

## **1.1 Project Scope**

The objective of this project is to improve upon Exactech's current design of the stemless reversible shoulder implant to reduce or eliminate the issue of levering out caused by general patient use.

The key goals of this project are to develop a method of preventing levering out from occurring to allow for a more comprehensive solution to shoulder replacement and lessen post-op issues that would require later replacement of the implant. This design should be robust due to the large range of motion that the shoulder allows as well as the largely varying force distributions it will be required to withstand. Ideally, this implant would be a lifetime replacement for the original shoulder.

Primary markets would include hospitals, biomedical companies, and private practices. Each of these organizations or companies would be involved in either direct instillation of this device or the continued iterative improvement of said device. A secondary market might include the Veterans Affairs department of the United States Military due to shoulder injuries and eventual replacement being a common issue present and previous servicemembers face.

This project makes the following assumptions. Current designs and CAD models will be provided by Exactech and will be used as a base design model for iterative testing. All substitutive methods of testing designs will be indicative of human bone and the loads experienced by patients in common daily activities.

The stakeholders of this project are as follows. Dr. Shayne McConomy, Cameron Barnes, Michael Dina, Tyler Ince-Ingram, Caleb Ward, Exactech and its representative Tom Vanasse, as well as healthcare organizations.