



Fishbone Diagrams

(cause and effect, or Ishikawa diagrams)

John Ham



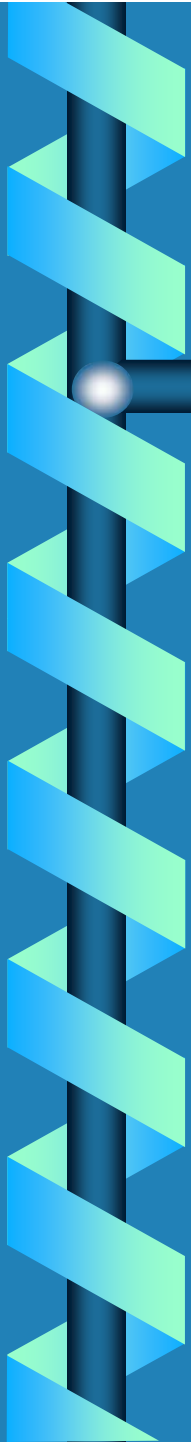
Overview (1 of 2)

- Definition
 - Uses
 - Ishikawa
- Use within organizations
 - benefits
- Creation of the Diagram
 - Steps 1-9



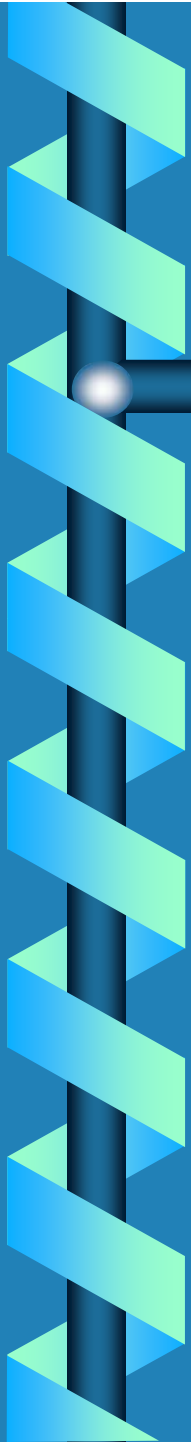
Overview (2 of 2)

- Example
 - Service example
- Exercise
 - Ham Industries



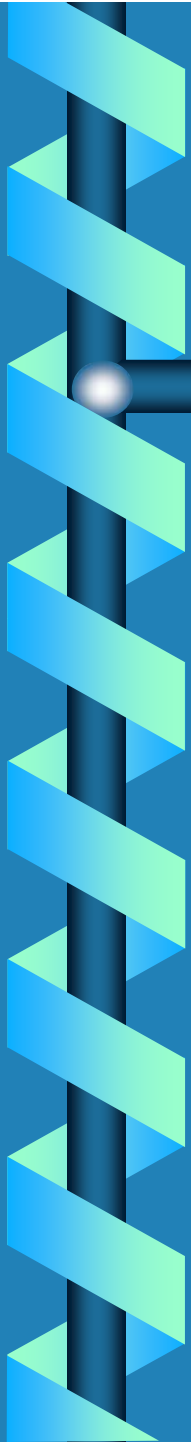
Fishbone (Cause and Effect or Ishikawa) Diagrams (1 of 4)

- Named after Kaoru Ishikawa
 - Japanese Quality pioneer
- Resembles skeleton of a fish
- Focus on causes rather than symptoms of a problem
- Emphasizes group communication and brainstorming
- Stimulates discussion



Fishbone (Cause and Effect or Ishikawa) Diagrams (2 of 4)

- One of Seven basic tools of Japanese Quality
- Leads to increased understanding of complex problems
- Visual and presentational tool



Fishbone (Cause and Effect or Ishikawa) Diagrams (3 of 4)

- Typically done on paper or chalkboard
- Recently some computer programs have been created to make Fishbone Diagrams
 - Ishikawa Environment



Use in Organizations (1 of 2)

- Can be used to improve any product, process, or service
 - Any area of the company that is experiencing a problem
 - Isolates all relevant causes



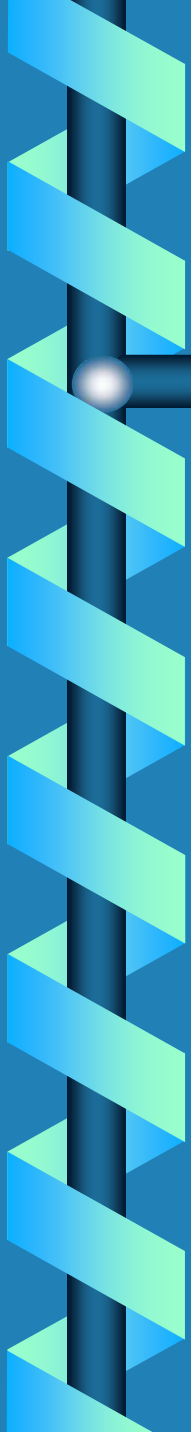
Use in Organizations (2 of 2)

- Helps bring a problem into light
 - Group discussion and brainstorming
 - Finds reasons for quality variations, and the relationships between them



Creating Fishbone Diagrams (1 of 4)

- As a group:
 1. Establish problem (effect)
 - state in clear terms
 - agreed upon by entire group
 2. Problem becomes the "head" of the fish
 - draw line to head ("backbone")

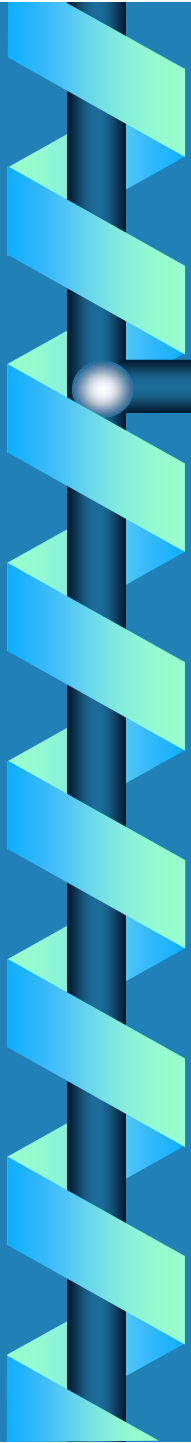


Creating a Fishbone Diagram (2 of 4)

3. Decide major causes of the problem

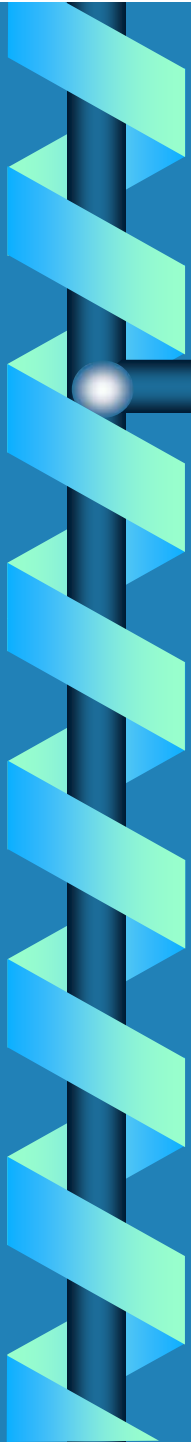
- by brainstorming
- if the effect or problem is part of a process the major steps in the process can be used

4. Connect major causes to backbone of the fish with slanting arrows



Creating a Fishbone Diagram (3 of 4)

5. Brainstorm secondary causes for each of the major causes
6. Connect these secondary causes to their respective major causes
7. Repeat steps 5 & 6 for sub-causes dividing with increased specificity
 - usually four or five levels



Creating a Fishbone Diagram (4 of 4)

8. Analyze and evaluate causes and sub-causes

-may require the use of statistical, analytical, and graphical tools

9. Decide and take action

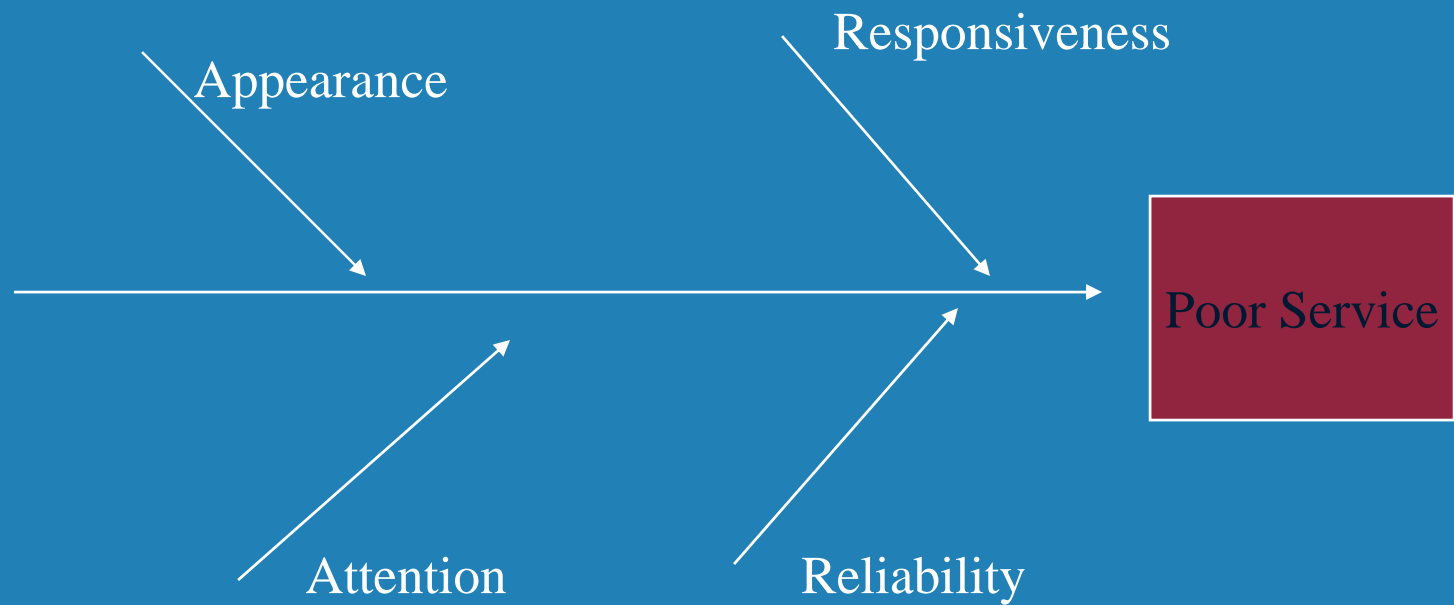
Example (1 of 4)

- Step 1 & 2:



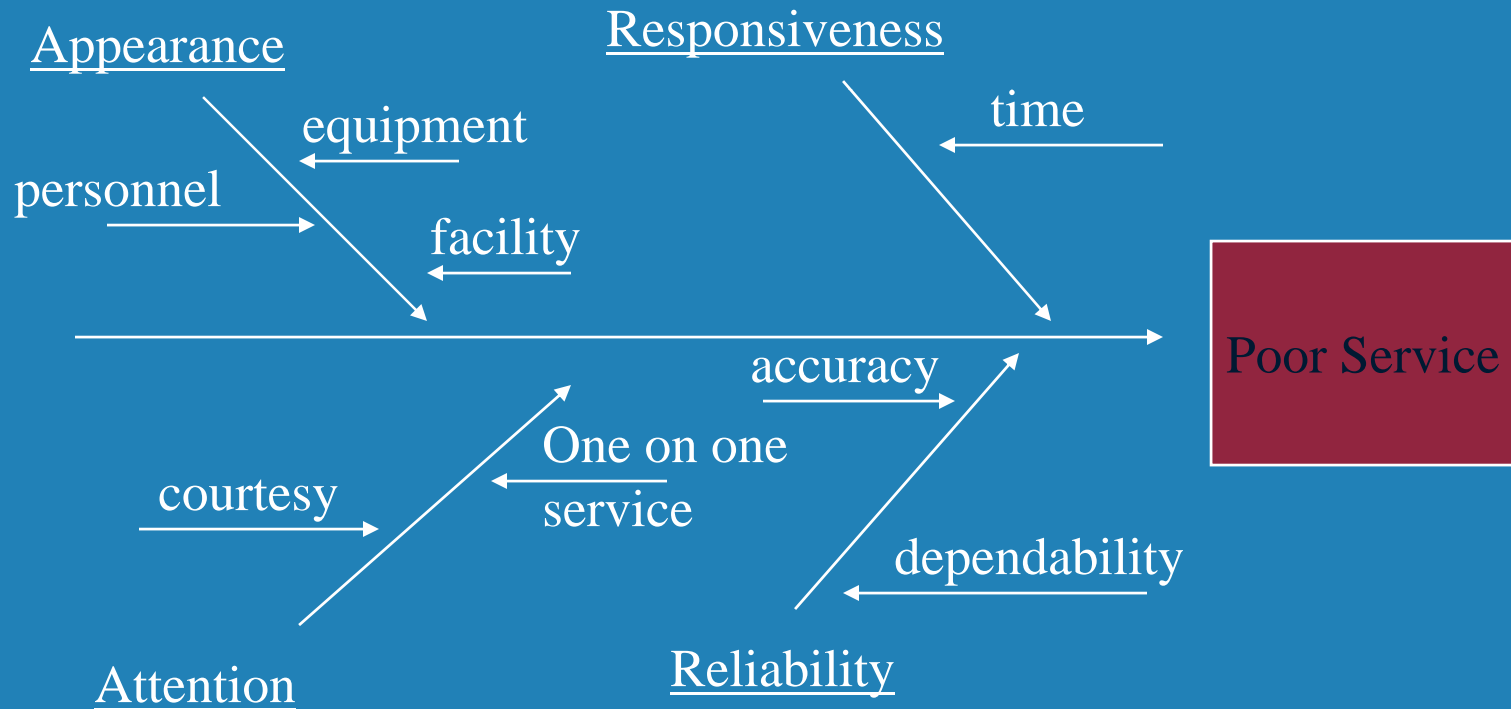
Example (2 of 4)

- Step 3 & 4:



Example (3 of 4)

- Step 5, 6, & 7:





Example (4 of 4)

- Step 8 & 9:
 - Use tools to analyze and evaluate causes
 - Pareto diagrams, charts, and graphs
 - Statistical analysis for causes in processes
 - Decide and take action
 - Use fishbone diagram, analysis and evaluations to find causes that can be fixed
 - Take action to eliminate and fix problem causes



Exercise

- Create a Fishbone (cause and effect, Ishikawa) Diagram for the following:

Management at Ham Industries has noticed that the productivity of its workers is well below the standard. After interviewing its employees, it was noticed that a vast majority felt dissatisfied and unhappy with their work. Your boss has asked you and a group of your peers to find the causes of worker dissatisfaction . Include all possible causes to at least the secondary level.



Summary (1 of 3)

- Fishbone Diagrams
 - visual diagram
 - resembles fish skeleton
 - identifies the causes of a problem (effect), and their relationships
 - created by Kaoru Ishikawa for Quality Management



Summary (2 of 3)

- Organizational Uses
 - Increases communication about problems
 - Used to improve any product, process, or service
 - Important part of quality management



Summary (3 of 3)

- Creation of Fishbone diagrams
 - Problem or effect is head of fish
 - Identify major, secondary and tertiary causes, and attach to backbone identifying relationships
 - Analyze and Evaluate results
 - Act to fix the problem(s)



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