

Problem Solving



Problem

a question raised for inquiry, consideration, or solution
an intricate unsettled question
a source of perplexity, distress, or vexation

Merriam Webster

A perceived gap between the existing state and a desired state,
or a deviation from a norm, standard, or status quo.

BusinessDictionary.com

What prevents you from reaching your goal?

Studggs.net

Albert Einstein once said, “If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.”



Problem Solving

Basic steps to Problem Solving

- Defining the Problem
- Generating Alternatives
- Evaluating & Selecting Alternatives
- Implementing Solutions

What Skills are necessary to address these steps?

What Standards do you use to measure those skills?



Implications of Critical Thinking

- In your own words describe one or more implications of Critical Thinking on any Problem-Solving process.



”MIND SET” and its implications for Problem-Solving

What do you think about the idea of ”Mind Set” and how it impacts.



To what degree does your Problem-Solving approach come from your personal philosophy?



Effectiveness as a Leader and Problem-Solving

What do you really believe about how
a leader is supposed to behave, in
particular during Problem-Solving?



How are Problem-Solving skills linked to Leadership?

And

Your Leader Philosophy

What's In It For Me?



Problem-Solving Models



Problem Solving Models

7 Step Problem Solving Process

1. Identify the issues.
2. Understand everyone's interests.
3. List the possible solutions (options)
4. Evaluate the options
5. Select an option or options
6. Document the agreement
7. Agree on contingencies, monitoring, and evaluation

LSU School of Nursing

1. Define the Problem
2. Determine the Root Cause(s) of the Problem
3. Develop Alternative Solutions
4. Select a Solution
5. Implement the Solution
6. Evaluate the Outcome

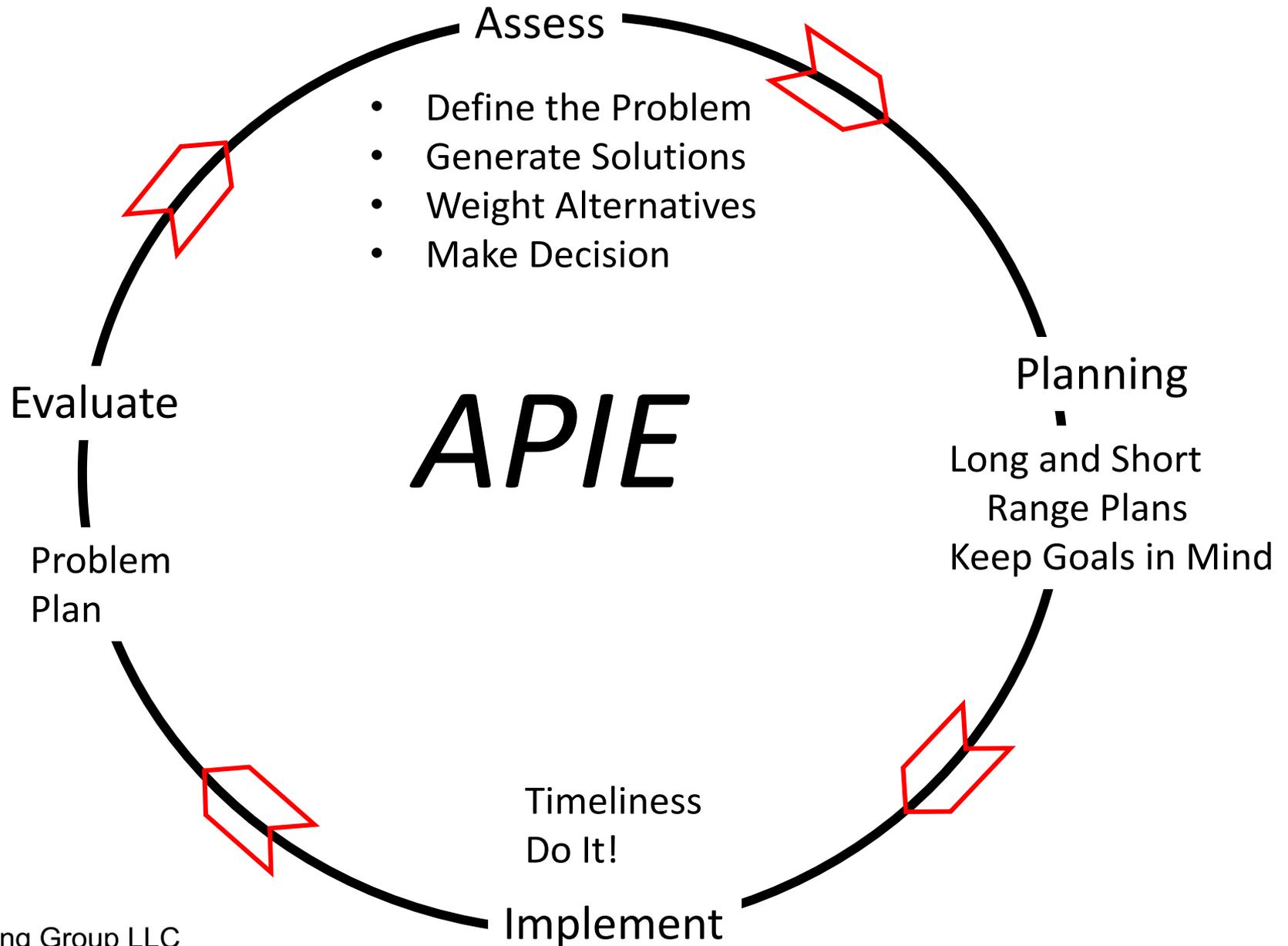
USC Marshall

1. Identify the problem
2. Analyze the problem
3. Identify decision criteria
4. Develop multiple solutions
5. Choose the optimal solution

Polya's Model

1. Understand the problem
2. Devise a plan
3. Carry out the plan
4. The key is to keep trying until something works,
Verification: Look back.

Problem Solving



OMR Model

Outcomes

What is our task?
What do we want to happen?
What results are we looking for?
What will “Success” look like?
What are we trying to do?
What are the goals and objectives?

Methods

How should we do it?
What is the best possible method?
What are some alternative methods?
What system or approach do we use?
Which of our people should do it?

Resources

How much money do we need?
How much time will it take?
How many people will it take?
How much material will it take?



A 

Assessment

P

Planning

I

Implement

E

Evaluate



O



M



R

O



M



R

O



M



R



So How Do I Know Which Model To Use?



It Depends



Types of Problems

Let's talk about the types of problems we
might be faced with...

Make a List...



Ethical Problems





Consulting Group LLC

Types of Problems

	<i>Well-structured</i>	<i>Medium-structured</i>	<i>Ill-structured</i>
Problem Structuring	The problem is self-evident.	Professionals easily agree on its structure.	Professionals have difficulty agreeing on problem structure and will have to agree on a shared hypothesis.
Solution Development	Solution techniques are available and there are verifiable solutions.	There may be more than one “right” answer. Professionals may disagree on the best solution. A desired end state can be agreed on.	Professionals will disagree on— <ul style="list-style-type: none"> • How the problem can be solved. • The most desirable end state. • Whether the end state can be attained.
Execution of Solution	Success requires learning to perfect technique.	Success requires learning to perfect techniques and to adjust the solution.	Success requires learning to perfect technique, adjust the solution, and continuously refine understanding of the problem.
Adaptive Iteration	No adaptive iteration required.	Adaptive iteration is required to find the best solution.	Adaptive iteration is required both to refine the problem and to find the best solution.

Which type of problem-solving model (4-Step / 5-Step/
6-Step or 7-Step) works best for:

- Well Structured Problem
- Medium Structured Problem
- Ill Structured Problem

WHY?



	Well Structured	Medium Structured	III Structured
4 Step			
5 Step			
6 Step			
7 Step			

- Problem is self-evident
- There more be more than one right answer
- Success requires learning to improve techniques and adjust solution
- Adaptive iteration is required
- Disagreement on how the problem can be solved
- Success requires refining the understanding of the problem
- Can not agree on end state



Problem Solving



“A” Problem Solving Model

1. Identify the Problem

2. Gather Information

3. Develop Criteria

4. Generate Possible Solutions

- a. Screening and Evaluation Criteria that are based on Facts and Assumptions
- b. **Brainstorm** and Generate Solutions

5. Analyze and Compare Possible Solutions

6. Select Best Possible Solution

7. Implement and Assess the Decision





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What Type of Problem is This?

You are a senior leader in your Agency whose employees reside in three separate states. Two thirds of your employees live in neighboring states that have issued mandates to “Stay At Home”, the remaining third reside in the one state that has not issued a “Stay At Home” order. The Agency’s physical offices are located in the State without a “Stay At Home” order. Your Agencies workload has intensified in the face of the pandemic. This decision has been delegated to you as the senior leader and no Agency wide decisions will be made. How do you manage a workload that is ever increasing while simultaneously seeking balance in supporting your employees and your Agency?



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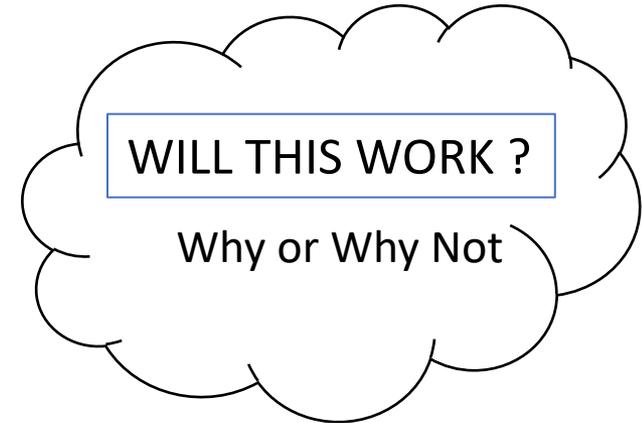
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A Different Approach To Problem-Solving

“Design”



Design

Design is a methodology for applying critical and creative thinking to understand, visualize, and describe problems and approaches to solving them.

Design methodology is particularly useful as an aid to conceptual thinking about unfamiliar problems.





- Problem Identification
- Conceptual-Blank Sheet
- Questions Assumptions and Methods
- Develops Understanding
 - Paradigm-Setting
- Complements planning, preparation, implementation and assessment
- Leader-Driven Dialogue

- Problem-Solving
- Physical and Detailed
- Procedural
- Develops Products
- Paradigm-Accepting
- Pattern and Template Activities
- Staff-Centered Process

Design Methodology

Current State

“What is going on in the current environment?”

1

Desired End State

“What do we want the future environment to look like?”

2

Problem Frame

“What are the obstacles preventing the current state from becoming the desired end state?”

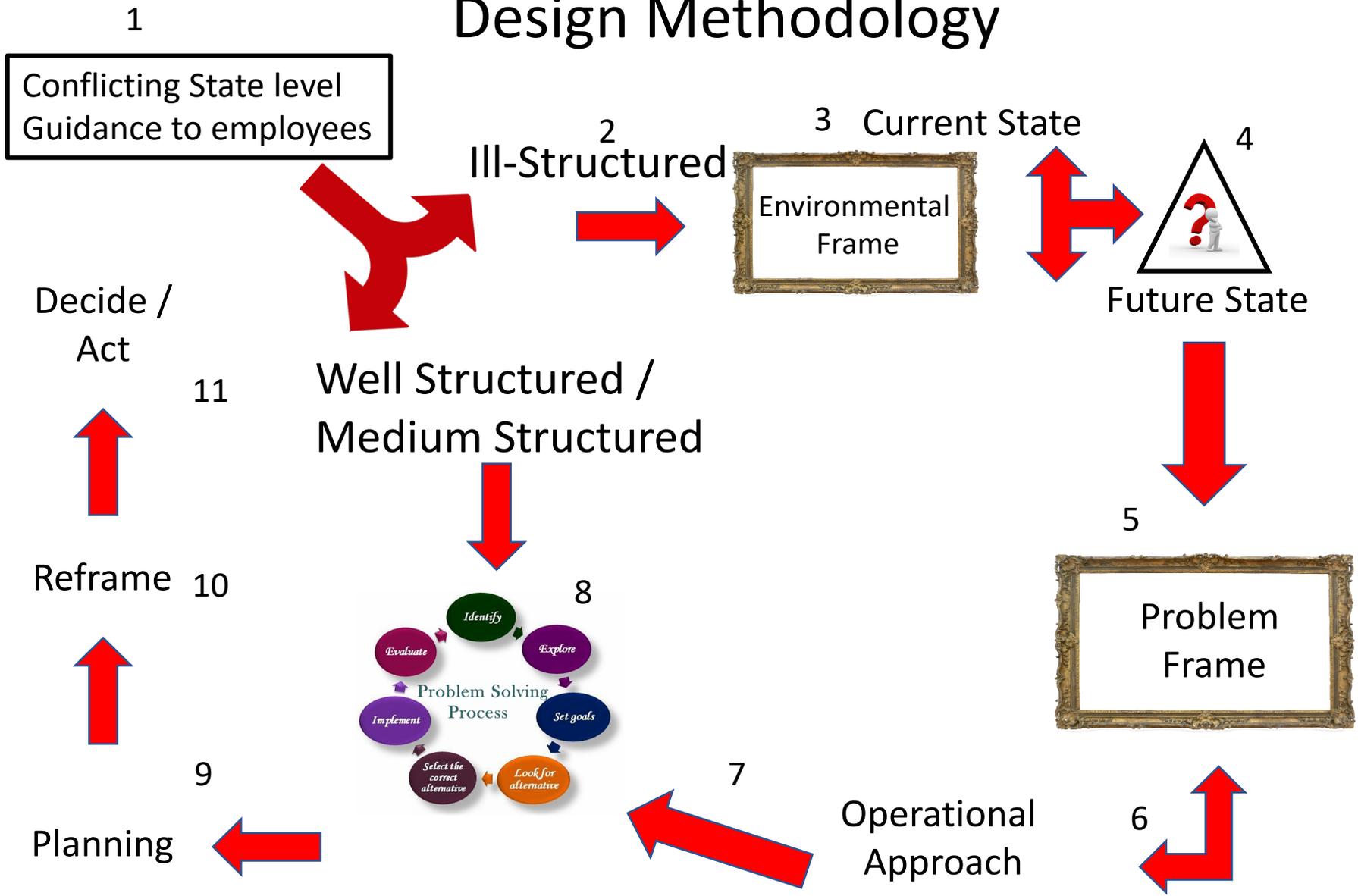
3

Operational Approach

“How do we get from the current state to our desired end state?”

4

Design Methodology



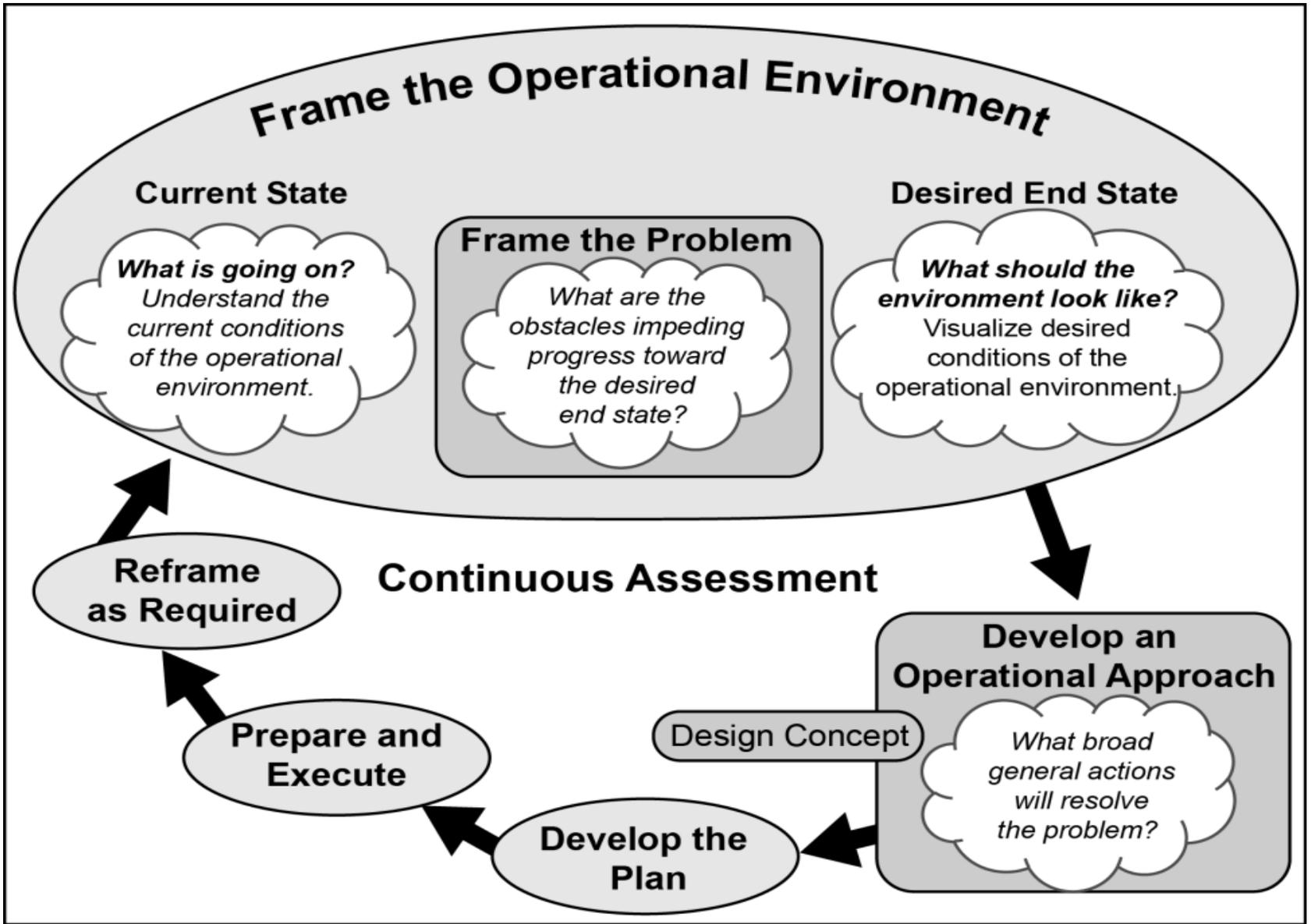
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Framing

Framing is the *art of seeing the essential and relevant among the trivial and irrelevant*; penetrating the logic of the broadly received requirement and its messy contextual situation; and reshaping it into a well-enough structured working hypotheses. It requires leaders to inquire into the nature or character of the factors—stakeholders, opponents, and the larger organizational environment—which define the situation into which their organization will operate.





?

Current State

?

Most States Are Under a "Stay At Home Order"

?

How do you manage a workload that is ever increasing while simultaneously seeking balance in supporting your employees and your Agency?

?

?

?

?

Future State

?

?



Framing

Current State

A large, empty rectangular box with a red border, intended for describing the current state.

Barriers

-
-
-
-
-
-
-

Future State

A large, empty rectangular box with a blue border, intended for describing the future state.

Problem Statement

A problem statement should describe an undesirable gap between the current-state and the desired future-state. A problem statement *should* include absolute or relative measures of the problem that quantify that gap but *should not* include possible causes or solutions!

Current State

Problem Frame

Future State

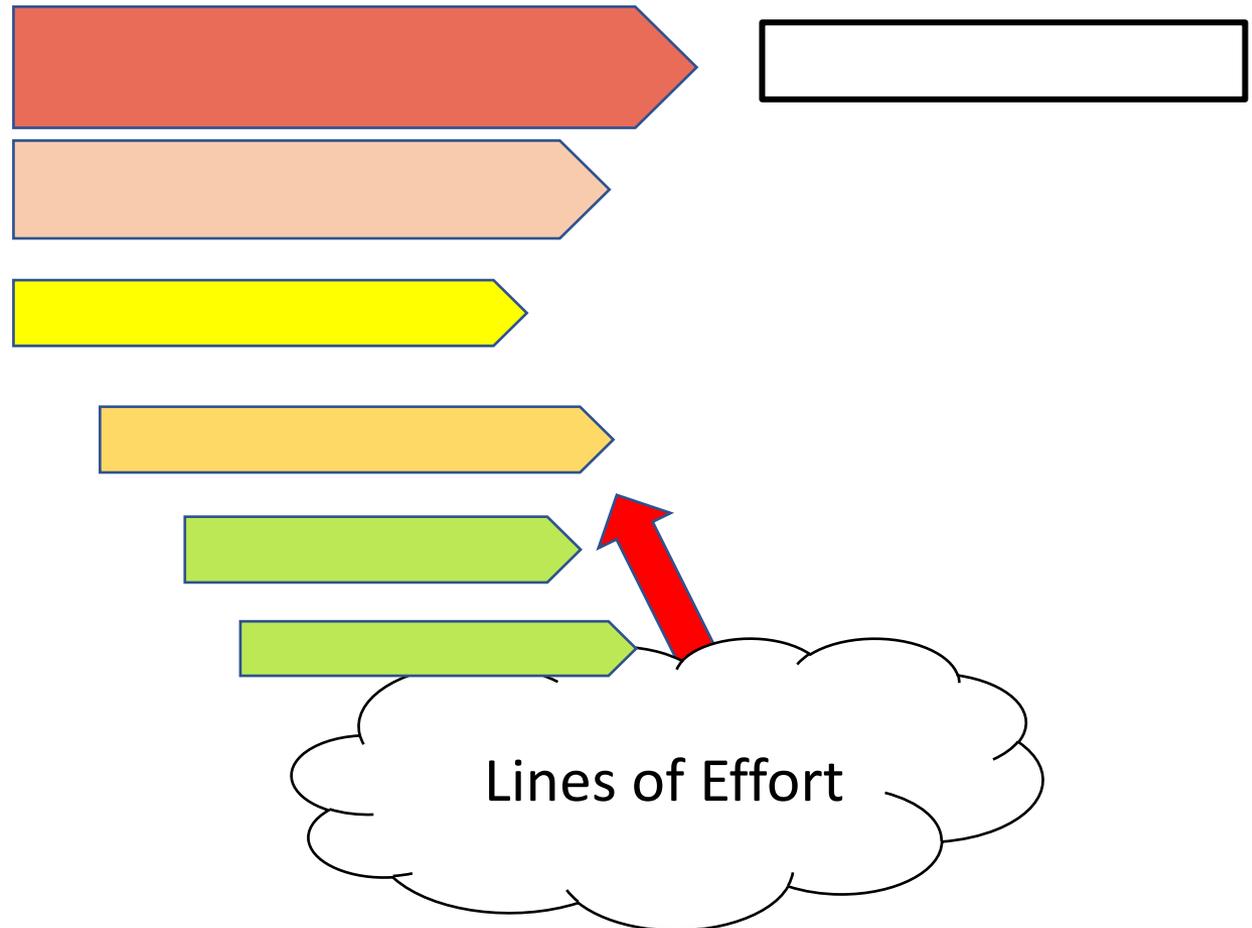


Operational Approach

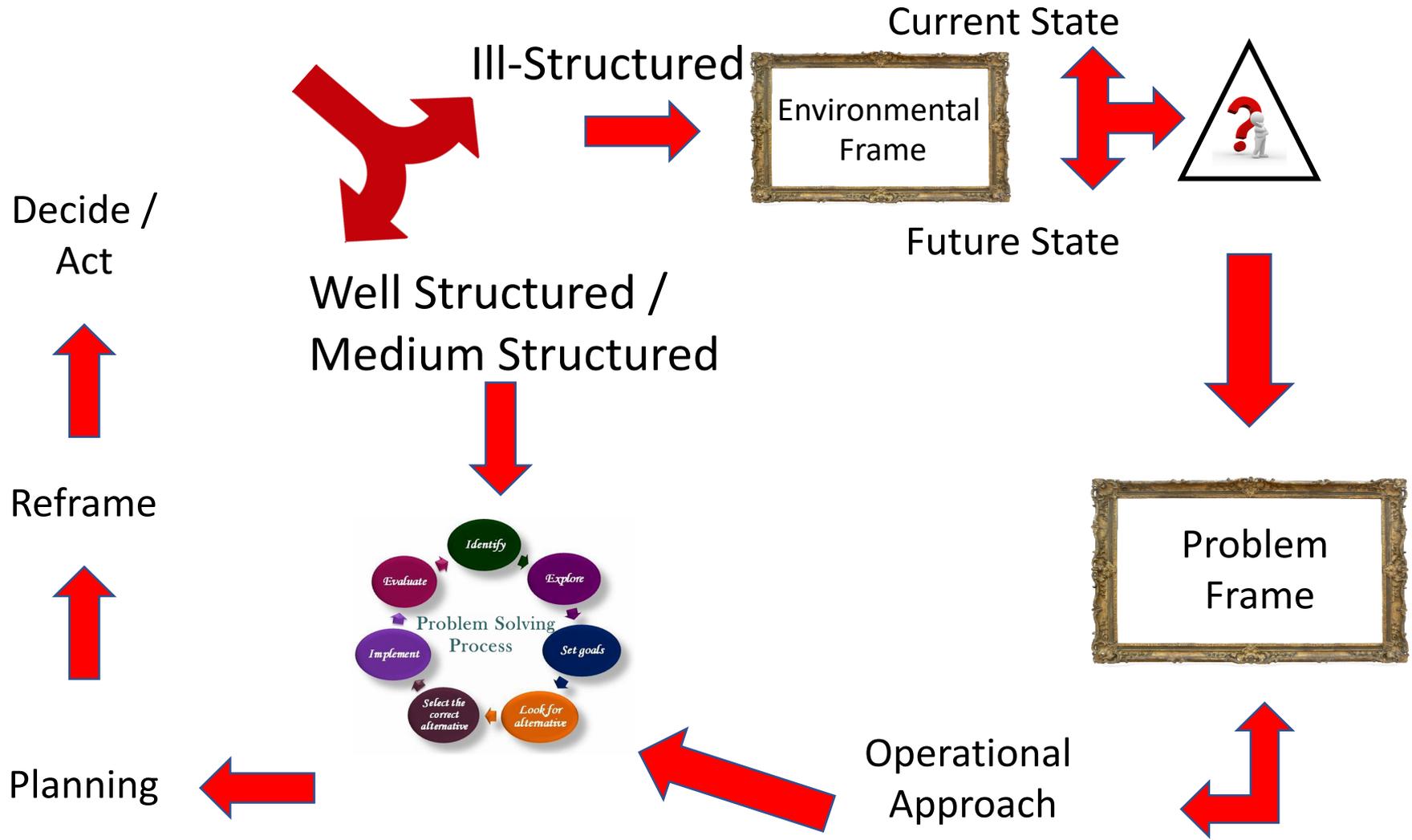
Current State

Barriers

Future State



What's the Problem



Problem Solving Models

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Decision Matrix

DECMAT

	Criteria A	Criteria B	Criteria C	TOTAL
Solution #1	2	3	1	6
Solution #2	1	1	3	5
Solution #3	2	2	1	5
CRITERIA WEIGHTS				



Summary

Determine the Problem NOT the Symptom

“Why is it a problem?”

Understand the TYPE of Problem you are dealing with

“Choose the ‘Right’ Problem-Solving Method”

Think Better

“Broader, Systems, Implications, Consequences, Other POV”

Communicate Better

“Listening for Understanding and Asking Better Questions”

FOCUS ON THE GOAL

“Don’t get lost in the Solving ...”

Additional Sources for Critical Thinking, Problem Solving and Decision Making

- M. Neil Browne and Stuart M. Keeley, *Asking The Right Questions*
- Gary Jason, *Critical Thinking*
- Sylvan Barnet and Hugo Bedau, *Critical Thinking, Reading and Writing*
- Dietrich Doerner *The Logic of Failure*
- Peter Senge *The Fifth Discipline*
- Richard Paul and Linda Elder, *The Miniature Guide to Critical Thinking*,
- Robert Ennis, *Critical Thinking*
- Sylvan Barnet and Hugo Bedau, *Critical Thinking, Reading, and Writing*
- Morgan D. Jones, *The Thinker's Toolkit*
- Army Doctrine Reference Publication 3-0, The Army in Unified Land Operations, 22 September 2011
- Daniel Kahneman, *Thinking Fast and Slow*, New York: Farrar, Straus and Giroux, 2011
- Morgan D. Jones, *The Thinker's Toolkit* (New York: Three Rivers Press, 1998)
- Dietrich Doerner, *The Logic of Failure: Recognizing and Avoiding Error in Complex Situations* (New York: Basic Books, 1996)
- Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).
- J. Koehler, "The Base-Rate Neglect Fallacy Reconsidered: Descriptive, Normative, and Methodological Challenges," *Behavioral and Brain Sciences* 19 (1996)
- Philip E. Tetlock, *Expert Political Judgment: How Good is It? How Can We Know?* (Princeton, NJ: Princeton University Press, 2005)
- M. Neil Browne and Stuart M. Keeley, *Asking the Right Questions: A Guide to Critical Thinking* (Upper Saddle River, NJ: Pearson Prentice Hall, 2007)
- A good example of how an analyst critically questioned a concept based upon its assumptions is found in, Antulio J. Echevarria II, *Rapid Decisive Operations – An Assumptions-Based Critique* (Carlisle: Strategic Studies Institute, 2001). Available at <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=218>
- Gary Klein, *Sources of Power: How People Make Decisions*, Cambridge, Mass. The MIT Press, 1998

