Assistive Eating Utensil Design

Overview
The challenge at hand is to improve upon the existing Assistive Feeding Utensil design in order to alleviate some of the problems that the client has with using it. These include difficulty of inserting and removing silverware, changing attachment method of device, and getting the product ready for mass production. The importance level of the problem should be considered serious as the client has almost no ability to feed himself without this utensil.

Objectives
- Improve Existing Design of Assistive Eating Utensil
  - Refrain from changing overall function, shape, and size of existing device
  - Make insertion/removal of silverware into device easier
  - Make attachment to brace quicker/more universal
  - Ready device for mass production

Approach
- Met with customer (victim who uses the device) and created a hierological list of customer needs
- Performed external search to find existing products and current patents to draw ideas for concept generation
- Used internal search methods such as “Black Box” model, morphological charts, and a TRIZ matrix to clarify problem and find possible solutions
- Created CAD models of generated concepts
- Continued to relay progress to sponsor to get feedback for further development
- Fabricated multiple prototypes for testing via 3D printing
- Testing could not be done with customer due to time constraints and distance obstacles, however, in-house testing was performed
- Validated results by comparing force needed to insert/remove silverware vs. old design

Outcomes
- Final prototype successfully lowered force required to insert/remove
- Attachment method made more universal to allow attachment to existing braces
- Manufacturing costs lowered by standardizing outsourced components