What are the New Seven Q.C. Tools

- Affinity Diagrams

- Relations Diagrams

- Tree Diagrams

- Matrix Diagrams

- Arrow Diagrams

- Process Decision Program Charts

- Matrix Data Analysis

History of the New Seven Q.C. Tools

- Committee of J.U.S.E. - 1972

- Aim was to develop more QC techniques with design approach

- Work in conjunction with original Basic Seven Tools

- New set of methods (N7) - 1977
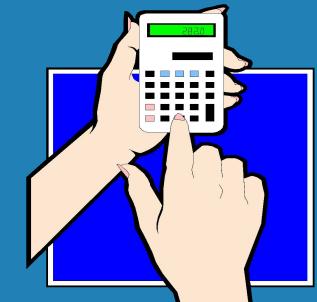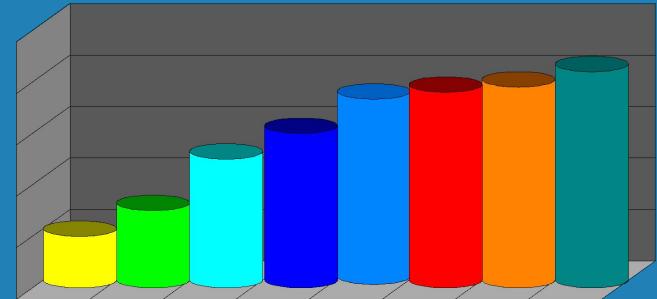
History of the New Seven Q.C. Tools

- Developed to organize verbal data diagrammatically.
- Basic 7 tools effective for data analysis, process control, and quality improvement (numerical data)
- Used together increases TQM effectiveness

What are the Basic Seven Q.C. Tools?

- Flow Charts

- Run Charts

- Histograms

- Pareto Diagrams

- Cause and Effect Diagrams

- Scatter Diagrams

- Control Charts

Benefits of Incorporating New Seven Q.C. Tools

Enhanced Capabilities

- Organize verbal data
- Generate ideas
- Improve planning
- Eliminate errors and omissions
- Explain problems intelligibly
- Secure full cooperation
- Persuade powerfully

Benefits of Incorporating New Seven Q.C. Tools

Enhanced Keys to Organizational Reform

- Assess situations from various angles
- Clarify the desired situation
- Prioritize tasks effectively
- Proceed systematically
- Anticipate future events
- Change proactively
- Get things right the first time

Benefits of Incorporating New Seven Q.C. Tools

Five Objectives of Organizational Reform which will establish a Culture that:

- Identifies problems
- Gives importance to planning
- Stresses the importance of the process
- Prioritizes tasks
- Encourages everyone to think systematically
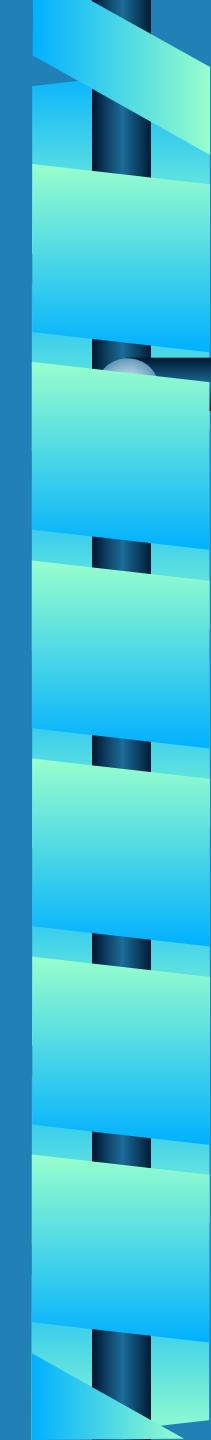
New Seven Q.C. Tools
Affinity Diagrams

For Pinpointing the Problem in a Chaotic Situation and Generating Solution Strategies

- Gathers large amounts of intertwined verbal data (ideas, opinions, issues)

- Organizes the data into groups based on natural relationship

- Makes it feasible for further analysis and to find a solution to the problem.

New Seven Q.C. Tools
Affinity Diagrams

Advantages of Affinity Diagrams

- Facilitates breakthrough thinking and stimulate fresh ideas

- Permits the problem to be pinned down accurately

- Ensures everyone clearly recognizes the problem

- Incorporates opinions of entire group

New Seven Q.C. Tools
Relations Diagrams

For Finding Solutions Strategies by Clarifying Relationships with Complex Interrelated Causes

- Resolves tangled issues by unraveling the logical connection

- Allows for "Multi-directional" thinking rather than linear

- Also known as Interrelationship diagrams

New Seven Q.C. Tools
Relations Diagrams

Advantages of Relations Diagrams

- Useful at planning stage for obtaining perspective on overall situation

- Facilitates consensus among team

- Assists to develop and change people's thinking

- Enables priorities to be identified accurately

New Seven Q.C. Tools
Tree Diagrams

For Systematically Pursuing the Best Strategies for Attaining an Objective

- Develops a succession of strategies for achieving objectives

- Reveals methods to achieve the results.

- Also known as Systematic diagrams or Dendrograms
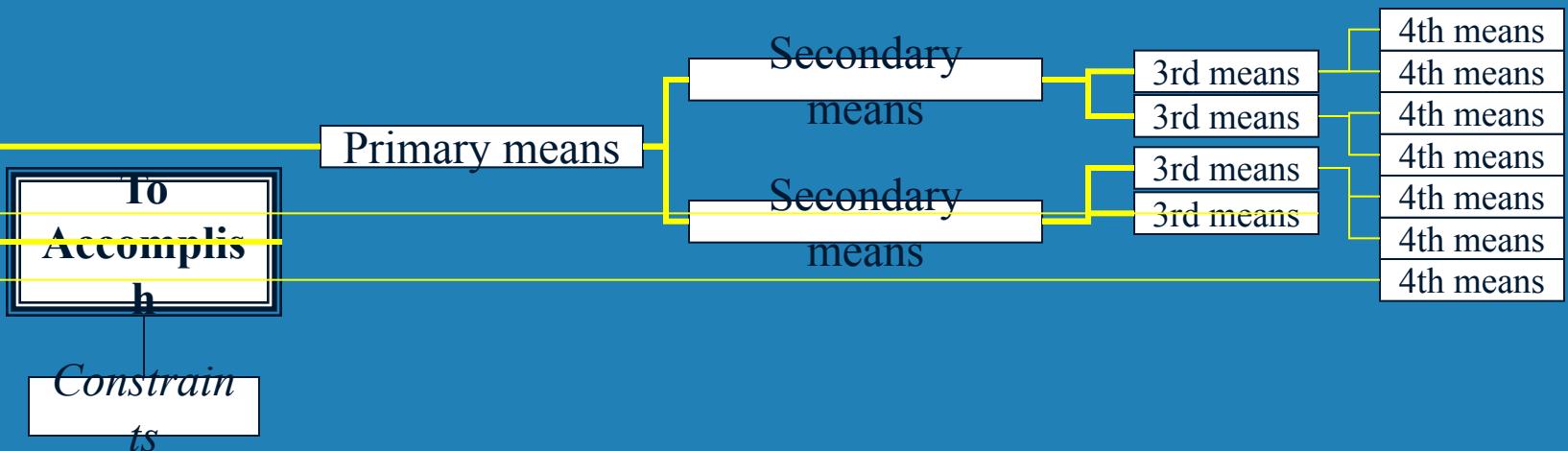
New Seven Q.C. Tools
Tree Diagrams

Advantages of Tree Diagrams

- Systematic and logical approach is less likely that items are omitted

- Facilitates agreement among team

- Are extremely convincing with strategies

New Seven Q.C. Tools
Matrix Diagrams

For Clarifying Problems by "Thinking Multidimensionally"

- Consists of a two-dimensional array to determine location and nature of problem

- Discovers key ideas by relationships represented by the cells in matrix.

New Seven Q.C. Tools
Matrix Diagrams

Advantages of Matrix Diagrams

- Enable data on ideas based on extensive experience

- Clarifies relationships among different elements

- Makes overall structure of problem immediately obvious

- Combined from two to four types of diagrams, location of problem is clearer.

New Seven Q.C. Tools
Arrow Diagrams

For Working Out Optimal Schedules and Controlling Them Effectively

- Shows relationships among tasks needed to implement a plan

- Network technique using nodes for events and arrows for activities

- Used in PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method)
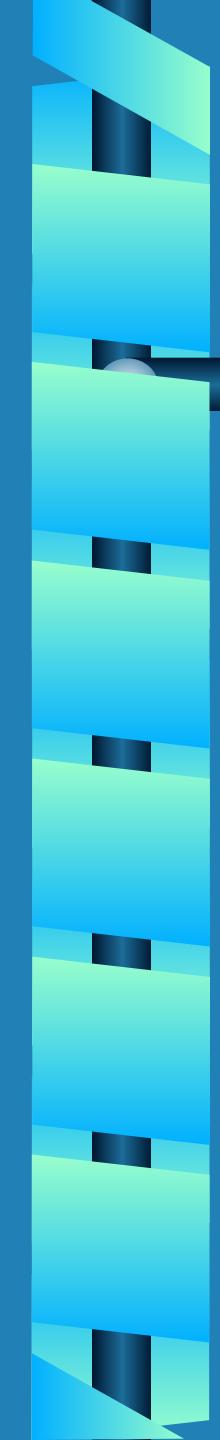
New Seven Q.C. Tools
Arrow Diagrams

Advantages of Arrow Diagrams

- Allows overall task to viewed and potential snags to be identified before work starts

- Leads to discovery of possible improvements

- Makes it easy to monitor progress of work

- Deals promptly with changes to plan

- Improves communication among team

New Seven Q.C. Tools
Process Decisions Program Charts

For Producing the Desired Result from Many Possible Outcomes

- Used to plan various contingencies

- Used for getting activities back on track

- Steers events in required direction if unanticipated problems occur

- Finds feasible counter measures to overcome problems

Process Decisions Program Charts

Advantages of Process Decisions Program Charts (PDPC's)

- Facilitates forecasting

- Uses past to anticipate contingencies

- Enables problems to pinpointed

- Illustrates how events will be directed to successful conclusion

- Enables those involved to understand decision-makers intentions

New Seven Q.C. Tools
Matrix Data Analysis

Principal Component Analysis

- Technique quantifies and arranges data presented in Matrix

- Based solely on numerical data

- Finds indicators that differentiate and attempt to clarify large amount of information

New Seven Q.C. Tools
Matrix Data Analysis

Advantages of Principal Component Analysis

- Can be used in various fields (market surveys, new product planning, process analysis)

- Can be when used when Matrix diagram does not give sufficient information

- Useful as Prioritization Grid

Keys to Successfully Using the New Seven Q.C. Tools

Mental Attitudes

- Keen awareness to the actual problem
- Eagerness to solve problem
- Be highly motivated for the challenge

Four Specific Keys

- Understand the problem
- Select the right tool for the job
- Obtain appropriate verbal data
- Interpret analytical results

Keys to Successfully Using the New Seven Q.C. Tools

4 Specific Keys

- ## Understand the problem

  Stage 1 - problem is unclear and not obvious
  what exact issue should be addressed

  Stage 2 - problem is obvious, but causes unknown
  explore causes and single out valid ones

  Stage 3 - problem and causes are known
  required action is unknown
  strategies and plan must be developed

Keys to Successfully Using the New Seven Q.C. Tools

4 Specific Keys *(cont.)*

- Selecting Right tool for the Job

Stage 1 - Collect verbal information on events

(Affinity Diagram)

Stage 2 - Choose tool to identify causes

(Relations Diagram / Matrix Diagram)

Stage 3 - List strategies and activities

(Tree Diagram / Relations Diagram)

Plan actual activities

(Arrow Diagram / PDPC Chart)

Keys to Successfully Using the New Seven Q.C. Tools

4 Specific Keys (cont.)

- Obtaining appropriate verbal data
  Three types of verbal data:
  - Facts; factual observations expressed in words
  - Opinions; factual information colored by opinion
  - Ideas; New concepts created by analyzing facts

  Group Discussions:
  - Ensures common understanding
  - All data should be without bias or distortion
  - Data should fit objective of the analysis

Keys to Successfully Using the New Seven Q.C. Tools

4 Specific Keys (cont.)

- Interpreting Analytical Results
Information must be obtained for accomplishing objectives from:
  - Completed diagrams; or
  - Process of completing diagrams

Analyze actual information obtained:
  - Prepare summarized report with findings, conclusions, and processes used
  - Check if necessary data has been obtained, if not
  - Discover the cause and take appropriate action