Identifying Customer Needs

Teaching materials to accompany:
Product Design and Development
Chapter 4
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Product Development Process
Concept Development Process

Mission Statement → Identify Customer Needs → Establish Target Specifications → Generate Product Concepts → Select Product Concept(s) → Test Product Concept(s) → Set Final Specifications → Plan Downstream Development → Development Plan

- Perform Economic Analysis
- Benchmark Competitive Products
- Build and Test Models and Prototypes
Customer Needs Process

- Define the Scope
  - Mission Statement
- Gather Raw Data
  - Interviews
  - Focus Groups
  - Observation
- Interpret Raw Data
  - Need Statements
- Organize the Needs
  - Hierarchy
- Establish Importance
  - Surveys
  - Quantified Needs
- Reflect on the Process
  - Continuous Improvement
Customer Needs Example: Cordless Screwdrivers
**Mission Statement**

**Example: Screwdriver Project**

<table>
<thead>
<tr>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A hand-held, power-assisted device for installing threaded fasteners</td>
</tr>
</tbody>
</table>

**Key Business Goals**

- Product introduced in 4th Q of 2000
- 50% gross margin
- 10% share of cordless screwdriver market by 2004

**Primary Market**

- Do-it-yourself consumer

**Secondary Markets**

- Casual consumer
- Light-duty professional

**Assumptions**

- Hand-held
- Power assisted
- Nickel-metal-hydride rechargeable battery technology

**Stakeholders**

- User
- Retailer
- Sales force
- Service center
- Production
- Legal department
How Many Customers?

Visual Information Example: Book Bag Design
## Five Guidelines for Writing Needs Statements

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Customer Statement</th>
<th>Need Statement-Wrong</th>
<th>Need Statement-Right</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Not How</strong></td>
<td>“Why don’t you put protective shields around the battery contacts?”</td>
<td>The screwdriver battery contacts are covered by a plastic sliding door.</td>
<td>The screwdriver battery is protected from accidental shorting.</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>“I drop my screwdriver all the time.”</td>
<td>The screwdriver is rugged.</td>
<td>The screwdriver operates normally after repeated dropping.</td>
</tr>
<tr>
<td><strong>Positive Not Negative</strong></td>
<td>“It doesn’t matter if it’s raining, I still need to work outside on Saturdays.”</td>
<td>The screwdriver is not disabled by the rain.</td>
<td>The screwdriver operates normally in the rain.</td>
</tr>
<tr>
<td><strong>Attribute of the Product</strong></td>
<td>“I’d like to charge my battery from my cigarette lighter.”</td>
<td>An automobile cigarette lighter adapter can charge the screwdriver battery.</td>
<td>The screwdriver battery can be charged from an automobile cigarette lighter.</td>
</tr>
<tr>
<td><strong>Avoid “Must” and “Should”</strong></td>
<td>“I hate it when I don’t know how much juice is left in the batteries of my cordless tools.”</td>
<td>The screwdriver should provide an indication of the energy level of the battery.</td>
<td>The screwdriver provides an indication of the energy level of the battery.</td>
</tr>
</tbody>
</table>
Organized List of Customer Needs

The SD provides plenty of power to drive screws.
* The SD maintains power for several hours of heavy use.
** The SD can drive screws into hardwood.
   The SD drives sheet metal screws into metal ductwork.
*** The SD drives screws faster than by hand.

The SD makes it easy to start a screw.
* The SD retains the screw before it is driven.
!* The SD can be used to create a pilot hole.

The SD works with a variety of screws.
** The SD can turn philips, torx, socket, and hex head screws.
** The SD can turn many sizes of screws.

The SD can access most screws.
The SD can be maneuvered in tight areas.
** The SD can access screws at the end of deep, narrow holes.

The SD turns screws that are in poor condition.
The SD can be used to remove grease and dirt from screws.
The SD allows the user to work with painted screws.

The SD feels good in the user's hand.
*** The SD is comfortable when the user pushes on it.
*** The SD is comfortable when the user resists twisting.
* The SD is balanced in the user's hand.
! The SD is equally easy to use in right or left hands.
The SD weight is just right.
The SD is warm to touch in cold weather.
The SD remains comfortable when left in the sun.

The SD is easy to control while turning screws.
*** The user can easily push on the SD.
*** The user can easily resist the SD twisting.
The SD can be locked "on."
![** The SD speed can be controlled by the user while turning a screw.

The SD is easy to set-up and use.
* The SD is easy to turn on.
* The SD prevents inadvertent switching off.
* The user can set the maximum torque of the SD.
!* The SD provides ready access to bits or accessories.
* The SD can be attached to the user for temporary storage.

The SD power is convenient.
* The SD is easy to recharge.
The SD can be used while recharging.
*** The SD recharges quickly.
The SD batteries are ready to use when new.
![** The user can apply torque manually to the SD to drive a screw.

The SD lasts a long time.
** The SD tip survives heavy use.
The SD can be hammered.
* The SD can be dropped from a ladder without damage.

The SD is easy to store.
* The SD fits in a toolbox easily.
** The SD can be charged while in storage.
The SD resists corrosion when left outside or in damp places.
! The SD maintains its charge after long periods of storage.
The SD maintains its charge when wet.

The SD prevents damage to the work.
* The SD prevents damage to the screw head.
The SD prevents scratching of finished surfaces.

The SD has a pleasant sound when in use.

The SD looks like a professional quality tool.

The SD is safe.
The SD can be used on electrical devices.

The SD remains comfortable when left in the sun.

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Needs Translation Exercise:
Book Bag Design Example

“See how the leather on the bottom of the bag is all scratched; it’s ugly.”

“When I’m standing in line at the cashier trying to find my checkbook while balancing my bag on my knee, I feel like a stork.”

“This bag is my life; if I lose it I’m in big trouble.”

“There’s nothing worse than a banana that’s been squished by the edge of a textbook.”

“I never use both straps on my knapsack; I just sling it over one shoulder.”
Caveats

• Capture “What, Not How”.
• Meet customers in the use environment.
• Collect visual, verbal, and textual data.
• Props will stimulate customer responses.
• Interviews are more efficient than focus groups.
• Interview all stakeholders and lead users.
• Develop an organized list of need statements.
• Look for latent needs.
• Survey to quantify tradeoffs.
• Make a video to communicate results.