

# Problem Solving Tool-Kit

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## What is Problem Solving?

### ■ Definition



## Techniques / Tools

- Brainstorming
- SWOT
- 5 Why's
- Drill Down
- Flowcharting
- Analytical Problem Solving



## Brainstorming

- Used to develop a large number of creative solutions to a problem.
- It can also help you get buy in from team members for the solution chosen - after all, they have helped create that solution.



# Brainstorming



- Define the problem
- List any criteria that need to be met
- Determine how much time you'll spend brainstorming

# Brainstorming

## Generate Ideas

- Be sure that no one criticizes – this dampens creativity
- Get everyone to contribute something
- Encourage creativity, even if it seems impractical
- Keep the group thinking, don't dwell on one topic - This is not the place to develop the idea, just to create it
- Encourage people to develop others ideas

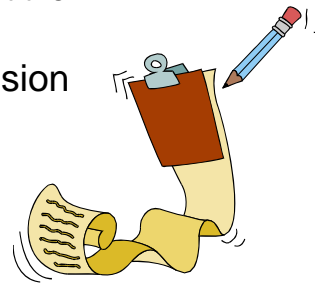
## Record ALL Ideas

- Focus on quantity not quality



# Brainstorming

- Sort through the list of ideas
  - Look for any that are duplicates
  - Group like concepts together
  - Eliminate responses that don't address the problem or meet the criteria
- Prepare a follow up discussion or meeting



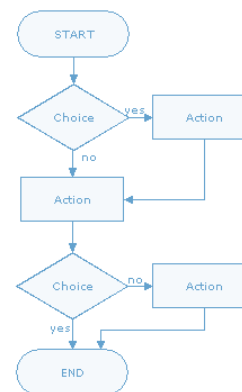
# Flowcharting

## What?

A tool for improving processes

## Why?

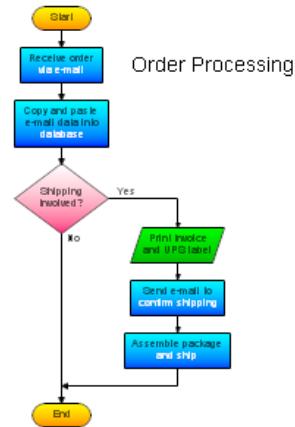
- Document an existing process
- Design an “ideal” process
- Determine whether the steps in a process are logical
- Identify bottlenecks and unnecessary complexity
- Uncover duplication of effort



# Flowcharting

## How?

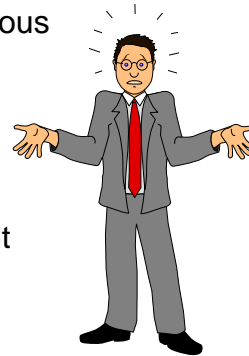
- Brainstorm current process
- List every step
- Challenge sequence of actions and decisions
- Analyze process for efficiency / effectiveness



# Flowcharting

## When?

1. Process Documentation / Training Materials
2. Workflow Management And Continuous Improvement
3. Programming
4. Troubleshooting Guides
5. Regulatory And Quality Management Requirements



# Flowcharting

## Types:

- Sequential Flowchart
- Top-Down Flowchart
- Deployment Flowchart
- “Hybrid” Flowchart



# S. W. O. T.

## **Strengths**, **Weaknesses**, **Opportunities**, & **Threats**

- Situational Analysis Technique
- Environmental Factors
  - Internal Factors
  - External Factors
- Problem Defining Tool
- Relatively Simple

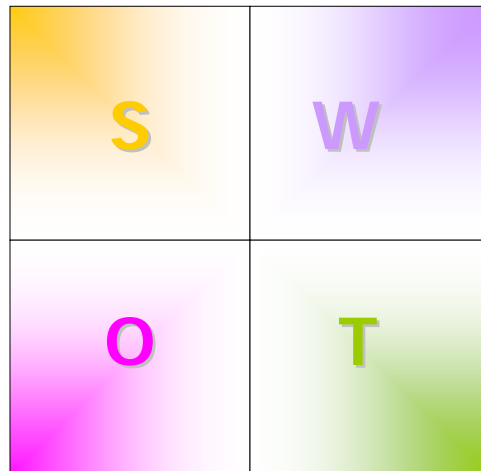
## S. W. O. T. (Continued)

### ■ Internal Factors

- Strengths
- Weaknesses

### ■ External Factors

- Opportunities
- Threats



## S. W. O. T. (Continued)

### ■ Strengths

- Experience & knowledge
- What is done well
- Unique resources
- Assets
- View of others
- Advantages
- System capabilities
- Other strengths

### ■ Weaknesses

- Improvement opportunities
- Lack of resources
- Other views
- Disadvantages
- Lack of system capabilities
- Organizational culture
- Other weaknesses

## S. W. O. T. (Continued)

### ■ Opportunities

- Regulatory changes
- Technological advances
- Market Developments
- Industry trends
- Partnerships, strategic alliances

### ■ Threats

- Legislative changes
- IT developments
- Environmental effects
- Key Staff Loss
- Market demands
- Global influences

## S. W. O. T. (Continued)

### ■ Advantages

- Strengths & opportunities
- Threats & weaknesses
- Strategic thinking
- Simple

### ■ Disadvantages

- Simple
- Data Issues
- Multiple Inputs

<b>Strengths:</b> Make the most of these	<b>Weaknesses:</b> Turn these around
<b>Opportunities:</b> Strengthen & build on these	<b>Threats:</b> Watch these carefully



## 5 Why's

- Purpose is to explore the cause/effect relationships underlying a problem.
- Goal is to determine a root cause of a defect or problem.
- Popular for its simplicity.

Source: [http://en.wikipedia.org/wiki/5\\_Whys](http://en.wikipedia.org/wiki/5_Whys)

## 5 Why's (continued)

- When to use:
  - When problems involve human factors or interactions.
  - In day-to-day business life
  - To avoid statistical analysis or hypothesis testing
  - Lack of data information available

Source: <http://www.isixsigma.com/library/content/c020610a.asp>

## 5 Why's (continued)

- **How To Complete The 5 Whys:**
  1. Write down the specific problem.
  2. Ask “Why” the problem happens and write the answer down below the problem.
  3. If the answer doesn't identify the root cause of the problem, ask “Why” again.
  4. Go back to step 3 until the problem's root cause is identified.

Source: <http://www.isixsigma.com/library/content/c020610a.asp>

## Drill Down Technique

- **Definition**

Breaking complex problems down into progressively smaller parts.



## How to Use the Tool:

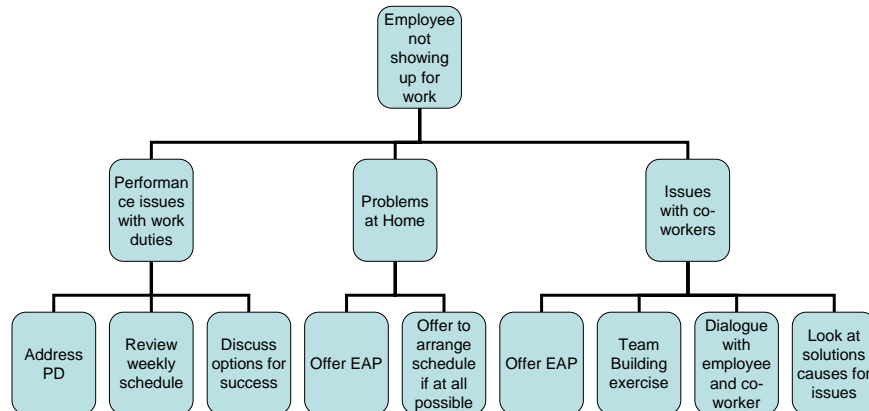
- Start by writing the problem down on the left-hand side of a large sheet of paper.
- Write down the points that make up the next level of detail on the problem a little to the right.
- For each of these points, repeat the process.
- Keep on drilling down into points until you fully understand the factors contributing to the problem.



## Key Points:

- Drill Down helps you to break a large and complex problem down into its component parts, so that you can develop plans to deal with these parts.
- It also shows you which points you need to research in more detail.
- It can be used in conjunction with the 5 Why's Techniques to ensure that you investigate each aspect of the problem systematically.

## Example of Drill Down



## Analytical problem solving

### The Eightfold Path

- Define the Problem
- Assemble Some Evidence
- Construct the Alternatives
- Select the Criteria
- Project the Outcomes
- Confront the Trade-offs
- Decide!
- Tell Your Story



## ■ Construct alternatives

- Four typical options: liberal, conservative, moderate, status quo
- Focus on causes
- Consider political, institutional environment



## ■ Select criteria

- How will you choose the best solution?
- Be specific:
  - “Biggest reduction in vehicle miles traveled”
  - “Highest cost to benefit ratio”
  - “Most likely to reduce cases of violence”

## ■ Define the problem

- One simple statement.
- Beware! Don't pre-determine a solution:
  - Wrong: “There is too little shelter for stray dogs.”
  - Right: “There are too many homeless dogs.”
  - Wrong: “There are too many young drivers on the roads.”
  - Right: “There are too many highway deaths.”

## ■ Assemble some evidence

- Think! Don't just gather.
- Consider *like* data, information.
- Ask: what do the experts think?



- Project outcomes

- The* hardest step!
- Consider ranges of outcomes.

- Confront tradeoffs

- Rarely is one solution obvious choice
- Review criteria



- Decide!

- Too tough? Revisit prior steps

- Tell your story.

- This could be the first step!
- Skip the blow by blow. Get to the good part first.

What would you do?

