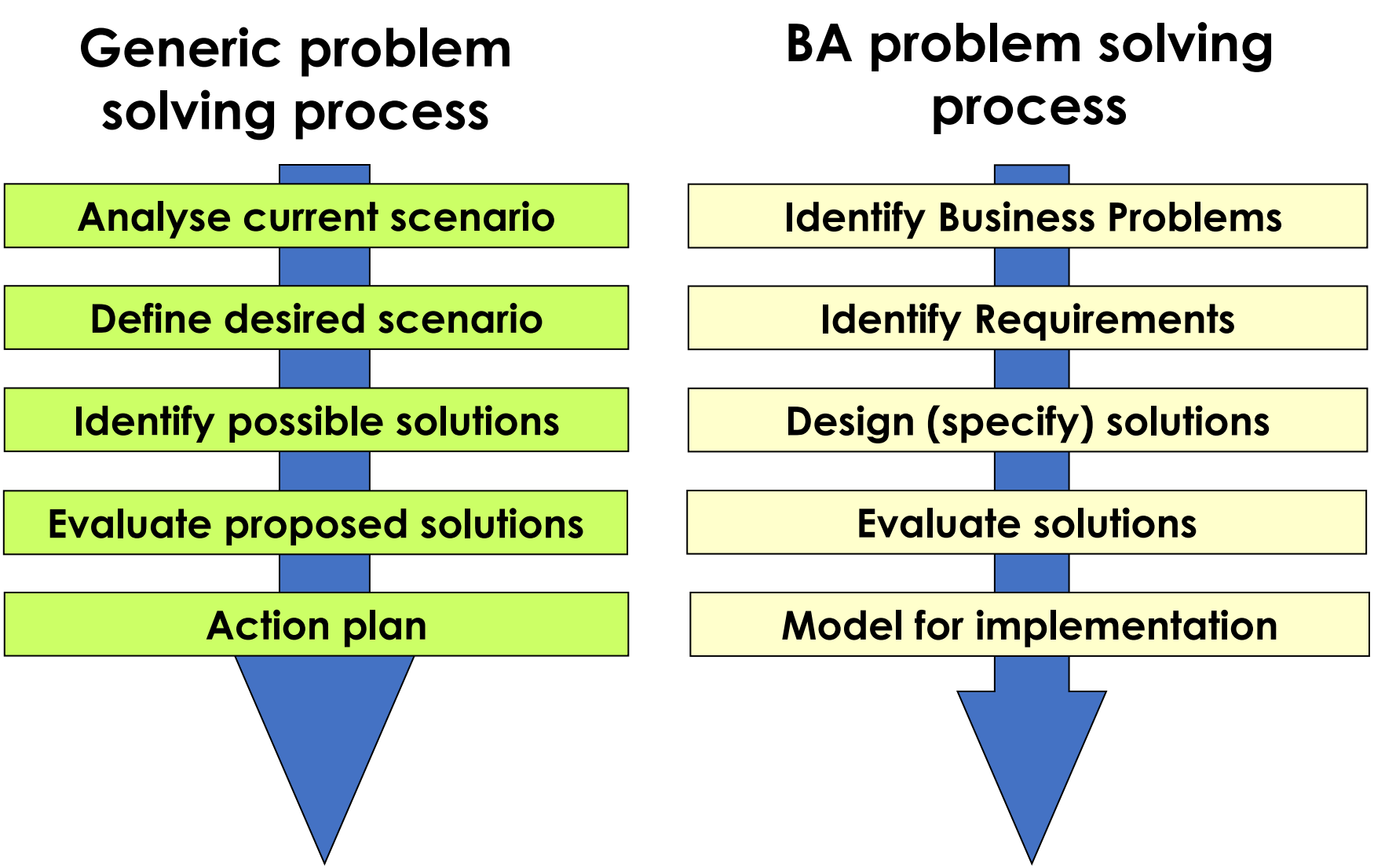
- User involvement
- Management commitment and review
- Accurate fact-finding
- Effective problem-solving approach
- Cost justification and feasibility reviews
- Correct scoping of the system
- Adequate resourcing
- Linking system objectives to business objectives
- Good estimating and project management
- Appropriate documentation
- Quality checks, feasibility studies and management reviews
- Regular reflection and adjustment.

The Problem Solving Process

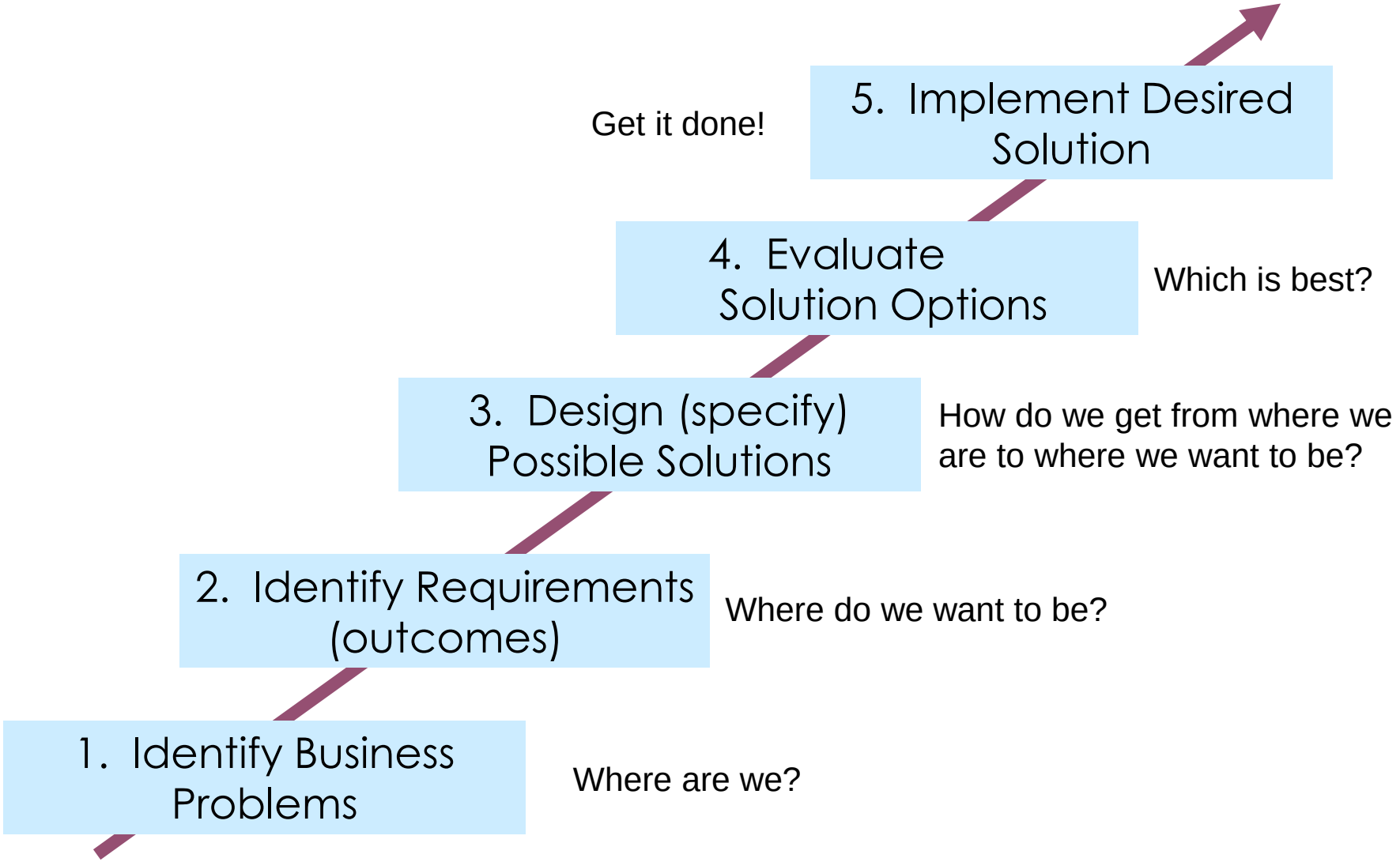
WHAT IS PROBLEM SOLVING?

- A Problem is the difference between an existing (current) situation and desired (output) situation
- The process of identifying problems is the process of defining these differences
- Problem/gap analysis is the information gathering process designed to
  - Identify all the problems/gaps that exist
  - Get as much information about them as possible
  - Identify the root cause or causes
  - Assess their business impacts
- Problem solving is the process of finding a way to eliminate the difference between an undesirable current situation and a desirable future situation
- Solving a problem must have some social, intellectual or commercial value, otherwise it will not / should not be solved.

THE PROBLEM SOLVING PROCESS



THE 5 STAGES OF PROBLEM ANALYSIS



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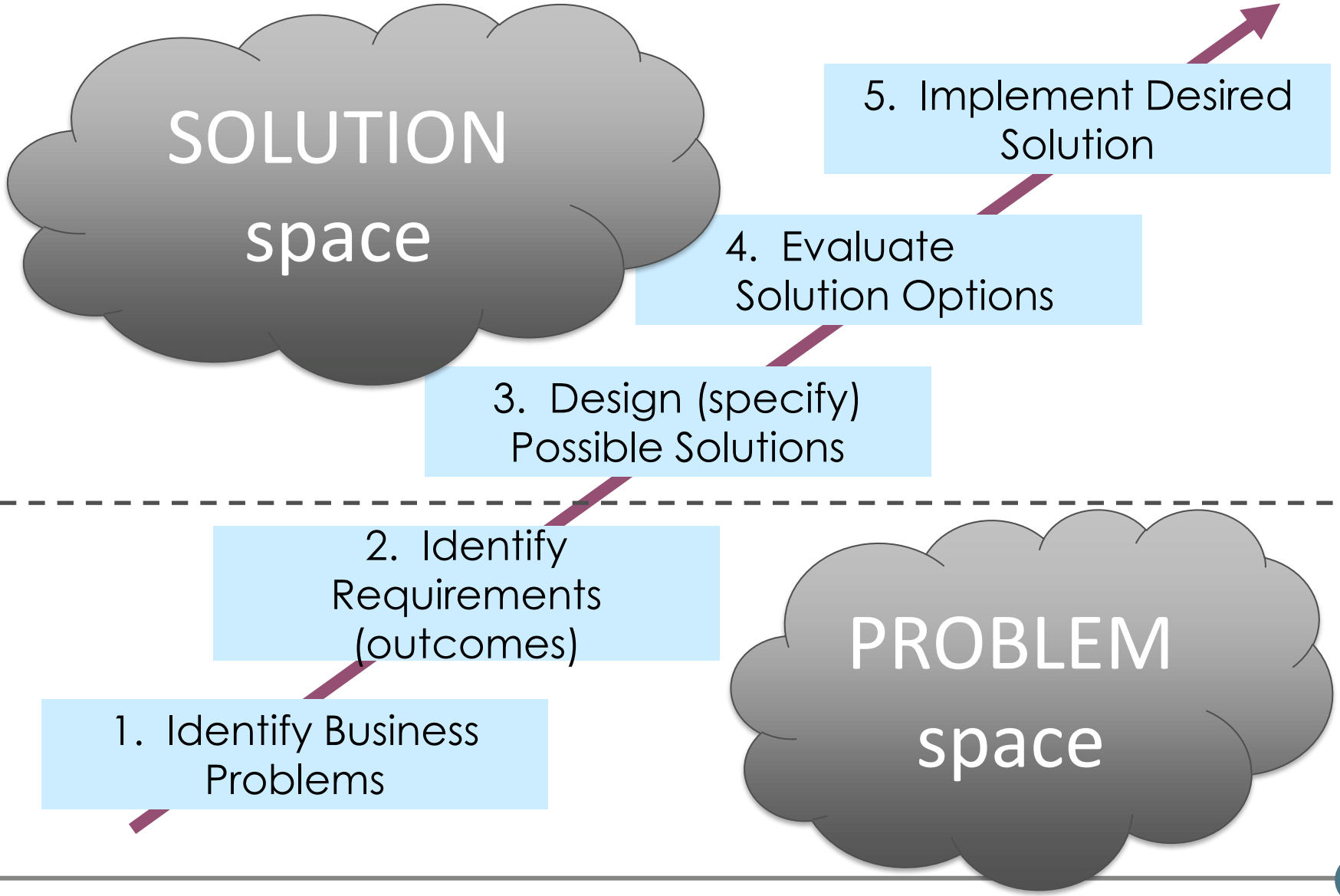


STAGE 1: IDENTIFY BUSINESS PROBLEMS

- Define an initial problem statement
- Uncover problems during the data gathering process
  - Interviews, Observation, Workshops, Questionnaires, Surveys and feedback forms
- Ensure that the problems are genuine and exist
  - Get first-hand knowledge, Confirm and corroborate (original source, observe yourself)
  - Check, cross reference, clarify, restate, use active listening
  - Get consensus that problems are real
- Get to the bottom of the problem
  - Identify root causes
  - Probe, ask insightful questions
  - Identify the real as opposed to the perceived problem
- Define and quantify problems
- Summarise and classify problems

Useful questions

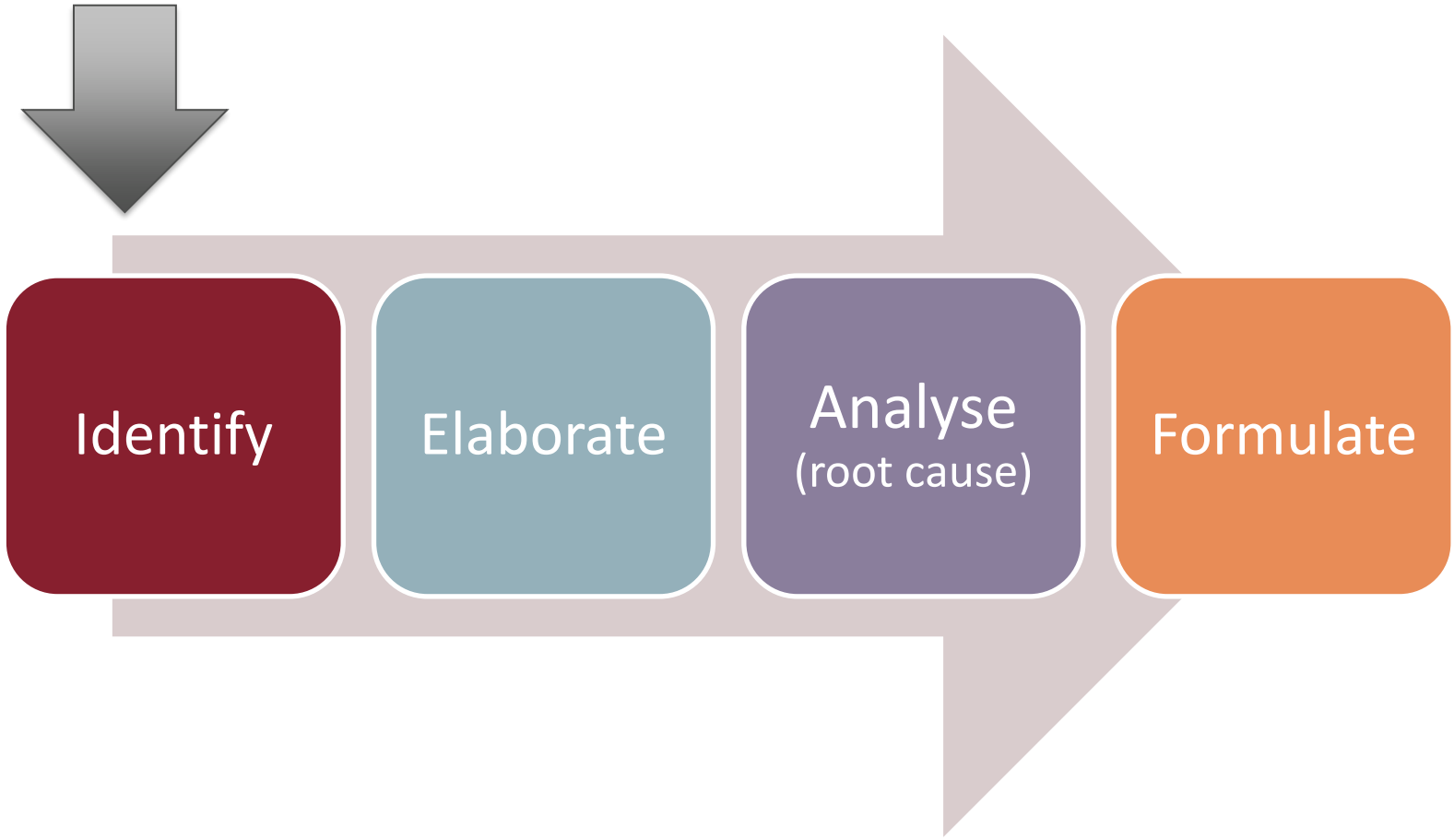
- What is the current state?
- Where are we now?
- How are we behaving?
- What are we doing?
- What is stopping us?
- What is working for us? (SWOT)

Who are our:

- Clients?
- Partners?
- Suppliers?
- Competitors?

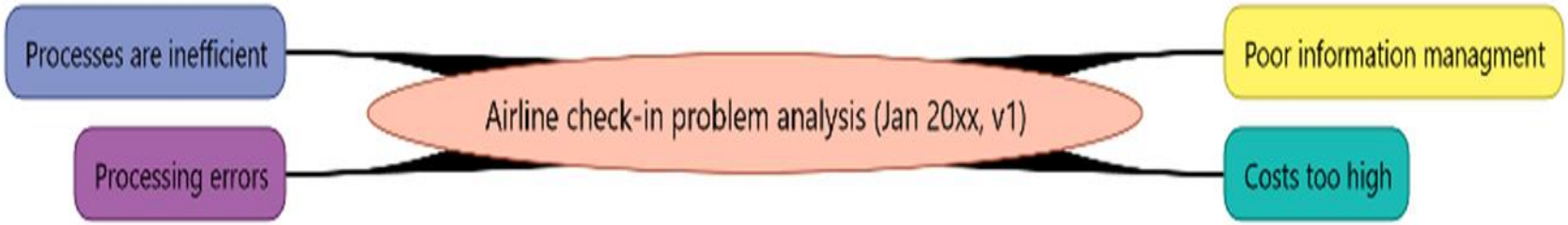
NO SOLUTION THINKING!

STAGE 1: CURRENT STATE

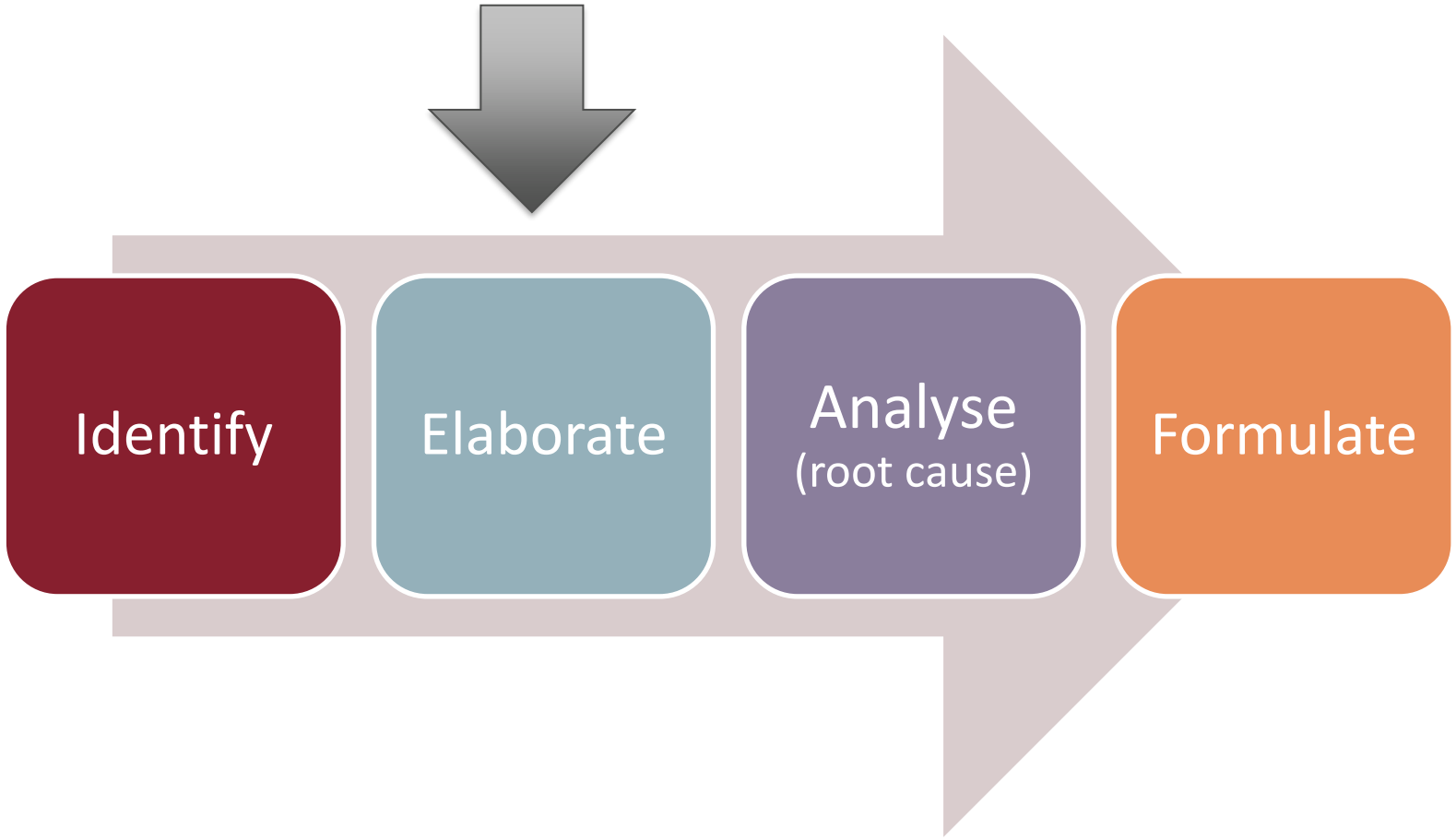


STEP 1: IDENTIFY PROBLEMS

- Start with “observed” or “reported” problems
- Uncover problems through an information gathering process
- Build around high-level taxonomy of business problems
- Generalised statements are okay initially but must be elaborated.

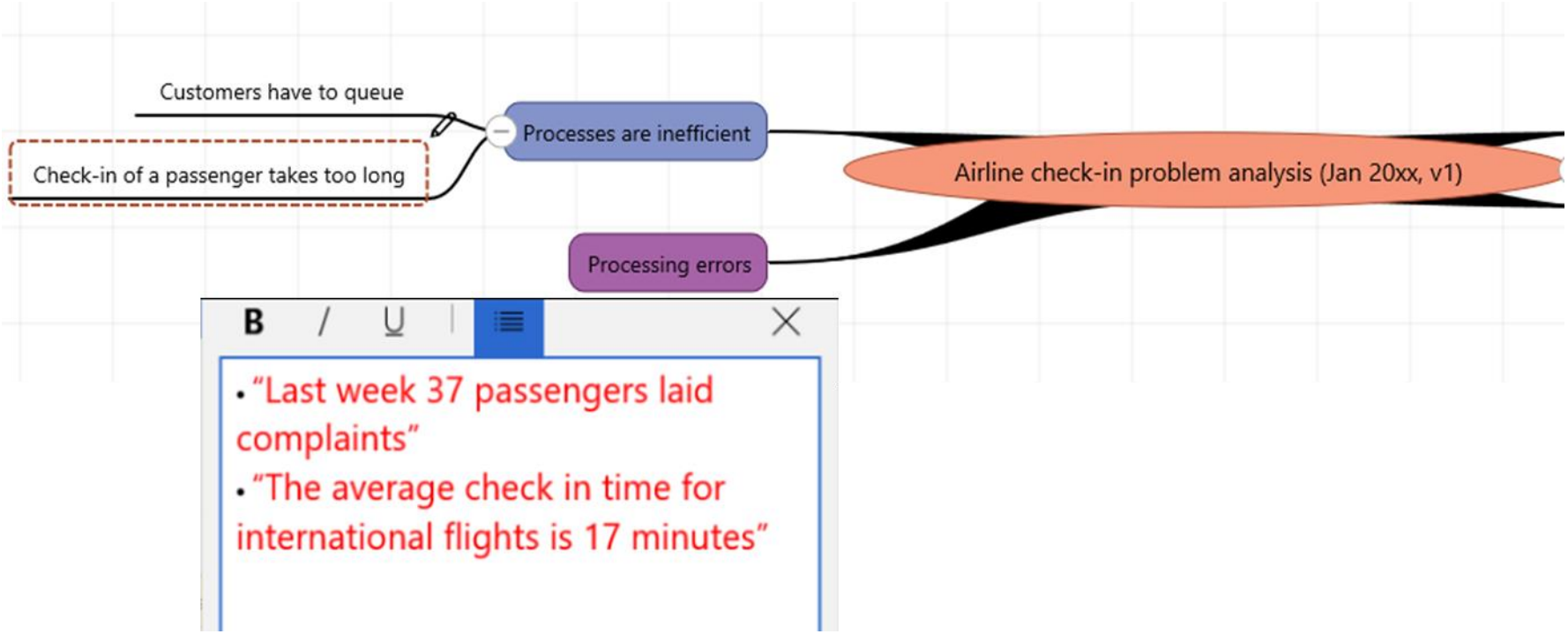


STAGE 1: CURRENT STATE

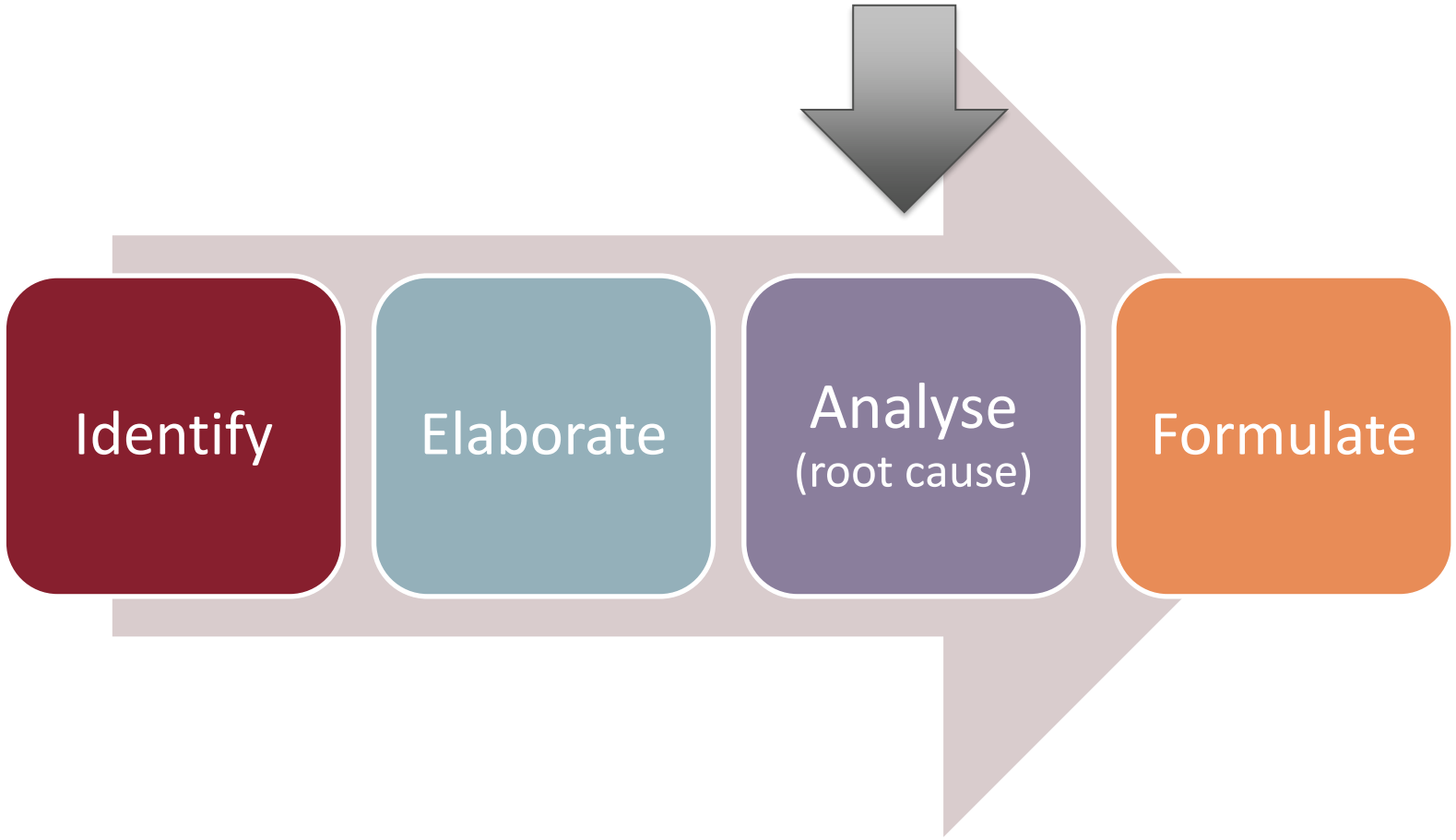


STEP 2: ELABORATE ON PROBLEMS

- Focus on each idea in turn, getting more detail, expanding branches
- Ensure that the problems are genuine and exist
- Get examples, facts, descriptions.

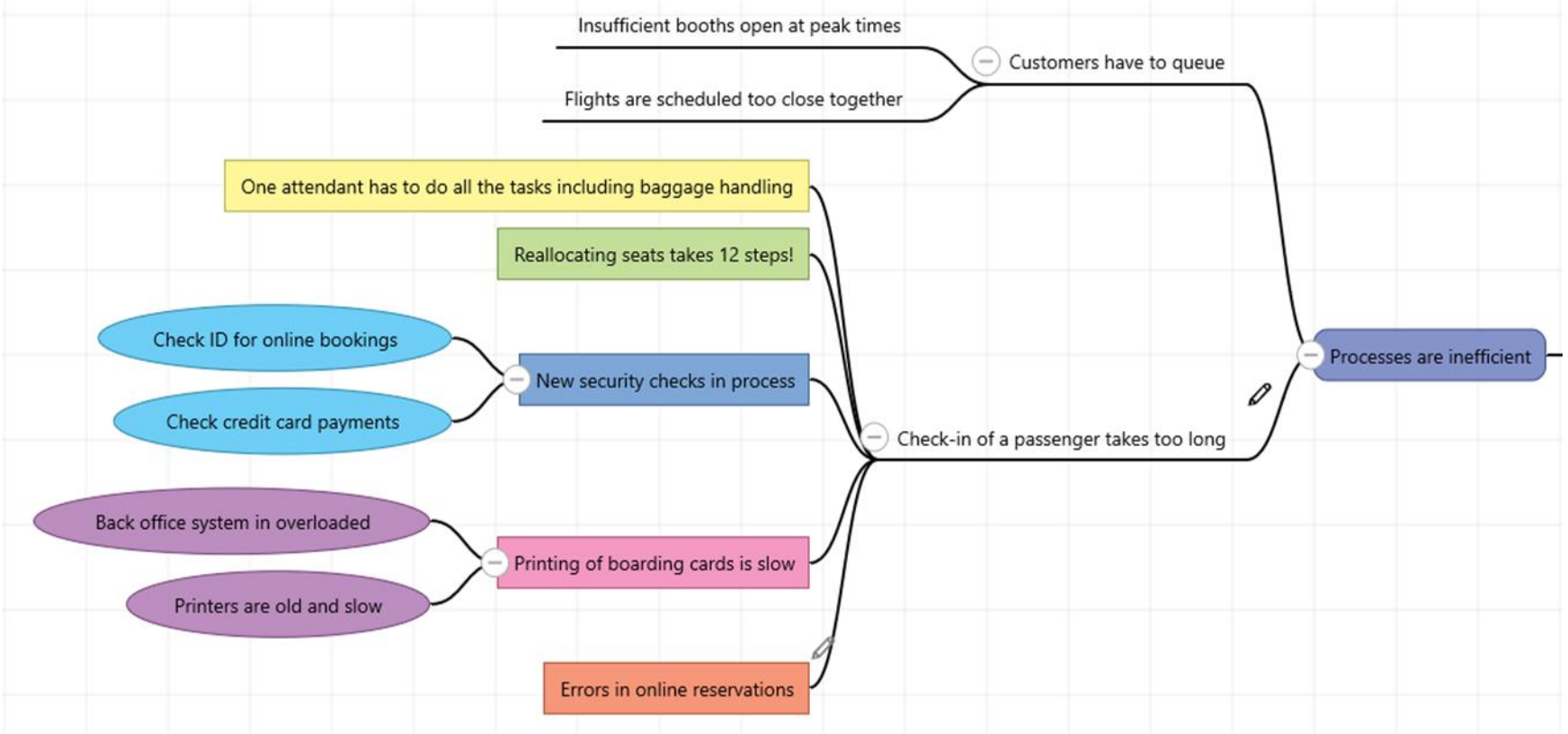


STAGE 1: CURRENT STATE



STEP 3: ANALYSE ROOT CAUSES

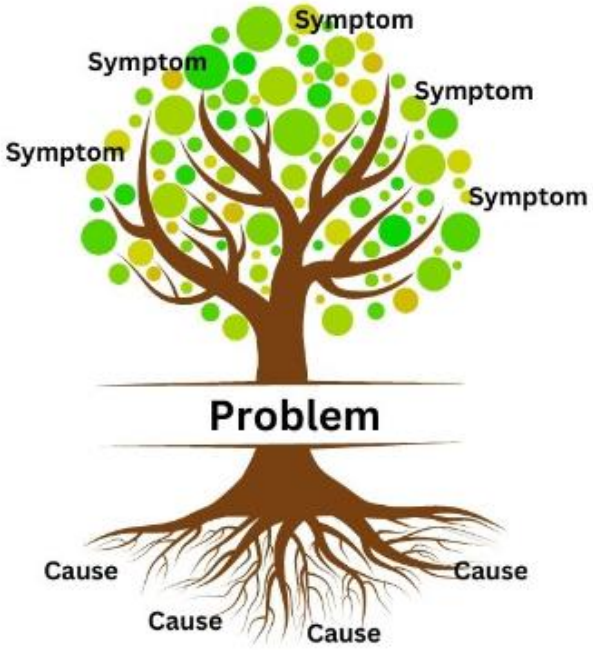
- Drill down deeper, substantiate ideas
- Get to the bottom of the problem
- Then use root cause technique to find underlying causes



WHAT IS ROOT CAUSE ANALYSIS?

- Root Cause Analysis focuses on determining the underlying cause of an identified problem
  - Rigorous technique to determine actual causes of material or component failure
- Using the '5-whys' technique
  - Start with the observed or reported problem by asking why it exists
  - The answer should be another problem statement that caused the first
  - Keep asking why for successive problems until your answer is
  - I don't know (ignorance point marked with ?)

  or
  - I don't care (beyond our scope to deal with)

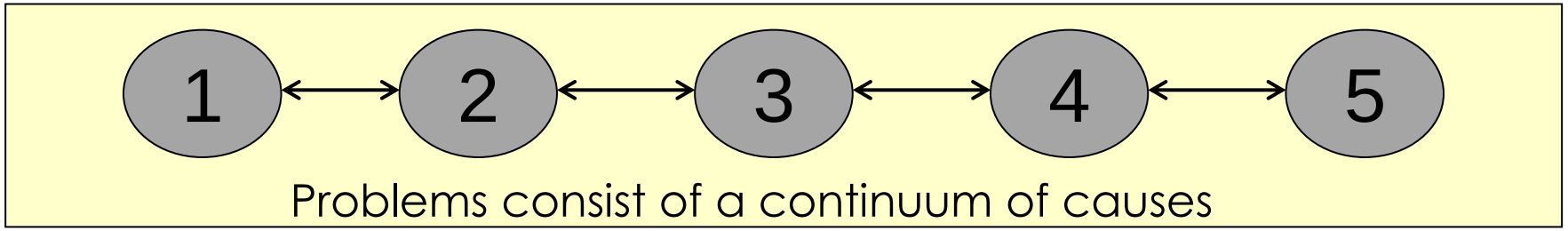


Above the surface you can see the **symptoms** of the problem

Dig deeper and you find the **root cause** of the problems

https://www.workfellow.ai/learn/what-is-root-cause-analysis

WHAT IS ROOT CAUSE ANALYSIS?



- Root cause analysis is the systematic process of determining the underlying cause of an identified problem
- Rigorously used technique in troubleshooting to determine actual causes of failure
- Focus on problem origin as the proper point of correction (rather than dealing with effects)
- There are many techniques for modelling root cause analysis
  - Cause effect trees
  - 5 why's
  - Causal loop diagrams (not covered here)

USING ROOT CAUSE ANALYSIS

- Always start with the observed or reported problem
- Ask why this exists. The answer should be another problem statement that caused the first. For complex problems, there may be more than one causal problem in answer to any of the why questions
- Keep asking why for successive problems until your answer is:
  - I don't know (ignorance point marked with ?); or
  - I don't care (beyond our scope to deal with)
- To be effective, each problem statement MUST have a direct relationship with both
  - The preceding problem statement
  - The succeeding problem statement
- Techniques are complimentary and can be used together.

EXAMPLE OF ROOT CAUSE ANALYSIS

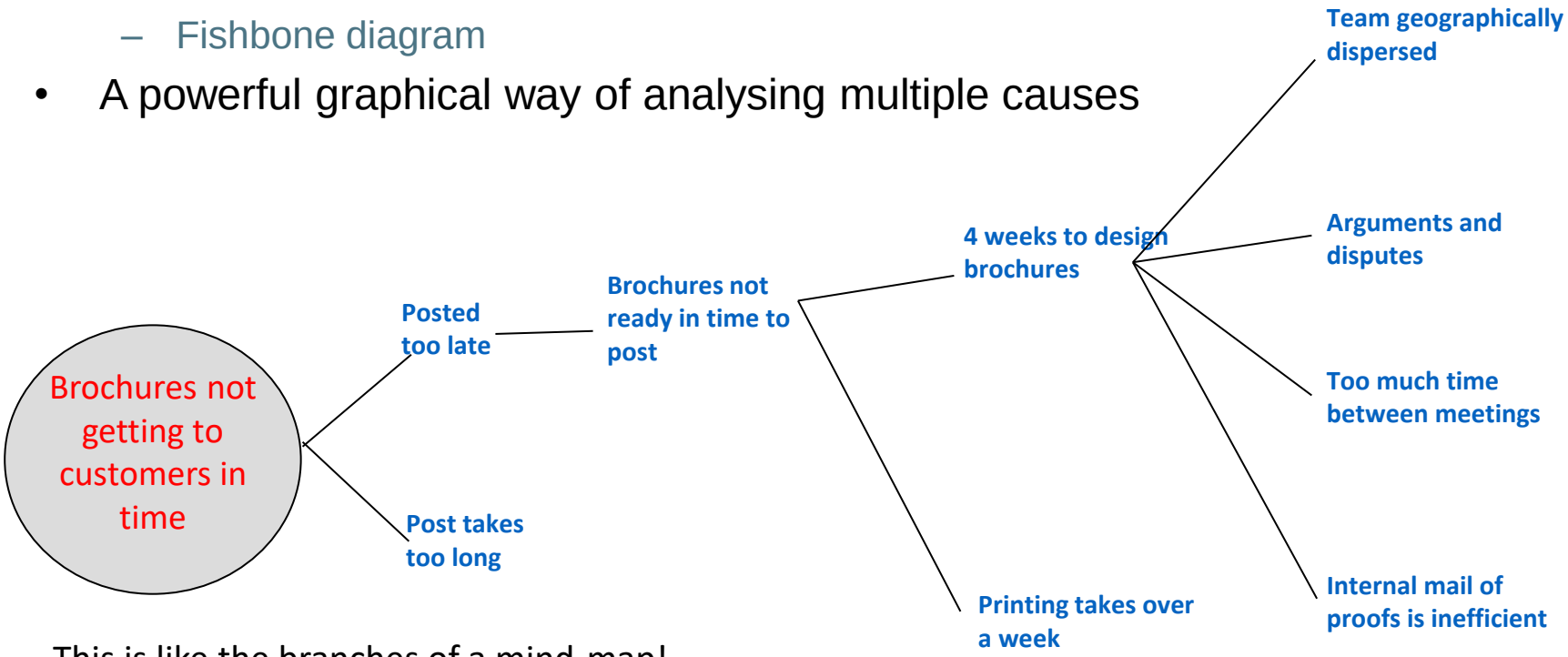
Observed or reported problem:
"Our brochures are not getting to customers in time for them to book their travel"

- Using the 5 Why's method
  - Why? "The brochures were posted too late"
  - Why? "The brochures were not ready in time to post"
  - Why? "The design/print team takes 4 weeks to design brochures"
  - Why? " They experience difficulty in sharing design concepts among the team
  - Why? "They are geographically dispersed"

- Solving problems
  - You can solve the problem by addressing the root cause, and any of the intervening problems as well
  - Sometimes there are a few causes of a problem; model all of them.

EXAMPLE OF ROOT CAUSE ANALYSIS

- Using the cause-and-effect diagram
- Also known as:
  - Ishikawa diagram
  - Fishbone diagram
- A powerful graphical way of analysing multiple causes



This is like the branches of a mind-map!

See handout: "Creating an Ishikawa Diagram"

FOCUS ON THE REAL BUSINESS PROBLEMS

- If you are going to get proper business buy-in, then you need to focus on real (observed or reported) business problems
- **The business is (or should be!) concerned with cost, profit, efficiency, accuracy, quality of information and the like**

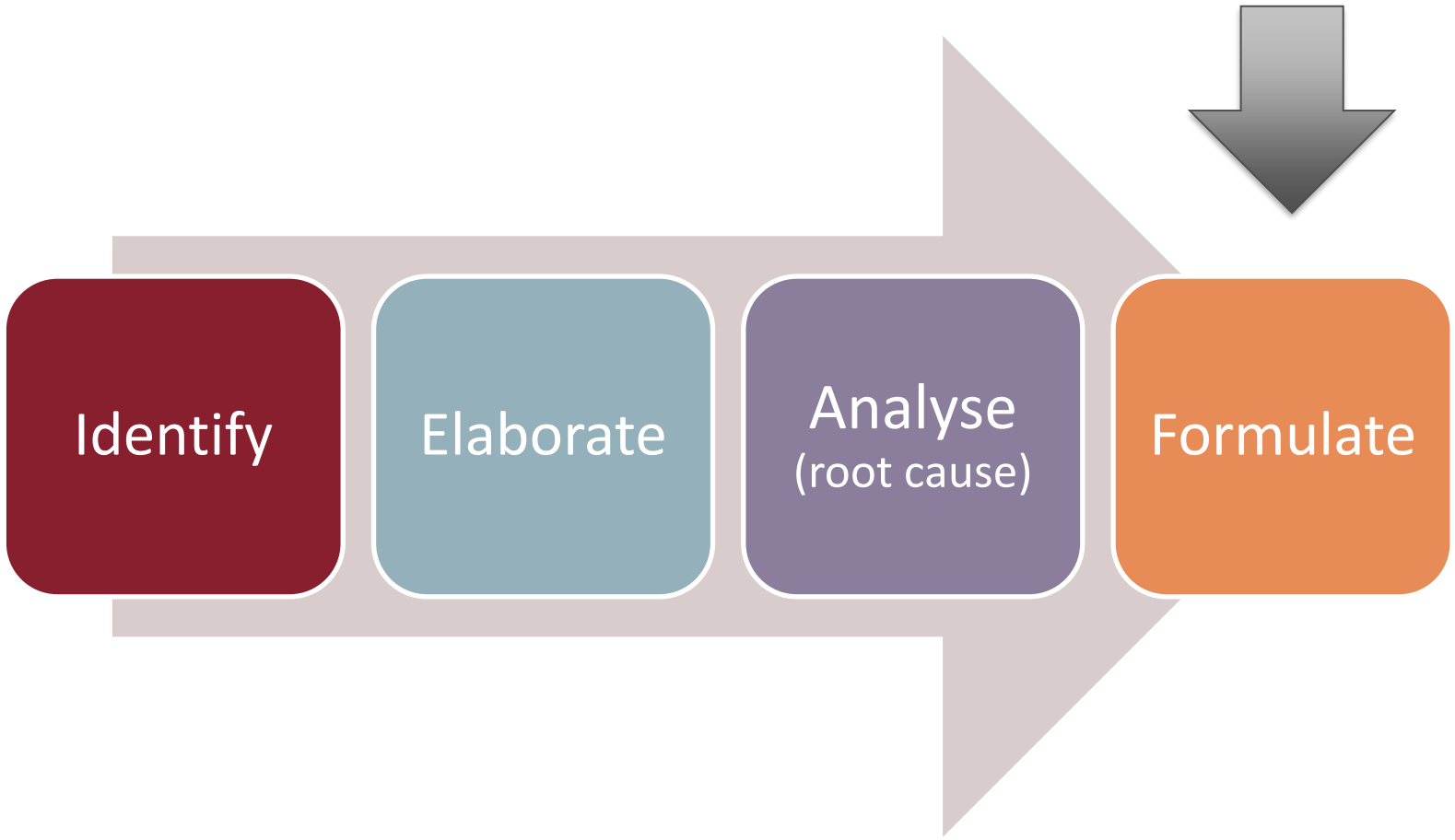
- The following are not (necessarily) business problems in themselves (but they may be the root cause of business problems).

> "The company does not have an IT system"
> "The computers are obsolete"
> "The order management software does not integrate to CRM"
> "The processes are not standardised"

Why are these not generally BUSINESS problems?

Can you identify what the business problems are (or what business problems these might cause)?

STAGE 1: CURRENT STATE



STAGE 2: IDENTIFY REQUIREMENTS (OUTCOMES)

Identify objectives and metrics

- How will we know when the problem is solved?
- How will we measure our successful solution of the problem?
- Clarify what we really want from the process

Consider short-term, medium-term and long-term view of outcomes if the problem is complex

- What are the Quick wins?
- What do we want that is sustainable in the long-term?

Useful questions

- What is the desired state?
- Where do we want to be?
- How would we be behaving?
- What would we be doing?
- What would be happening around us?
- What would our environment look like?

Who will be our:

- Partners? Suppliers?
- Competitors?
- Clients?
- How will we make the answers to these questions measurable?

NO SOLUTION THINKING!

Creative

Analytical

Critical

THE IMPORTANCE OF A CORRECTLY PHRASED (DESIRED) OUTCOME

Several centuries ago, a curious but deadly plague appeared in a small village in Lithuania. What was curious about this disease was its grip on its victims: as soon as a person contracted it, he would go into a deep, almost deathlike coma. Most died within a day, but occasionally someone would recover. Given the limitations of 18th Century medical technology, the people had a difficult time distinguishing whether the victim was truly dead, or alive.

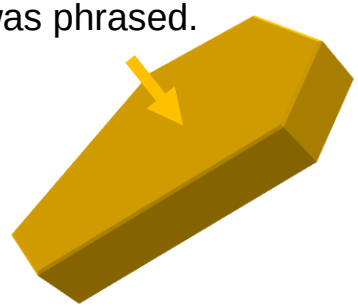
One day it was discovered that someone had been buried alive. This alarmed the townspeople, who called a meeting to decide what to do to prevent the situation ever happening again. After much discussion, the majority agreed that the solution was to put food and water in the casket next to each body, with an air hole to the surface. This would be expensive but would be worthwhile if they saved peoples' lives.

Another group proposed a second, less expensive answer. They proposed implanting a 30 cm stake in the coffin lid, over where the victim's heart would be. Then whatever doubt there might be about the victim's state would be resolved as soon as the coffin was closed.

The difference between the solutions was how the question used to find them was phrased.

The first group asked: "What should be do in case we bury someone alive?"

The second group asked, "How can we make sure everyone we bury is dead?"



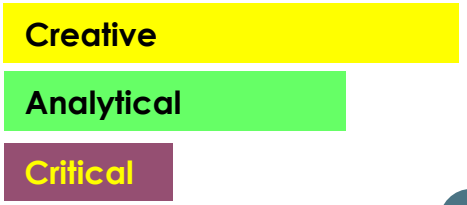
From 'A Whack on the Side of the Head': Roger van Oech

STAGE 3: IDENTIFY POSSIBLE SOLUTIONS

- Two distinct stages
  1. Idea generation – **quantity over quality**
  2. Idea evaluation (stage 4)
- Think outside the box
  - Lateral, creative, free thinking styles
- Identify all available alternatives that could achieve desired solution
  - Separate the solutions from the problems
  - 'As-is' should not drag back the 'to-be'; do not keep harping on the problems – focus on the solutions
  - Aim for the positive outcomes that will meet the objectives

- Encourage creative thinking; avoid analysis and judgement; that happens later
- Tips and tricks:
  - Limit the amount of time allocated to focused creative thinking (no more than 30mins)
  - Leverage creative thinking tools like the Morphological Matrix or Random Word
  - Run these sessions as a brainstorm (with application of the brainstorming guidelines)
  - Have fun!

THERE IS NO RISK IN IDEAS!



WHAT IS IDEATION?

- The creative process of generating, developing and communicating new ideas

CONDITIONS FOR SUCCESS

PRINCIPLES	
Suspend disbelief	Encourage crazy / wild ideas
Divergent / breakthrough thinking	Questions are welcome – as long as they are for clarity (not criticism)
Quantity leads to quality	Move past the first few (obvious) ideas
Never crush an idea	Limit time
All ideas are equal	Facilitate well
All idea originators are equal	No analytical or critical thinking
Postpone judgement	Language = YES, AND…

STAGE 4: EVALUATE THE SOLUTIONS

- Rate the solution option fit
  - Business priorities
  - Business constraints, e.g. finances, skills, capabilities
  - Business drivers
  - Business capabilities
- Assess the impacts of each solution
  - Benefits
  - Costs
  - Risks
  - Time lines
  - Likelihood of actually solving the real problems without creating new ones…
- Rank the alternative solutions
- Select the alternative that maximizes satisfaction
  - Gain consensus
  - Achieve buy-in.

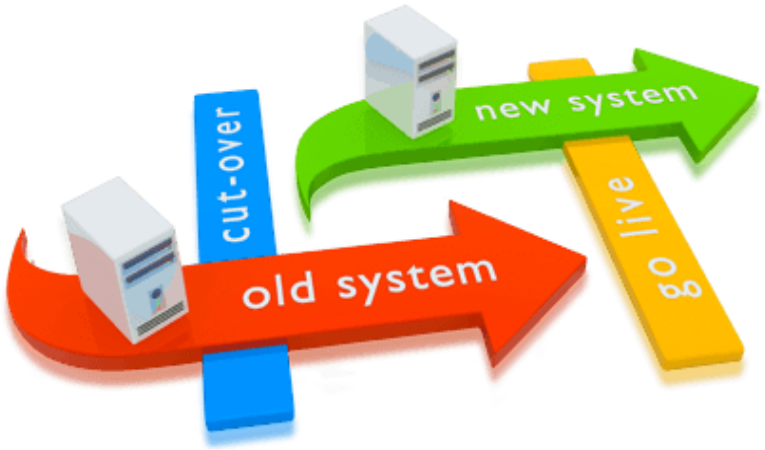
Creative

Analytical

Critical

STAGE 5: IMPLEMENT DESIRED SOLUTIONS

- Decide on course of action
- Develop project plans
  - How do we get to the desired state from where we are?
  - Break it down into manageable chunks
  - Assign responsibilities and dates
- Produce detailed plans for the solution
- Develop the solution
- Quality assure the solution
- Roll out / implement the solution
- Evaluate the efficacy of the solution



THERE IS NO REWARD IN IDEAS

Creative

Analytical

Critical

COURSE OBJECTIVES REVISITED

- This course has enabled you to
  - Appreciate what thinking is and how many different types there are
  - Have a deeper understanding of Problem-Solving
  - Recognise the importance of a keen focus on the Problem Space
  - Be able to formulate problems effectively to maximise the value of time and effort spent in Problem-Solving
  - Understand Complex Systems Thinking and be able to develop Causal Loop Diagrams in order to better understand problem situations
  - Understand something about Creativity and Innovation in relation to Problem Solving
  - Have acquired a basic Creative Problem-Solving Toolkit containing a number of thinking tools.

HOMEWORK

- To be completed before the next session
- Refer to your workbook for instructions.

Evolving Requirements

LEVEL OF ABSTRACTION

- Levels of abstraction enable the business to describe requirements at an appropriate level of detail at different stages in a project

  - **Business requirements**:
    - A high-level description of need in business terminology, that can apply to whole enterprise, a business area or a specific initiative
    - A statement of goals, objectives and outcomes that describe a business change, and why it has been initiated

  - **Stakeholder requirements**:
    - A description of requirements, pertinent to the different stakeholders in a project, describing the interests / needs that must be met in order to achieve the business requirements

  - **Solution requirements**:
    - Detailed descriptions of capabilities required in the solution in sufficient detail that the solution may be selected, designed or constructed

Adapted from BABOK® v3

REQUIREMENTS AT DIFFERENT LEVELS OF DETAIL

Business requirements
Text description in business language
Each ‘requirement’ may actually include lots of unstated sub-requirements
Emphasis is on understanding purpose and rationale for solution; requirements phrased as desired outcomes, goals
Very few models or diagrams; if included will address context and big picture of business
Solution defined in terms of required outcomes, if at all
Techniques: problem analysis, high level business or organisational models, Goal Analysis

REQUIREMENTS AT DIFFERENT LEVELS OF DETAIL

Stakeholder requirements
High level statements of stakeholder wants / needs Used as a basis for determining solution requirements
Requirements decomposed to atomic level, identified by requirement ID, prioritised
Emphasis is on eliciting as complete a list of requirements as possible that define what the solution will contain
Descriptions primarily to clarify and differentiate requirements from each other, or to clarify scope
Solution is defined in terms of what is must contain, rather than how it must achieve this
Techniques: numbered requirements list (product backlog), user stories, text annotations

REQUIREMENTS AT DIFFERENT LEVELS OF DETAIL

Solution requirements
Detailed list of individual requirements, classified by type (functional, informational, non-functional, transitional) Detailed definitions of each requirement
Requirements decomposed to atomic level, identified by requirement ID, prioritised Each requirement on the list is fully described by a requirement package containing text, designs, diagrams and other relevant specifications
Emphasis is on describing in detail what the solution will contain
Extensive use of techniques to fully define requirements Lots of models and diagrams
Almost entirely focused on articulating solution requirements
Full range of specification techniques, including use cases, process models, information models, prototypes, designs, tables, lists etc.