Unit 1

Step 1: Define

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Step 1: Define

Objective:

Demonstrate the importance of improvement needs in measurable terms.
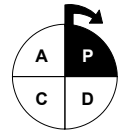
Description:

STEP 1 demonstrates with data, why this particular improvement need is more important than any other. To accomplish this, we must identify the **stakeholders and their needs**. We must also **measure** our performance in meeting those needs. This will enable us to better prioritize improvement opportunities and focus our efforts. Finally, we must establish a preliminary **schedule** for conducting our improvement activities.

Checkpoints:

1 ✓ **The stakeholders' need(s) were identified**.

Performance improvement needs may be identified from many sources, including:

- External or internal customer surveys, reports or discussions,
- Department or company indicators,
- Management requests, and
- Information and ideas from individuals.

Tip

It should be clear as to who the stakeholder is, what the need for improvement is, and why improvement is important to this particular stakeholder.

Step 1: Define (Continued)

2 ✓ **The Problem can be described as an ″object″ with a ″defect″ with unknown cause(s) that need to be identified.**

Review the selected problem. Identify the ″object″ (or noun with adjective(s)) that is the subject of the problem. Next identify the ″defect″ (or undesirable occurrence(s)) that are of concern. Last, this problem must have an unknown cause(s) that is of concern and needs to be identified. (Note: If the cause is know the problem solver may want to immediately procedure to Step 3 and verify cause as root cause and/or identify countermeasures to address those root causes.)

3 ✓ **A line graph outcome indicator was constructed that appropriately measures the problem (or gap).**

A line graph outcome indicator can often be determined by asking ″how do we know the defect is present? ″ Or ″What ways do we currently measure the object? ″.

4 ✓ **A schedule for completing the five DMAIC Story steps was developed.**

A schedule represents a commitment by both the team and management to improve performance within a specified period of time. To meet this objective, the team members must meet regularly, and management must support the team. The Project Planning Worksheet can be used to develop a schedule.

Step 1: Define (Continued)

Recommended Tools And Techniques:

Tools commonly used in STEP 1 may include:

- Checksheet (or spreadsheet)
- Control Chart
- Histogram

- Graphs
  - Bar Graph
  - Line Graph
  - Pie Chart

Techniques that may be helpful include:

- Brainstorming
- Consensus
- Multivoting
- Priority Management Matrix
- Process Flow Chart

- Project Planning Worksheet
- Survey
- Selection Matrix

LINE GRAPH

PROCESS FLOW CHART

SELECTION MATRIX

Brainstorming (Technique)
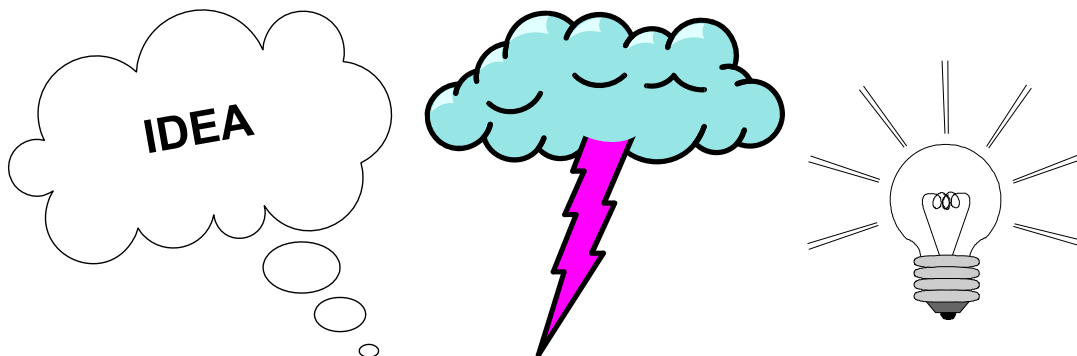
Brainstorming is a method used by a group of people to produce a large number of creative ideas in a relatively short period of time. It is an effective technique because of two main principles:

1. **Delayed Judgment** - People are able to produce more ideas when they delay evaluation of ideas until a later time.
2. **Extended Effort** - More original and useful ideas are created when the group continues to generate ideas beyond the initial, more obvious responses by filling an agreed upon time limit or an agreed upon number of ideas. The emphasis in the Generation Phase of a brainstorming session is always on the "quantity" of ideas not the "quality." The quality will come later when ideas are clarified and evaluated.

How To Brainstorm:

1. The leader selects the method of brainstorming that will be used and informs the team. It will usually be one of two popular types:
   - Structured or Round Robin. In this type, each member of the group gives an idea as her/his turn arises in rotation around the table, or passes until the next "round." It is a good method to obtain everyone's participation but can also create a certain amount of pressure to contribute.
   - Unstructured Open Forum or Green Lighting. In this type, group members give ideas as they come to mind in a spontaneous manner. It tends to create a more relaxed atmosphere but also risks domination by the most vocal members.

2. The leader clearly states the topic and purpose of the brainstorming session. Everyone agrees on the topic or issue. The topic is then written and placed in a prominent, visible position.

3. A recorder is selected to record all ideas on a flipchart or viewgraph transparency for all to see. Always having the words visible to everyone at the same time avoids misunderstandings and helps to inspire other new ideas.

4. The leader reviews the following "Rules for Brainstorming" with the group.
   - No discussion, comments or evaluation of any idea during the generation phase.
   - All ideas will be recorded.
   - Quantity not quality is important during the generation phase.
   - State ideas briefly and clearly.
   - Build on recorded ideas.

5. **Generation Phase**- Begin the brainstorming session by posting ideas on the flip chart. Make sure all ideas remain visible to the team. Continue until the agreed upon time is used or the agreed upon number of ideas are generated.

6. **Clarification Phase**- During the **Clarification Phase** of Brainstorming, the team goes over the list to make sure that everyone understands all of the items. Do not discuss ideas. Criticism and discussion will take place during the **Evaluation Phase** and in **Multivoting**.

7. **Evaluation Phase**- Finally, during the **Evaluation Phase**, the team reviews the list to eliminate duplications, irrelevancies and issues that are off limits or cannot possibly be addressed or acted upon by this team.
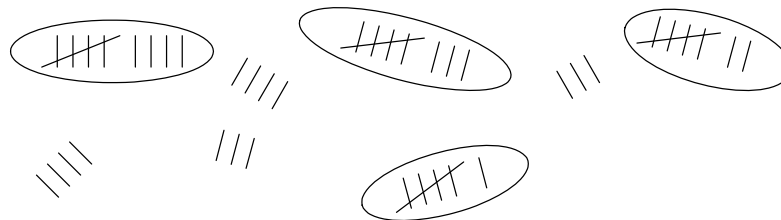
Tip

When Should You Use Brainstorming?

Brainstorming can be used to:

- *Identify improvement opportunities and/or problem(s).*
- *Identify possible countermeasures. (see Step 4: Counter Measures)*
- *Identify barriers or aids to implementing action plans. (see Step 4: Counter Measures)*

Multivoting (Technique)

Multivoting is a structured process of voting by a team that helps quickly reduce a list containing a large number of items down to a manageable few (usually four to eight). Multivoting helps the team accomplish a list reduction with a high degree of group consensus. It is often useful to reduce a "brainstormed" list of ideas before discussion takes place in order to move effectively utilize team members time on the more important ideas.

How To Multivote

1. **First vote:** Each person votes for as many items as desired, but only once per item. Check the items receiving a relatively higher number of votes than the other items. Example: A team has ten members. After voting, items receiving five or more votes are checked.

2. **Second vote:** Count the checked items from the first vote. Each person gets to vote a number of times equal to half the checked items. Example: if twenty items are checked after the first vote, then each person gets to vote ten times during the second vote.

3. **Subsequent vote(s):** Continue multivoting until the list is reduced to a manageable number of items. If the list is reduced to less than four items, there may be a danger of selecting items that may later be determined "off limits" by management. It may also be indicative of a team driven to a foregone conclusion. If more than five items are selected, the team will have to evaluate **with data** each theme's "need to improve" for more themes than may be practical.

Example: Brainstormed list reduced after second round during multivoting.

Problems in Our Work Area	2nd Round Votes	Add To Selection Matrix
Too many job errors	||||	
Expenses report checks arriving late to employees	⊬|||	✓
Accounts take too long to open	|	
Computers lock up too often	⊬||||	✓
Too many computer complaints	||	
Too many products are being returned	⊬ ⊬	✓
Too many customer calls are being lost	|||	

Selection Matrix (Technique)

The **Selection Matrix** is a technique that helps the team clearly show why one problem is more important than any other. A problem that shows both a high **impact on the customer** and a high **need to improve** can provide an increased urgency to the team and to management.   Often, the Selection Matrix is used following a multivoting exercise.

Problems may come from several sources, including:

1. Team Members may be aware of specific conditions or problems in their immediate work areas.

2. Team Members may brainstorm and reach consensus on issues they feel may need further investigation.

3. Remaining problems from previous Performance Improvement Teams may be offered to the team for consideration.

4. Management may provide the team with one or more problems that have direct impact on a corporate or department objective.

Tip

*Whatever the source, the **Selection Matrix** is a valuable technique for prioritizing and/or ranking problems because:*

1. *It considers the **impact on the customer, or stakeholder.** If it is important to our customers, it must be important to us.*

2. *It considers the **need to improve**. Current performance of outcome indicators can provide a factual basis for improvement needs.*

It is this combination of "customer" importance and "need to improve" that provides the team a more objective approach for ranking or prioritizing problems.

SELECTION MATRIX

PROBLEM (OBJECT WITH DEFECT)	CUSTOMER/ STAKEHOLDER	IMPACT ON CUSTOMER	X	NEED TO IMPROVE	=	OVERALL SCORE
1.						
2.						
3.						
4.						
5.						
1. LIST PROBLEMS: Problems should be: 1. Within the team's ability to solve. 3. Described in terms of an "object" with a "defect".	**2. IDENTIFY CUSTOMER OR STAKEHOLDER:** The team should identify who directly benefits from the problem being solved.	**3. ASSESS IMPACT ON CUSTOMER:** The team determines the level of impact this problem has on the customers or stakeholders listed. For example, a problem with **high** customer impact would receive a score of "**4**".		**4. DETERMINE NEED TO IMPROVE:** The team lists and evaluates data or indicators that identify the problem. Facts are required to ensure objective ratings. For example, a theme with an **extreme** Need to Improve would be given a score of "**5**".		**5. OVERALL:** Multiply each rows score for each problem. The problem with the highest score is selected for the QIC Story.

SCALE: 1 = NONE 2 = LOW 3 = MODERATE 4 = HIGH 5 = EXTREME

Survey (Technique)

A **Survey** is an important and useful method for collecting subjective data. It can require face-to-face interviews, written questionnaires, or sometimes a combination of the two. Surveys can be substitutes for collecting and analyzing objective data and also provide helpful subjective information.

How To Conduct A Survey

1. **Determine information to be collected.** Each survey should contain pertinent demographic information (i.e., What, When, Where, and Who information of person(s) being surveyed) as well as rating questions or statements.

Survey (Technique) (Continued)

2. **Develop a set of questions or statements** that you desire rater responses. If it is to be a written questionnaire, consider the following guidelines:

   - Give the people answering the questions a clear idea of why you want the information.

   - Make the survey as brief as it can be to obtain the information you need. Think "valid requirements" as you compose survey questions or statements.

   - Make the survey easy to administer and to answer. Try to keep surveys to 1 or 2 pages if possible.

   - Phrase the questions in clear language, appropriate to the audience.

   - Leave enough space on the form so that responses can be recorded clearly and allow comments to be recorded for each survey question or statement.

   - Try to structure the questionnaire so that the information received can be transferred to an excel spreadsheet or database easily from the survey instrument.

3. **Do a trial run on a small group** and make survey adjustments based on the group's feedback and/or survey results.

4. **Target the audience** and administer the survey.

5. **Follow-up with participants** to ensure as many surveys as needed are secured.

6. **Provide feedback to the participants** if appropriate, on the results of the survey.

Checksheets/Spreadsheets (Tool)

A **Checksheet (or Spreadsheet)** is a form used to collect data. Each checksheet should be custom designed for the purpose desired. A thoughtfully developed checksheet permits the review of data from what, where, when and who viewpoints.

Checksheet Example:

ABC Company
Phone Calls Received on wrong orders by one Representative

Source:
When: 1/97
Where: FL
Who: JCE, x4091

Wrong Orders Filled			Time					Totals	
			Monday	Tuesday	Wednesday	Thursday	Friday		
	Type D	A.M.	卌 ‖	‖‖‖	‖‖	‖‖	卌	23	41
		P.M.	卌	‖‖	‖‖‖	‖‖	‖‖	18	
	Type C	A.M.	卌	‖‖‖	卌	‖‖	‖	19	33
		P.M.	卌	‖‖	‖‖	‖	‖	14	
	Type B	A.M.	卌 卌 ‖	卌 ‖	卌	卌	‖‖	31	40
		P.M.	‖‖	‖	‖	‖	‖	9	
	Type A	A.M.	‖‖	‖	‖	‖	‖	8	15
		P.M.	‖	‖	‖	‖	‖	7	
Totals			**41**	**24**	**25**	**20**	**19**	**N = 129**	

In today's computer environment, electronic spreadsheets have taken the place of manual checksheets. Electronic spreadsheets have many advantages over the old manual checksheet, including the ability to quickly sort by any collected data category. This sorting can aid the user in graph construction. The basic function remains the same for both checksheets and spreadsheets; and that is, to collect data for what, where, when and who categories that can be later used in trend and summary graphs for problem solving.

Checksheets/Spreadsheets (Continued)

How To Create A Checksheet or Spreadsheet

1. **Decide on what data you need by considering what data viewpoints you want for stratifications (or "drill downs").** The four "W's" are helpful:
   - **WHAT** (type, category, severity, complexity)
   - **WHEN** (did the defect occur in calendar time and/or when did it occur in the life cycle of the process/product)
   - **WHERE** (geographically did it occur or where was the defect location on the object, location type)
   - **WHO** (was involved: customer or persons type, age, gender, dept, organization, etc.)

2. **Design a worksheet (or spreadsheet) for individuals to use as they record the data you need.** Make the questions straightforward, well organized, easy to read and easy-to-interpret (incorporate visual elements if possible). In a sample, the total population from which the data were collected should also be noted. Include a method to combine or total individual data observations or records.

3. **Simplify the form.** Revise the form as needed to make it very easy for the people who will help gather the data.
   - Make sure the checksheet (or spreadsheet) has locations to record all relevant data including source box information.

4. **Pilot your form, if possible.** Run a small data collection sample with your newly designed form to identify and resolve any unforeseen problems.

5. **Review the checksheet (or spreadsheet) periodically and revise as needed to keep the form current with the type of data being recorded.**

Checksheets/Spreadsheets (Continued)

How To Collect Data

Collect data consistently and honestly, making sure there is enough time for the data-gathering task. Here are some important considerations to help ensure quality data are obtained.

- **Train Recorders**. Your analysis will only be as good as the data you collect. Make sure everyone involved is trained on how to use the form.

- **Ensure Objectivity**. Record the data as seen or formed, being careful not to introduce bias by summarizing or abbreviating what was seen or found. If others are collecting the data, this point must be stressed in the training.

- **Allow Time**. Make sure sufficient time is allowed to collect the data.

- **Appropriate Time.** Ensure the sample or data selected is drawn from a population or period representative of conditions in which the problem occurred.

Graphs: Bar, Line, and Pie (Tool)

Graphs are used to visually represent numbers. The type of graph used depends upon the purpose of the analysis and the message to be conveyed.

There are three types of graphs that are associated with the seven (7) basic tools.

1. **Bar Charts** – used to **summarize** quantities of multiple (generally three or more) categories.

2. **Line Graphs** – used to display **trends** over time.

3. **Pie Charts** – used to **summarize** the parts of a whole, showing each pie slices relative percentages.
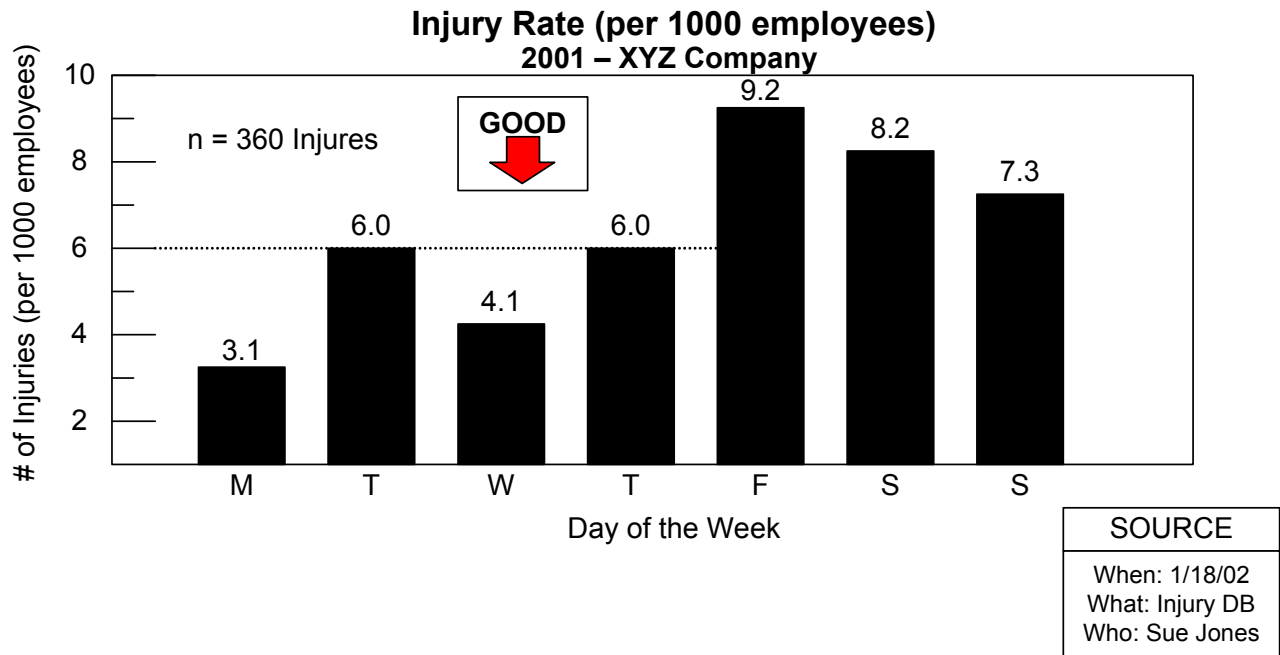
Graphs should contain the following:

BAR	LINE	PIE	Graph Element	Legend: X = element in graph / NA= not applicable
X	**X**	**X**	▪ A title that describes what is portrayed in the graph.	
X	**X**	NA	▪ A vertical, or Y, axis that represents frequency, units or the indicator.	
X	**X**	NA	▪ The horizontal, or X, axis represents time (day, month, year, etc.) or by occurrences.	
X	NA	NA	▪ The horizontal, or X, axis representing a what, where, or who category.	
X	**X**	**X**	▪ Can show the number of data points that are represented. The symbol "n" (i.e. little "n") is used to represent a **sample of a population** (e.g., n=50 data points), the symbol "N" (i.e. capital "N") is used to represent an **entire population** (e.g., N=496 data points).	
X	**X**	NA	▪ Can show the average of the data points on the graph.	
X	**X**	NA	▪ Display a "good arrow" to enable any reviewer to quickly determine what the graph is showing without having to pause and figure it out.	
X	**X**	**X**	▪ Display source boxes indicating when, what and who.	
X	**X**	NA	▪ Display a target line (as appropriate or known).	

Bar Graph Tool

The **Bar Graph summarizes data sets** and shows comparisons. Bars make it easier to recognize small differences in quantities or frequencies between categories. Data points that are displayed by vertical "bars" rising from the "X" axis that reaches a height equal to its value on the "y" axis. A **Bar Graph** gives an easily understood visual display of how one, or more, set of data compares to each other.

Bar Graph Example:

Injury Rate (per 1000 employees)
2001 – XYZ Company

n = 360 Injures

GOOD

M	T	W	T	F	S	S
3.1	6.0	4.1	6.0	9.2	8.2	7.3

Day of the Week

# of Injuries (per 1000 employees)

SOURCE
When: 1/18/02
What: Injury DB
Who: Sue Jones

Bar Graph Tool (Continued)

How To Construct A Bar Chart

1. **Draw horizontal (X) and vertical (Y) axes.** On the "X" axis, put marks to separate data groups or comparison units of measurement and label them appropriately (examples: product type, departments, district, worker, etc.). On the "Y" axis, draw marks representing the frequency or quantity and label the marks with the appropriate measurement unit designations (try to use ten marks or less).

2. **Collect data for each of the groups to be analyzed.**

3. **Display the data using the axes** by placing a point at the proper measured proportion over the proper data group.

4. **Draw vertical bars** (usually non-touching) of uniform width from the "X" axis to the dot in each of the data groups. The left most bar should not touch the "Y" axis.

5. **Label the chart with other pertinent information** (data, source, population or sample size, good arrow (if appropriate), axis labels, title of graph, etc.).

6. **Make sure all numbers and text are legible** and large enough to read easily.

Line Graph (Tool)

The **Line Graph displays trends** over time. Data points are added in the order in which they occurred. These points are connected by straight lines. For outcome indicator line graphs, the line graph displays outcome performance along with a performance target. Outcome indicator line graphs will also contain a good arrow. (see the below example)

Outcome Indicator Line Graph Example:
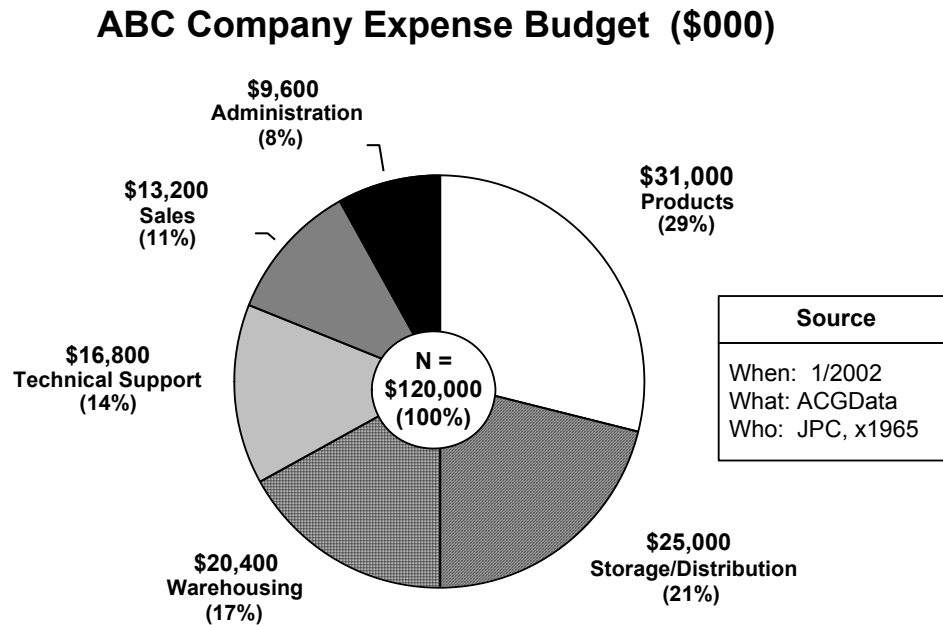
Line Graph (Tool) (Continued)

How To Construct A Line Graph

1. **Draw horizontal (X) and vertical (Y) axes.** On the "X" axis, draw marks to separate the time (day, month, year, etc.) or occurrences (1st, 2nd, 3rd, etc.). On the "Y" axis, draw marks representing the frequency or quantity observed and label the marks with the appropriate measurements units.

2. **Display the data** by placing a point even with the proper measurement unit mark on the "Y" axis over the appropriate time or occurrence mark.

3. **Draw straight lines connecting the points.**

4. **Label the chart with other pertinent information** (source box, population or sample size, good arrow, axes labels, title of graph, legend, calculation, etc.).

5. **Average lines can be constructed and displayed** using a bold "solid" (or dashed) line and should be appropriately labeled as an average.

6. **Point in time targets or target "dashed" lines can be added when known.** Target lines are often used and are labeled as "target" lines.

Pie Graph Tool

The **Pie Graph summarizes data sets** and displays percentages along the relative pie slice proportion of each category to the whole. It is a chart in which the entire circle represents 100% of the data to be displayed. The circle is divided into percentage "slices" that clearly shows the largest shares of data. The circle, being divided by different portions of information, resembles a "pie".

Example of Pie Graph:

ABC Company Expense Budget ($000)

$9,600
Administration
(8%)

$13,200
Sales
(11%)

$16,800
Technical Support
(14%)

$20,400
Warehousing
(17%)

$31,000
Products
(29%)

$25,000
Storage/Distribution
(21%)

N =
$120,000
(100%)

Source
When: 1/2002   What: ACGData   Who: JPC, x1965

Pie Graph Tool (Continued)

How To Construct A Pie Chart

1. **Draw a doughnut, or a circle within a circle.**

2. **Inside the small circle, enter the sample or population size** in units along with "(100%)". (e.g.=$120,000, (100%))

3. **Calculate and display the size of each slice.** Divide the value of the item by the total value of all items, then multiply:

    - by 100 to get percentage;

    $$\frac{\$\ 20,400\ (WAREHOUSING)}{\$120,000\ Total\ Population} = .17 \times 100 = 17\%$$

    - and by 360 to get degrees;

    $$\frac{\$\ 20,400}{\$120,000} = .17 \times 360 = 61°$$

    A protractor should be used to plot the degrees for each slice to ensure accurate graphical representation. Note: Always start dividing the pie at 12:00 noon and, moving clockwise, construct the pie slices from largest to smallest slice.

4. **Label each slice with the item description and it's the relative percentage number that it represents.** Also label the chart with other pertinent information (data, source box, population or sample percentage, title, etc.). A different shade, color or texture to a particular slice can draw the reviewer's attention to the area of focus.

Flow Chart (Technique)

A **Flow Chart** is a pictorial representation showing all the steps of a process and their sequence. It can be a useful technique for examining how various steps in a process are related to each other. By studying properly constructed flow charts one can see the "best process path" (i.e. path of least process variation) and discover rework loops and other potential sources of rework, unnecessary costs and delays that cause customer dissatisfaction.

How To Construct A Process Flow Chart

A. **Use the following elements for a simple flow chart:**

- ▪ Oval or Circle: Beginning and ending steps.
- ▪ Box: Activities within the process.
- ▪ Diamond: Points where decisions are required ("yes" or "no" answers only).
- ▪ Arrow: The direction or flow of activity.

B. **Assemble subject matter experts** who have a good understanding of the various steps throughout the process.

C. **Establish the starting and ending points for the process** and arrange the activities and decision points in their proper sequence using arrows to show direction of flow. Break down complex activities as needed. Two (2) basic questions can be used to identify these activities and decision points. Ask, "What happens next?" to identify subsequent activities and "What do you hope happens?" to determine the decision diamond(s) that will display the best path(s).
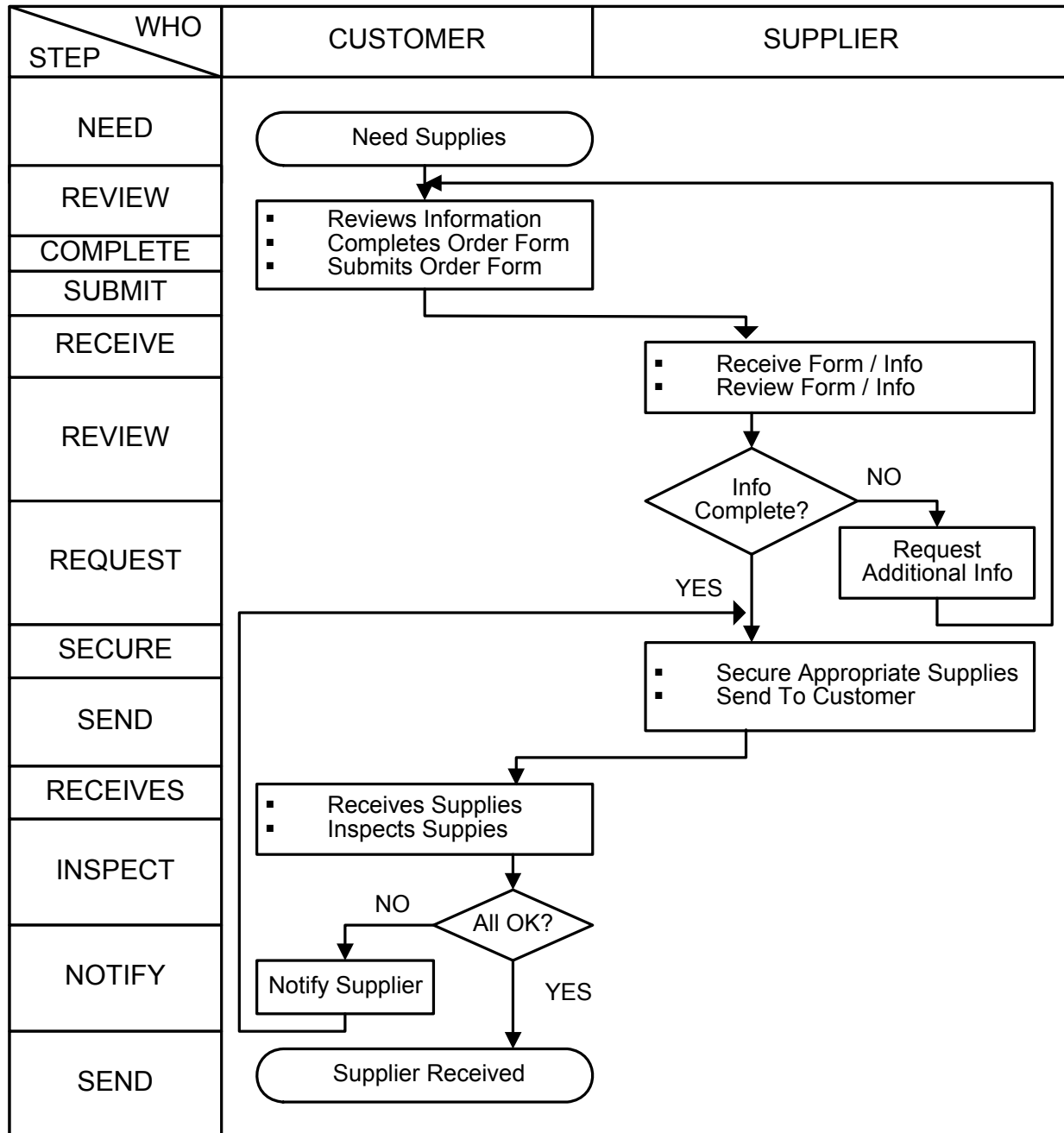
Flow Chart (Technique) (Continued)

How to Construct a Process Flow Chart (Continued)

D. **Follow the following flow chart construction rules as the flow chart is developed:**

1. **Place process players (nouns) across the top.**

2. **Start and end with ellipses.** The first action should be on the top row and the last action on the bottom row.

3. **Boxes and ellipses represent actions with the text inside starting with a "VERB".** Boxes, ellipses and diamonds can be stretched when multiple players are involved.

4. **Diamonds are "YES" and "NO" questions with "YES" always being down** and representing the most direct or quickest process path. "NO" flows out either side of the diamond and often represents an undesirable rework condition or a longer duration process path.

5. **Arrows should flow "In the Top" and "Out the Bottom"** of boxes, ellipses, and diamonds. This ensures that each process step will have some vertical separation.

6. **Only 1 arrow out of any box or ellipse.**

7. **Keep flow charts simple and on one page.** Use a mix of Macro (general actions) and Micro (specific actions) boxes as needed to provide focus in the desired areas.

8. **Avoid crossing arrow lines.** Try swapping Dept./Person columns to accomplish this.

9. **Place process steps (verbs) down the left column.** (Elapsed time can also be shown along the left column.)

Flow Chart (Technique) (Continued)

Example of Process Flow Chart:

ORDER SUPPLIES

WHO / STEP	CUSTOMER	SUPPLIER
NEED	Need Supplies	
REVIEW	• Reviews Information	
COMPLETE	• Completes Order Form	
SUBMIT	• Submits Order Form	
RECEIVE		• Receive Form / Info
REVIEW		• Review Form / Info Info Complete? — NO → Request Additional Info
REQUEST	YES	Request Additional Info
SECURE		• Secure Appropriate Supplies
SEND		• Send To Customer
RECEIVES	• Receives Supplies • Inspects Suppies	
INSPECT	All OK? — NO	
NOTIFY	Notify Supplier — YES	
SEND	Supplier Received	

Performance Improvement Teams

Performance Improvement Teams are critical to Total Quality Management (TQM). The ideal team size is four to eight members. Four members help ensure enough different viewpoints to provide a balanced approach to the problem. Limiting teams to eight members helps enable the new Team Leader to better guide the team through the natural stages of group development toward prompt and effective problem resolution. There are two major types of problem solving teams, either of which can be cross functional (cutting across organizational boundaries).

1. **Voluntary Team** – A voluntary team is usually ongoing and chooses its own problem or improvement opportunity. These teams usually consist of employees that work in a common work group, area or department.

2. **Task (or Assigned) Team** – A Task (or assigned) team is usually non-voluntary and usually disbands after addressing problems and issues assigned by management. The employees are brought together to apply unique skills or knowledge to a common opportunity or problem.

Lead (or Administrative) Teams

A Lead Team sets directions and guidelines, and reviews the progress of Performance Improvement Teams. Lead Teams may exist at any level, for example:

- Agency **Lead Team** (may also be called a **Quality Council**).
- District / Program Office **Lead Team**.
- Division / Program **Lead Team**.

Their primary purpose is not to solve problems, but to oversee the work of the Performance Improvement Teams.

Team Member Expectations

Key Positions

A **Team Member** is a person participating on a Performance Improvement Team.

The team member is vital to the success of TQM. Without the input of the team member to identify and solve the day-to-day problems, TQM cannot succeed.

Team members are expected to:

- Attend all team meetings.
- Share experiences and knowledge.
- Identify improvement opportunities.
- Participate in the decisions made by the team.
- Gather and analyze data.
- Help the team recommend countermeasures to management.
- Track the effectiveness of countermeasures.

Team members are expected to actively participate in all team activities. This may require more than the one-hour per week set aside for team meetings.
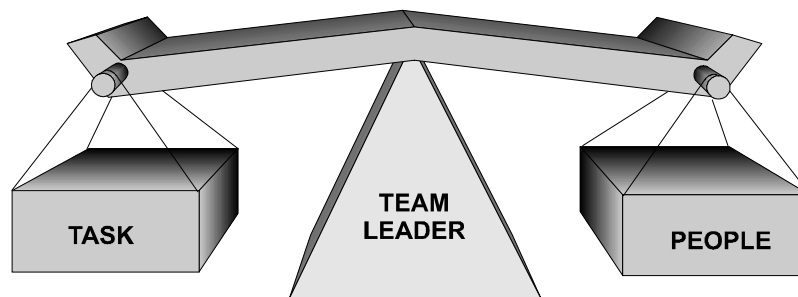
Team Member Expectations (Continued)

A **Team Leader** is a team member who receives special training to equip her/him for the additional responsibilities of leadership.

Team Leader responsibilities include:

- Lead the team meetings.
- Lead the team through the DMAIC Story.
- Teach and refresh the team on pertinent tools and techniques.
- Communicate team progress to the team.
    - Monitor team involvement and enthusiasm,
    - Evaluate and manage group dynamics to maintain team effectiveness.
- Communicate and coordinate with the supervisor and/or the facilitator, especially before and after team meetings.
- Share experience and knowledge.
- Fulfill administrative duties.

The Team Leader should be proficient at delegating through encouraged participation, involving all team members. They **cannot** and **should not** be expected to do everything. The effective team has shared leadership. The effective team leader balances tasks with concern for people.

Team Member Expectations (Continued)

The **Facilitator's** basic function is to be the "culture change agent." As a consultant to the team leader, the facilitator is expected to run interference and clear the way for the team.

The successful facilitator must fulfill at least five key roles:

1. **Coach** - Serve as a support and resource person. Recommend support staff or specialists when needed. Provide encouragement and feedback to the team leader.

2. **Communicator** - Keep teams and management aware of team successes, lessons learned, and emerging issues important to the Organization and its employees.

3. **Coordinator** - Support and involve supervision and provide links to other departments. Help secure support staff or specialists when needed. Assist the team leader in meeting preparation (P.A.L.'s, etc.).

4. **Promoter** - Actively promote team activities such as DMAIC Story reviews, recognition events and awards.

5. **Teacher** - Instruct in the **DMAIC Story**, tools and techniques. Critique the team leader's effectiveness after the meeting adjourns and suggest possible group dynamics management techniques. Support team leaders, when necessary, in providing initial or refresher training to team members.

Team Member Expectations (Continued)

The **Supervisor** can assist the team in many ways. Primarily, it is the supervisor's responsibility to ensure that team members have the time and resources needed for success. The supervisor should serve as an advisor without dictating team activities.

Five critical activities performed by the supervisor include:

1. **Assist in Implementation of Countermeasures**. Implementing change can be difficult. The supervisor should assist the team by making sure they have been thorough and by becoming a resource whenever needed.

2. **Coach**. The supervisor should act as a technical problem-solving resource, encouraging teams to keep going when barriers are encountered.

3. **Coordinate Team Activities**. The supervisor can take an active role in communicating to the team the problems relating to department objectives. Suggestions can be given on possible problems to select and how to schedule, track, and measure progress toward solutions. The supervisor should ensure that the team has adequate leadership and facilitation, and that training is provided to all leaders, members and facilitators.

4. **Provide Resources**. The supervisor should make sure that the team has the training, time, place, technical resources and any other materials necessary for effective meetings.

5. **Recognize Team Achievement**. Praise, support and feedback to teams are constant duties of the supervisor. Management support at all levels is vital to the success of the QMS.

Project Planning Worksheet (Technique)

The **Project Planning Worksheet** provides a form for team information, team membership, attendance tracking and a project schedule.

Some pertinent items to be listed on the form include:

- Team name and members' names.
- Meeting attendance record.
- Project schedule.
- Recognition of individuals who provide support to the team, but are not team members, such as subject matter experts, or the team sponsor.
- Reference to the Managing Point or issue to which this DMAIC Story is linked.

Project Planning Worksheet (Technique) (Continued)

Project Planning Worksheet

Problem

Team Work Location

Team Name

Duration   (mm/yy)   through   (mm/yy)   Total Months:

Team Members

Team Leader		**Team Info**
ALT.Team Leader		
Team Member 1		
Team Member 2		
Team Member 3		
Team Member 4		
Team Member 5		
Team Member 6		

Meetings

#	Date	Time	Att.	#	Date	Time	Att.	#	Date	Time	Att.	#	Date	Time	Att.
1				9				17				25			
2				10				18				26			
3				11				19				27			
4				12				20				28			
5				13				21				29			
6				14				22				30			
7				15				23				31			
8				16				24				32			

Outline of Activities

☐ = Proposed ■ = Actual

Step	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	Comments/Exception
Define																
Measure																
Analyze																
Improve																
Results																
control																
Future Plans																

Project Planning Worksheet (Technique) (Continued)

The objective of the **Project Planning Worksheet** is to provide a planning structure for team projects that incorporates the "PLAN-DO-CHECK-ACT" methodology for a team, its supervisor and facilitator.

1. **Problem**

   Write in a brief statement of the problem including an "object" and a "defect".

2. **Team Work Location**

   List the location of the Team.

3. **Team Name**

   Enter the team's complete name.

4. **Team Members**

   List the names of team members, indicating the team leader.

5. **Team Information**

   Include any pertinent information selected by the team.

6. **Meetings**

   <u>Date</u> - Month and day that the meeting took place (for example, 3/2 is March 2). Place an asterisk (*) by the day if the meeting was facilitated by a facilitator or supervisor; otherwise, just put the day.

   <u>Length of time</u> - Number of hours the team met.

   <u>Percent Attendance</u> - Number of team members attended divided by total number of team members. All this information should coincide with each meeting's respective minutes.

Project Planning Worksheet (Technique) (Continued)

7. **Outline Of Activities**

   Before your team begins the steps of the **DMAIC Story** process or at the end of STEP 1, estimate the length of time that will be needed to complete each step. Indicate this by using the open-faced bar across the months for that step. A shaded bar below the open faced bar indicates the actual time spent on each of the steps. Place an asterisk (*) in the proper box for your projected presentation date(s).

8. **Duration**

   *   **Month/Year** that the team formed or when an experienced team collected potential themes.

   **   **Through Month/Year** that the team completed the **DMAIC Story.**

   ***   **Total Months** between these two dates.

9. **Comments**

   Give a brief synopsis of what QC or other tools were used to complete each step.

Tip

Distribute the worksheet in the following manner:

- *Original copy stays with the team leader.*
- *One copy is posted on the team's **DMAIC Storyboard**.*
- *One copy is routed monthly to the team leader's supervisor, facilitator or manager.*
- *This synopsis should be updated monthly.*

Stages of Team Development

Overview

When small groups of people come together for the first time or when other events occur, these groups are said to be in transition and will undergo some predictable phases of team change or growth. A corresponding change in individual comfort levels brings tension and a sense of uneasiness to the whole team.

The net result is usually some form of undesired or dysfunctional team behaviors. An awareness of these stages of group development and their related behaviors is important, especially for people leading teams in transition. The transition can be triggered by numerous events, including:

- A small group coming together for the first time
- Changing team leaders on an existing team
- Member turnover
- An unexpected surprise visitor sits in with the team

All of these things affect how people in teams feel, how they behave, what they say, and how they say it. For example, try and recall how you felt on the first morning of this workshop. Has anything changed since then in the way the group interacts with each other and the ability to accomplish the tasks at hand?

Initially, there may have been some hesitancy to participate and less willingness to volunteer. Some people would prefer to hide if they could, rather than be called upon to come up and address the group. Remember those feelings on the afternoon of day three.

During the interim you will individually and as a group, experience the stages of group development first hand.

Stages of Team Development (Continued)

The Four (4) Stages of Team Development are:

Stage I: Form: This is where the group comes together either for the first time or after being apart for long periods.

During this phase, team members discover what behaviors are acceptable. A transition from being an individual to being a member occurs here. This is a period of <u>testing</u> behavior and <u>dependence</u> on formal leadership for guidance. Individuals are unsure of themselves in the new environment and usually act reserved.

Typical Behaviors of Stage I: People attempt to describe objectives and decide how the team will accomplish the work, such as the type of data to collect.

Often there is a hesitancy to participate.

Some members will test the leader's behavioral expectations and ways s/he will address problems.

Feelings of desired attachment to the team can occur.

Intellectualizing.

Discussing symptoms peripheral to the work.

Complaints about the organization.

Doubts, concern and anxiety about the new environment.

Minimal work gets done.

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*Tuckman (1965)

Stages Of Team Development (Continued)

Stage II: Storm: This phase is characterized by <u>intra-team conflict</u> as members become more familiar and more comfortable with the team environment. They take more risks, and often begin to become competitive with each other.

People begin to see scope of the task and what is expected of them. They may respond emotionally to the commitments they must make. Members can become belligerent or overzealous as a means of expressing individuality and resisting identity loss and self-denial.

Typical Behaviors of Stage II: Defensive behavior, conflicts and competition.

Setting unreachable goals.

Tension, jealousy, lack of harmony or discord.

Resisting assignments because they seem to interfere with personal desires.

Concerns over excessive work.

Polarization of team members.

The establishment of an informal hierarchy or pecking order.

Minimal work is accomplished.

Stage III: Norm: This phase is typified by the <u>development of team cohesion</u>. After all the conflict of phase II, the members begin to recognize and accept the team norms, their roles and the pecking order established in stage II. The personal "quirks" of other members also become accepted, or at least better tolerated and torn relationships get patched back up.

Stages Of Team Development (Continued)

Typical Behaviors of Stage III: Now people work at avoiding conflicts.

Members take each other into more confidence.

A common spirit emerges and a sense of *TEAM* begins to exist.

The group establishes their "turf" and derives a sense of mutual ownership for protecting the boundaries.

A fair amount of work is accomplished.

Stage IV: Perform: This is when the team really begins to <u>operate smoothly like a well-oiled machine</u>. Members now know one another well; they freely depend on each other for support and can thus focus on solving the problem and objective decision-making instead of each other.

Typical Behaviors of Stage IV: The team gains insight into the problem solving process.

Voluntary self-improvement is undertaken.

A great deal of work is accomplished.

Stages Of Team Development (Continued)

What Does This Mean To You?

Because the Form, Storm and Norm stages of group development result in less than optimum output, teams often try and push through these phases before their chemistry is ready to move on in order to improve team productivity.

This might seem like a good idea, but it is really dysfunctional.

It is *natural* for people to go through predictable phases of growth depending on maturity, experience, and other factors. It is natural for teams to do so too. They must go through these predictable phases as they mature and gain experience with each other and the **DMAIC Story.**

The duration of each phase depends on individual and team maturity, task complexity, leadership, and the sponsor's support.

While it is natural that teams go through these stages some teams can get stuck in different stages. Given that the stages are unavoidable, an idea to consider to help reduce the time needed for a "team in transition" to go through the stages and be fully productive, is to share expectations about the group and its preferences and direction.

Specifically, the team can establish (as part of their rules of team conduct) for example, there will be no "surprises". This can help establish an atmosphere of trust *earlier* in the evolutionary process allowing for some interpersonal issues to be put aside so people can focus on team objectives.

Stages Of Team Development (Continued)

FORM	➤	STORM	➤	NORM	➤	PERFORM
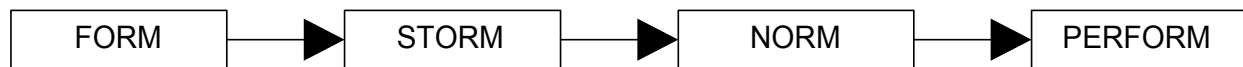
Form Stage

Members wonder why the group has been established and what role they are expected to play. People talk about what the task is. Discomfort arises from not knowing who should clarify the task. People test each other, trying to figure out motives and hidden agenda.

- Task Issues included establishment of goals, objectives, and priorities. The group clarifies its purpose for meeting, describes its end project, determines a course of action and decides on procedures.

- Personal Issues include how much energy members are willing to give the group, and how much they are willing to be influenced by the group. Curiosity about other members is high.

- Leadership Strategies

  – breaking the ice and

  – active participation

Storm Stage

Issues center on power and influence as members wrestle with questions of control. People disagree about issues and how to approach them. This is the stage where people work through a method for operating. People may be in conflict over the roles members have assumed.

- Task Issues involve roles and responsibilities as members structure tasks and assign duties.

- Personal Issues center on control, with leadership shifting as members decide how much control or influence they want over the group and how much control or influence the group has over them.

- Leadership Strategies entail dealing with differences and managing emotions.

## Stages Of Team Development (Continued)

Norm And Perform Stages

These stages are characterized by openness and team spirit. These are the most cohesive stages, because the group begins to work as a single unit, which usually results in greater productivity. People share information and disagree constructively. People accept each other and roles are interchangeable with little disruption to the group.

- Task Issues involve feedback, following through to be certain people have executed their responsibilities, following up to make sure that things were done right, and keeping track of results.

- Personal Issues include emotional support, such as how much help, reinforcement and constructive feedback members give and receive.

- Leadership Strategies include follow-up and follow-through as well as feedback and building team spirit.

	FORM	**STORM**	**NORM OR PERFORM**
INDIVIDUAL ISSUES	- What am I doing? - Who are these people? - Who is in charge?	- How effective am I? - How much influence do I have?	- I know how I belong - I know what I contribute
GROUP ISSUES	- What is the charter? - Is this the right group? - Is this the right structure?	- How do we work together? - What is each member responsible for? - What should we be working on?	- What changes might increase our effectiveness? - Give and take - Celebration when it is earned
WHAT YOU WILL SEE	- Testing boundaries - Establishing rules - Caution - Politeness - Superficiality - Dependency/ Counter Dependency	- Focus on methods - Conflict/tension - Cop out (quick agreement and silence) - Polarization - Resistance - Win-Lose	- Increased comfort - Role shifting - Little need to discuss methods - Identification with the group - Shared power and information - Fun
LEADERSHIP STRATEGIES	- Break the ice! - Get involved and participation	- Elicit examination of differences - Model and support influential, not aggressive communication	- Provide positive and critical feedback - Create celebration

Consensus (Technique)
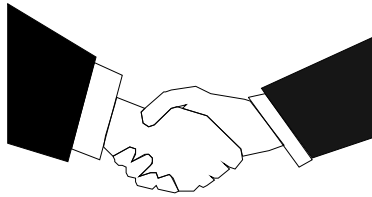
Consensus is a group decision-making process that takes each member's ideas and opinions into account and results in a decision that everyone in the group can support. It is an effective method for decision-making because it involves every member's participation. Consensus improves decision quality, equalizes power, causes examination of alternatives, increases commitment to implement the decision and promotes unity among the team members.

How To Reach Consensus

1. The leader clearly lists the alternatives the group has to choose from and opens the topic for discussion.

2. Each member of the group shares her/his ideas opinions and known facts about what each feels the group's decision should be. During the discussion, the following guidelines are followed:

   ▪ Avoid arguing your own point of view. Present your views and then listen to what others have to say.

   ▪ Look for common ground and areas of agreement where members can agree on something, and work from there. Always look for a solution on which everyone can agree.

   ▪ Once your idea is clearly understood by the others, release "ownership".

   ▪ Trust the team to evaluate your idea and make the right decision.

   ▪ Never criticize others or their ideas. People and their ideas are valuable and should be treated with respect.

   ▪ Conflicts and differences of opinion should be viewed as "helpful" input.

Consensus (Technique) (Continued)

3. When the leader feels that the team is beginning to come to a common agreement, he/she will clarify the position and ask the team if there is a consensus. If everyone agrees that it is the best decision, or feels that it is a decision that they can support, they state their agreement and the leader confirms the decision. If a member has new information or clarification of previous information that may be helpful to the team, time is spent discussing the concern and the process continues until consensus is achieved.

THE GOALS OF CONSENSUS
- Eliminate a "we-they" feeling.   - Focus on the problem, not on personalities, position, or points of view.   - Reach a "win-win" decision.   - Develop team ownership to the decision.

Consensus (Technique) (Continued)

There are three basic ways to make decisions: A **monarchy**, where one person makes all the decisions, a **democracy** where the population makes the decisions by voting, and then there is **consensus** where decisions are made based on uniform agreement. While voting is a way for many people to become involved in a decision in a relatively fast manner, it is a win-lose situation. The majority wins and the minority loses. Consensus, on the other hand, derives decisions only when all members agree first. Webster's New World Dictionary defines consensus as the voluntary giving of consent.

Does this mean that all members must have the same level of enthusiasm for the idea? No. It simply means that a member can at least live with the decision and would not disrupt the plan if they had the opportunity to do so.

This sounds great, but like most things, consensus does have its downside. It is very time-consuming to make decisions this way, since all members are obligated to participate in sharing their views on the subject at-hand. The benefit is that the subject is thus very well explored and totally understood by those discussing it. This surfaces an important aspect of consensus. If any member is not adequately involved in the discussion, then the whole group may miss a very important piece of information it needs in order to make the best decision.

It is this element of consensus that makes it such a powerful decision-making technique. Specifically, that all members not only get a chance to participate, but that they are obligated to do so. Consensus usually derives the best decision because it builds on the combined knowledge of the participants.

All of these useful decision-making methods (voting, consensus and even unilateral decisions) have their place. It is up to the leader to set the stage and call for the proper tool at the proper time.

Key Guidelines For Decision Making By Consensus

Avoid arguing based on opinion. Strive to focus on facts and objectivity. Don't change your mind to avoid conflict. Change it based on facts and objectivity. Look at differences among the group as positive ways to make change. Coach each other to be honest, open and data based as much as possible.

The following is an exercise to practice the decision-making technique of consensus in a group setting. Pay special attention to member involvement, as this will drive your success.