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DATE: February 23rd, 2022
SUBJECT: D3 Functional Decomposition Concepts

In this memorandum, we are going to talk about the problem definition for Team Nugget, along with the functional decomposition, morphological chart, and concept sketches. After our discussion, we came out with four main functions and many sub-functions. Meanwhile, we generated a lot of ideas and drew the concepts into sketches. Finally, we combined each part, assembled them together, and generated 16 possible products.

Our current problem definition is that customers should be able to open doors hands free and with minimal effort. While achieving this, the product must also be safe, long lasting, and fast. If we fulfill these requirements, we are expected to achieve sales equal to 20% of our top competitor, StepNPull.

The functional decomposition helped visualize and organize the functions our product should provide to the user. Team Nugget identified four categories of functions and several functions within those categories that will help shape product design. These categories include: full door functionality, secure to the door, easy user interface, and force transformation.

The morphological chart includes the Team Nugget's ideas on how those individual functions will be achieved within the product. The chart provides several ideas for each identified function that will allow us to create a variety of concept sketches that incorporate different combinations of elements seen in the morphological chart.

If you would like any further details, please contact us at any of the following emails: Nate Saul (nmsaul@purdue.edu), Samuel Graham (graha205@purdue.edu), Dingming Lu (lu807@purdue.edu), or Luke Bame (lbame@purdue.edu).

Sincerely,
Nate Saul

Nate Saul

Samuel Graham

SG

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Luke Bame

Attached:
Door Functions.doc
Functional Decomposition.PNG