Charcot-Marie-Tooth Disease

Group 1: Ethan Ambler, Bill Kurtz, and Jared Wolfe
Charcot-Marie-Tooth disease is an inherited disorder that affects the peripheral nerves. There are many types of CMT that can damage the nerves in different ways to cause symptoms such as:

- Foot deformity
- Loss of muscle in the lower legs
- Numbness in the feet
- Difficulty with balance
- Symptoms in the arms and hands

[http://www.cmtausa.org/understanding-cmt/what-is-cmt/](http://www.cmtausa.org/understanding-cmt/what-is-cmt/)
Goal:

• Design a means to assist a person suffering with (CMT) disease to use utensils to eat their food independently with convenience and at a modest cost
Customer Needs:

• Easy to use
• Durable
• Portable
• Cheap
• Reusable

Objectives:

• Able to operate after 5 minutes of instructions
• Withstand up to 5lbs. of pressure
• Under 2 lbs.
• Under $50
• Repetitive use without damage for a minimum of 5 years
Concept 1

Spork with Velcro
Concept 2

L-Shaped Spork with Velcro
Concept 3 L-shaped Spork with Knife Elbow
Concept 4

The “Swiss Army” Mitten
Concept 5  The Cradle
## Scoring Matrix

<table>
<thead>
<tr>
<th>Weight</th>
<th>Rating</th>
<th>Weighted Rank</th>
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<th>Rating</th>
<th>Weighted Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to Use</td>
<td>30%</td>
<td>8</td>
<td>2.4</td>
<td>10</td>
<td>3</td>
<td>6</td>
<td>1.8</td>
<td>4</td>
<td>1.2</td>
<td>2</td>
</tr>
<tr>
<td>Durable</td>
<td>15%</td>
<td>8</td>
<td>1.2</td>
<td>8</td>
<td>1.2</td>
<td>8</td>
<td>1.2</td>
<td>5</td>
<td>0.75</td>
<td>4</td>
</tr>
<tr>
<td>Portabe</td>
<td>10%</td>
<td>10</td>
<td>1</td>
<td>8</td>
<td>0.8</td>
<td>8</td>
<td>0.8</td>
<td>6</td>
<td>0.6</td>
<td>2</td>
</tr>
<tr>
<td>Cheap</td>
<td>25%</td>
<td>10</td>
<td>2.5</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Reuseable</td>
<td>20%</td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>7</td>
<td>1.4</td>
<td>9</td>
</tr>
</tbody>
</table>

| Sums: | 9.1 | 9 | 7.8 | 4.95 | 4.2 |
| Rank | 1 | 2 | 3 | 4 | 5 |
| Continue? | YES | Combine w/ concepts 3 | Combine w/ concept 2 | NO | NO |

**CONCEPTS**

- A: Velcro Spork
- B: "L" Shaped Spork w/ "L" Shaped Spork w/
- C: "Swiss Amry Mitten"
- D: Cradle

The table above represents a scoring matrix for different concepts based on various criteria such as ease of use, durability, portability, and reusability. Each criterion is weighed differently, and the weighted ratings are calculated to determine the overall ranking of each concept. The final row indicates whether to continue with the current concepts or combine with other concepts based on the scores.
Final Selection