

1.2 Customer Needs

| Question | Customer Statement | Interpreted Need |
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| What are the current design's causes of failure? | Rocking and shear stress. | Increase strength of the interface between bone and implant. |
| What is the objective of this year's project? | The objective is to improve upon the current Exactech's design. | Development of designs that can be rigorously tested such that they exceed the current design in longevity and resistance to certain forces and moments. |
| Would fasteners work to secure the implant to the bone? | No, due to the density of bone fasteners would not work. | Other methods of attaching are needed to prevent bone fragmentation. |
| How should be align implants for testing? | Last year's team made 3D printed punches, you will need something similar. | Design and implement punches to properly align implants with the substitutive bone surface. |
| Does a current method of testing these designs exist? | Last year's team focused on testing their designs using their own methods, you will need to do something similar. | We will need to develop a solid method of testing designs for max shear and bending moment. |
| What are some ways to imitate bone for implant testing? | Bone block or bone foam. | Bone block or bone foam. |
| Which factors are important besides the implant bone interface? | Mobility and preventing scapular notching are both important factors. | Our design must consider these two phenomena when designing. |
| What different configurations are currently available for these implants? | Both inlay and onlay, I would like to see you test both. | Investigate both and compare the results. |

Customer needs is an overarching phrase used to describe the customer's desired features of the product. These customer needs were gathered through a Microsoft Teams meeting with Tom Vanasse, liaison engineer at Exactech. When questioned he supplied a statement that better defined his expectations for our work. After this, an interpretation was generated to help define the construct that is the project. Altogether, these interpretations give vital information on what will be designed and tested but do not define specifically how. This serves to help define the problem while not limiting the team. To summarize, the team will focus on developing a testing method that properly recreates situations that cause failure in the current design. This is done to understand the exact failure mechanisms so that the original design can be improved.

