WHY’, ‘HOW’ AND ‘WHAT’

- When a client first approaches a designer with a product specs, it is unlikely that the ‘specs’ are expressed very clearly.

- An important first step in design is to try to clarify the design objectives.

- Some design objectives might be contained within the design brief; others must be obtained by asking the client, or by discussions of the design team.

- Typically, initial statement of objectives are brief and rather vague.

WHY’, ‘HOW’ AND ‘WHAT’ Cont’d

- Example “The product must be safe and reliable”

- To produce more precise objectives, you will need to expand and to clarify such statement.

- For example, an objective for a machine tool that must be safe might be expanded to:
  - Low risk of injury
  - Low risk of operator mistakes
  - Low risk of damage to work-piece or tool
  - Automatic shutdown in case of overloading
  - Complies with the tooling standards

WHY’, ‘HOW’ AND ‘WHAT’ Cont’d

- The types of questions that are useful in expanding and clarifying objectives are the simple ones: ‘why’, ‘how’, and ‘what’.
  - Why do we need to achieve this objective?
  - How can we achieve it?
  - What are the available solutions?

- Order the list into sets of higher-level and lower-level objectives.

- Draw a diagrammatic tree of objectives showing relationships and inter connections
Example

Student design team selected the familiar “Jewel case” to improve CD Case as a product needs improvement.

• As a first step the team brainstormed to develop ideas for possible improvements to the CD case.

• The following ideas were generated in response to the question: What functions or attributes of a CD case need improvement?
  - case resistant to cracking
  - easier to open
  - add color
  - better waterproofing
  - easier extraction of the CD from the circular fastener
  - hinge that does not come apart

What’s Next?

• Next the ideas of improvement are sorted out based on their priorities.

• Priorities must be identified based on the customer’s needs.

• How can we know the needs of the customer?
  - Interviews with customers
  - Customer complaints
  - Customer survey