

Management Tools
Problem Solving
Chapter 17

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The “Why Why” Tool...

Why

WHY

Why

Why

Why

The “Why Why” Tool...

- Why did the customer return the product?
 - It had a faulty component
- Why did it have a faulty component?
 - It was machined wrong
- Why was it machined wrong?
 - The calibration was off
- Why was the calibration off?

Forced Field Analysis...

Identify the forces and factors that may influence the problem or goal

1. State current situation, problem, or desired state.
2. List all the forces driving change and restraining change (from the current state, or to the desired state)
3. Explore each force -- are they valid, what is behind them, and can they be changed?
4. Determine the strength of each force using an evaluative scale (e.g. High-Medium-Low or 1-10 with 1 being extremely weak top to bottom listing)
5. A graphical presentation of the forces and their relative strength is useful in visualizing the dynamics of the situation and what change is viable.
6. Develop action plans to reduce restraining forces and increasing driving forces

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FORCE FIELD	
Retaining Customer Service Employees	
+ Driving Forces	Restraining Forces -
401K benefits	Low pay
Paid training	Lack of opportunities for advancement
Free lunches	Stressful work environment
Good health insurance benefits	No dental or vision plan
Strong community	No on-site day care center
Casual dress code	Long hours
Christmas bonus	No stock options

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Develop action plans to reduce restraining forces and increasing driving forces.

Nominal Group Technique...

- Everyone submits problem they think is most important
- Problems are listed
- Each member ranks all problems
- Rankings given numerical value in regards to importance

1 2 3 4 5 6 7

--- REVIEW ---

The canning factory that you are in management for is being faced with the possibility of downsizing and lay-offs of several hundred employees.

1. Use the WHY WHY Tool to determine the main reason for this situation.
2. Use FORCED FIELD ANALYSIS to meet the objective to avoid lay-offs.

Affinity Diagram...

- Conduct a brainstorming session on the topic under investigation.
- Clarify the list of ideas. Record them on small cards or Post-It notes.
- Randomly lay out cards on a table, flipchart, wall, etc.
- Without speaking, sort the cards into "similar" groups based on your gut reaction. If you don't like the placement of a particular card, move it. Continue until consensus is reached.
- Create header cards consisting of a concise 3-5 word description; the unifying concept for the group. Place header card at top of each group.
- Discuss the groupings and try to understand how the groups relate to each other.

Affinity Diagram...

Sample Layout

Also see page 446 in your textbook

Post-It notes or cards that can be easily moved and changed in positions



Interrelationship Digraph...

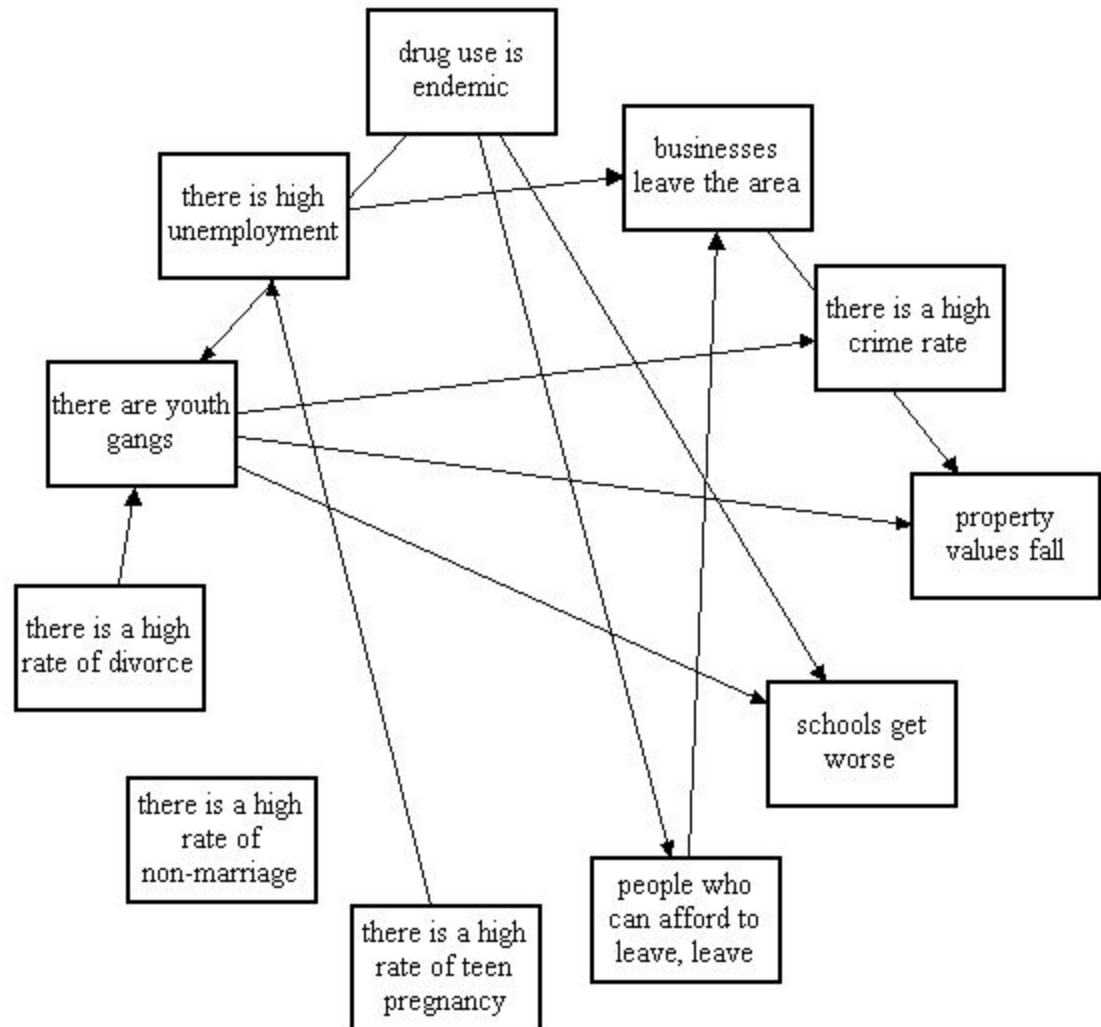
Used to show cause-and-effect relationships between identified factors surrounding an issue

- 1. Place the problem statement or desired outcome in the middle of a large piece of paper, such as, a flipchart.**
- 2. Draw a double circle around the statement or outcome.**
- 3. Arrange the major items (if using an affinity diagram to feed this, use the title cards) in a circle around the problem statement. Place the cards which have ideas most closely related to the problem nearer the problem, if this can be determined.**
- 4. Draw lines between ideas that are related. Put an arrowhead on the end of the line that shows the direction of the cause and effect relationship. Use only one way arrows. The arrow should point toward the effect and away from the cause. Each of the cards should have an arrow pointing toward the problem statement.**
- 5. Count the number of arrows leading into and out of each idea card. Place the number of arrows going out of the card, a slash and the number of arrows coming into the card above each card (i.e. number away/number into -3/4).**
- 6. The card with the most arrows going out is the key cause factor. Place a double box around it.**

Interrelationship Digraph...

Sample Layout

Also see pages
447-448 in your
textbook



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Questions So Far?

--- REVIEW ---

and present

Your company has to shut down a main production line.

Create an AFFINITY DIAGRAM to decide which line will be the one that gets shut down.

Your company is trying to implement a new rewards programs for employee moral.

Create an INTERRELATION DIAGRAPH to come up with the best kind of program for your employees.

BREAK

Let's Take a 10-15 Minute Break!

“7 Management and Planning Tools”

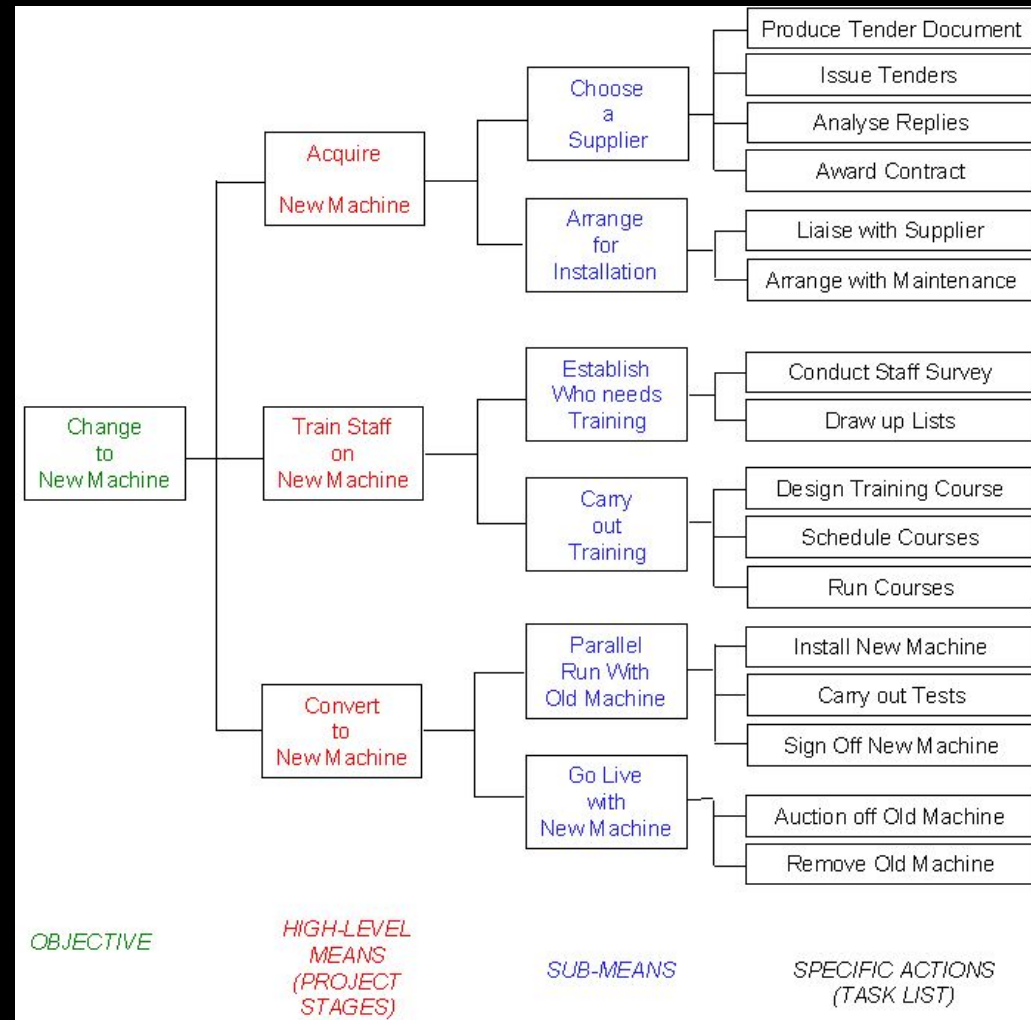
- Affinity Diagram
- Interrelationship Diagram
- Tree Diagram
- Matrix Diagram
- Prioritization Methods
- Process Decision Program Chart
- Activity Network Diagram

Tree Diagrams...

Breaks down or stratifies ideas in progressively greater detail. The objective is to partition a big idea or problem into its smaller components, making the idea easier to understand, or the problem easier to solve.

Sample Layout

Also see page 450 in your textbook











Matrix Diagrams...

Helps you to identify and analyze the presence and strength of relationships between two sets of information.

Sample Layout

Also see page 451 in your textbook

<div>Customer Requirement</div> <div>Process</div>	Polite Service	Large Choice	Quick Service	Clean and Tidy
Waiting on Tables				
Purchasing				
Housekeeping				
Food Preparation				



Strong Relationship



Medium Relationship



Weak Relationship

Prioritization Matrices...

Helps you rank problems or issues (usually generated through brainstorming) by a particular criterion that is important to your organization. Then you can more clearly see which problems are the most important to work on solving first.

Summary	Cost	Time	Resistance to Change	Impact on Problem	Row Total	Relative Decimal Value
Option 1	.26 x .31=.08	.14 x .22=.03	.01 x .11=.001	.59 x .29=.17	.281	.29
Option 2	.26 x .12=.03	.14 x .23=.03	.01 x .37=.004	.59 x .19=.11	.174	.18
Option 3	.26 x .12=.03	.14 x .22=.03	.01 x .02=.0002	.59 x .27=.16	.220	.23
Option 4	.26 x .33=.09	.14 x .19=.02	.01 x .29=.003	.59 x .02=.01	.123	.13
Option 5	.26 x .12=.03	.14 x .14=.01	.01 x .21=.002	.59 x .21=.12	.162	.17
Grand Total: .96						

Sample Layout

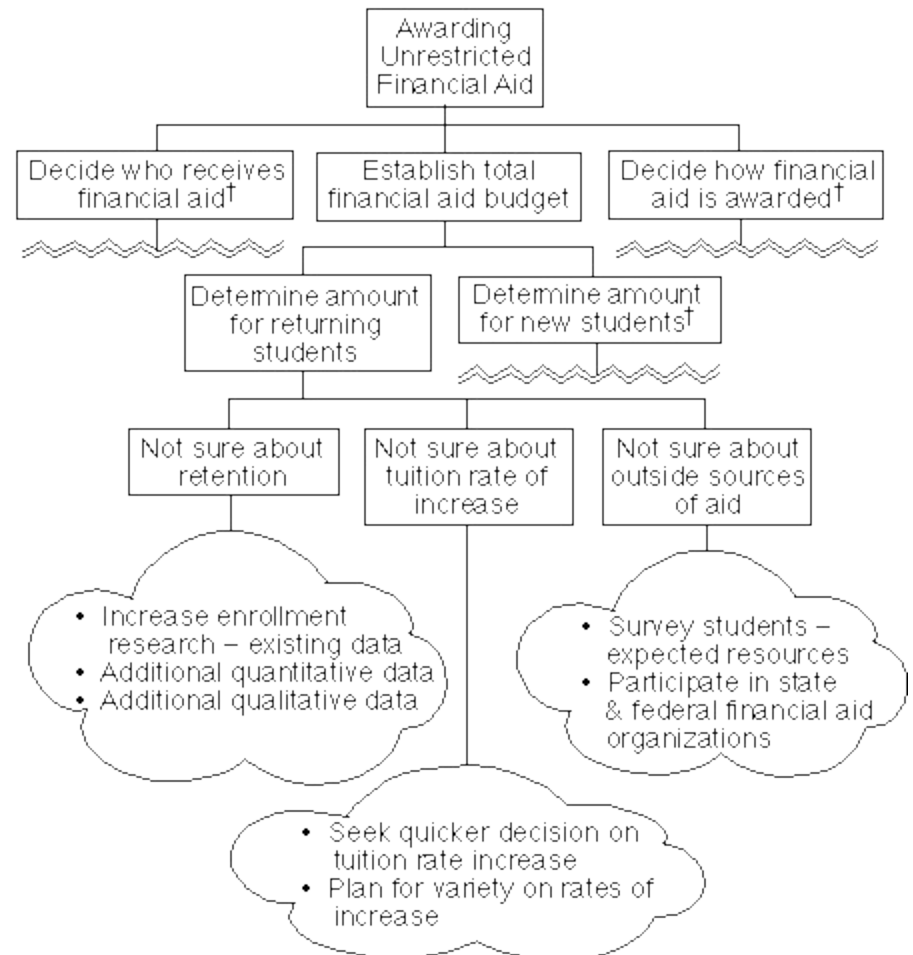
Also see page 452 in your textbook

Process Decision Program Chart...

A method that graphically displays as many alternatives and contingencies that can be determined in advance to strategies for dealing with them can be determined in advance.

Sample Layout

Also see page 454 in your textbook

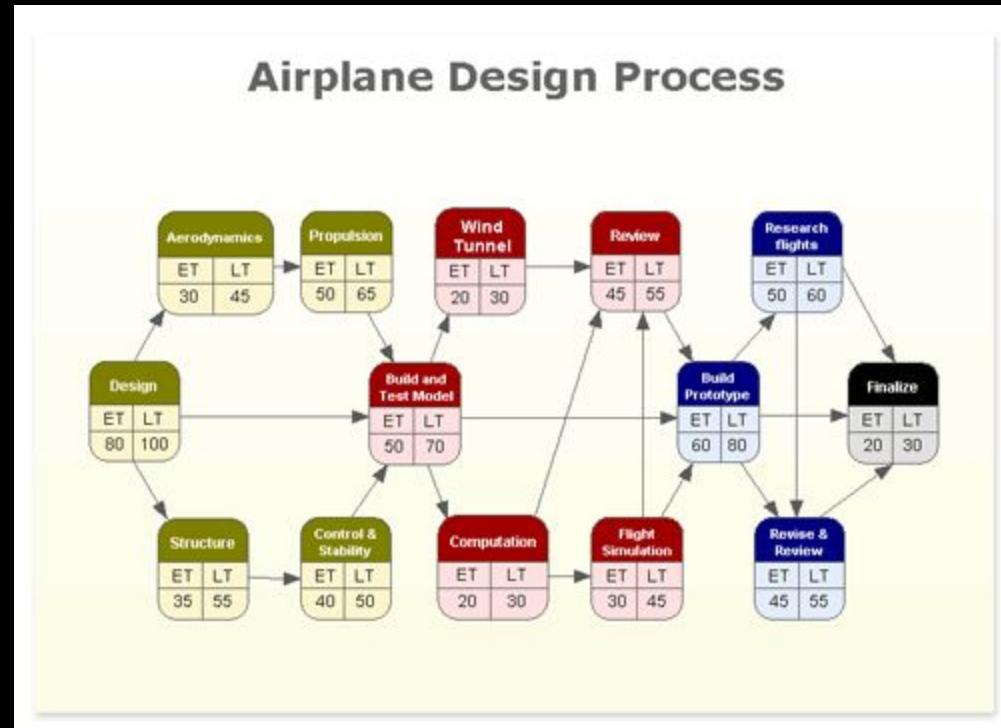


† Further information exists but is not shown

Activity Network Diagram...

Helps you to work out the most efficient sequence of events needed to complete any project. It enables you to create a realistic project schedule by graphically showing

- the total amount of time needed to complete the project
- the sequence in which tasks must be carried out
- which tasks can be carried out at the same time
- which are the critical tasks that you need to keep an eye on.



Sample Layout
Also see page 455 in
your textbook

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Questions?

--- APPLY IT ---

The continuing conflict in the Middle East has raised commodity prices to record levels which is threatening to put your company financially under.

- **What is the greatest impact to your company?**
- **Using the tools reviewed, work toward a solution that will help your company resolve this problem.**

--- DISCUSS IT ---

- What tool did you use?
- Did you try a tool that didn't work? Why didn't it?
- How easy/hard was it to apply the tool to meet your goal?

--- CONCLUSION ---

- 10 Tools Presented
- First 3 can be used in variety of situations
- Last 7 are known as “7 Management and Planning Tools”
- These tools are most effective when used as a system to implement an improvement plan

Resources used from the web...

- Force Field Analysis - http://www.axi.ca/tca/Jul2003/facilitationrole_1.shtml
- http://www.smartdraw.com/resources/centers/bpm/ex_force_field.htm
- Affinity Diagrams - <http://mot.vuse.vanderbilt.edu/mt322/Affinity.htm>
- Interrelationship Digraph - <http://quality.enr.state.nc.us/tools/interdigraph.htm>
- Relations Diagram (or Interrelationship Digraph)
- http://www.skymark.com/resources/tools/relations_diagram.asp
- Tree Diagram
- http://www.tin.nhs.uk/sys_upl/templates/DbILeft/DbILeft_disp.asp?pgid=1275&tid=75
- Matrix Diagram -
http://www.tin.nhs.uk/sys_upl/templates/DbILeft/DbILeft_disp.asp?pgid=1276&tid=75
- Prioritization Matrix - <http://erc.msh.org/quality/pstools/psprior3.cfm>
- The Seven Management and Planning Tools
- <http://www.goalqpc.com/whatweteach/Research/7mp.html#>
- Activity Network Diagram -
http://www.tin.nhs.uk/sys_upl/templates/StdLeft/StdLeft_disp.asp?pgid=1378&tid=50