TenStep Supplemental Paper

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DFE - Product Conceptualization

Product conceptualization focuses on:

- The well-known concept that products must be developed based on user's needs.
- Basic assumptions regarding the function of a product.
- How the specific product will meet end-users' needs.

Dematerialization is the replacement of a physical product with a non-physical product or service. It reduces a company's production, demand and use of physical products. This facilitates cost-savings in material, energy, transportation, consumables and the need to manage the eventual disposal and/or recycling of a physical product.

Dematerialization may involve:

- Making the product smaller and lighter.
- Replacing a material product with an immaterial substitute, e.g. mail replaced by E-mail.
- Reducing the use of material or infrastructure-intensive systems, e.g. telecommuting vs. use of automobile for work purposes.

Designers should conduct an in-depth analysis of end-users' needs to identify the true value or service that a product provides before exploring new product concepts that may involve immaterial solutions.

Pros

- Reduced production of goods
- Savings in energy, materials, labor
- Often provides flexible, multifunctional, productive solutions

Cons

- Changes customers' perception of the product
- Often provides energy-intensive solutions
- Few studies measuring environmental improvements

Examples of how we can reduce dependence on physical entities for our work:

- Improved communication like E-mail and the Internet reduce paper, post and faxes.
- An answering service can substitute for answering machines, leaving the user with no physical equipment.

- On-line catalogues by retailers, libraries and government departments facilitate public access to goods and services while reducing dependence on physical filing and storage systems.

Any product that is shared by several people is used more efficiently than one that is distributed to each person individually. Good examples of products that can be shared include equipment such as photocopiers, laundry equipment, hardware and construction tools. The advantages to sharing are:

- When an organization decides to implement "shared use" of a product, it ceases to be the property of an individual user. It becomes the property of the organization that provides users with the product.

  The organization must then manage a limited number of products that are "shared" among users. This often involves developing a new organizational structure.

- Companies who supply products that will be "shared" often supply services as well as the product, e.g., technical support. (As a result, users pay per unit of service offered by the product rather than for ownership of the product.)

The benefits of applying this strategy are:

- More efficient use of products.
- Reduced material energy and transportation costs due to the production and distribution of fewer products.
- Increased ability for manufacturers to track the use and life span of their products.
- Facilitation of disposal and/or recycling of the product.

When a company provides a service related to a product, it assumes responsibility for maintenance, repair, disposal and/or recycling of the product during its use and end-of-life phases. When applying this strategy, companies:

- Will have to undertake an in-depth analysis of users' needs. They are likely to find that users are more interested in the value a product provides than in its physical presence.
- May have to re-organize product development and production from being sales-oriented to being service-oriented.
- Will find that they have increased contact with customers.

The benefits of this strategy are:

- A constant stream of information about users' needs and concerns.
- The opportunity to respond rapidly to changes in the marketplace.
- More control over product distribution, maintenance, disposal and recycling.
- The opportunity to generate revenue during the product's use and end-of-life phases.