

# Mechanical Shredder

## Progress Report Presentation

Mohammed Molani, Sultan Al Shahrani,  
Kendall Meyer, Ryon Baloo

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NORTHERN  
ARIZONA  
UNIVERSITY



*College of*

*Engineering, Forestry*

*& Natural Sciences*



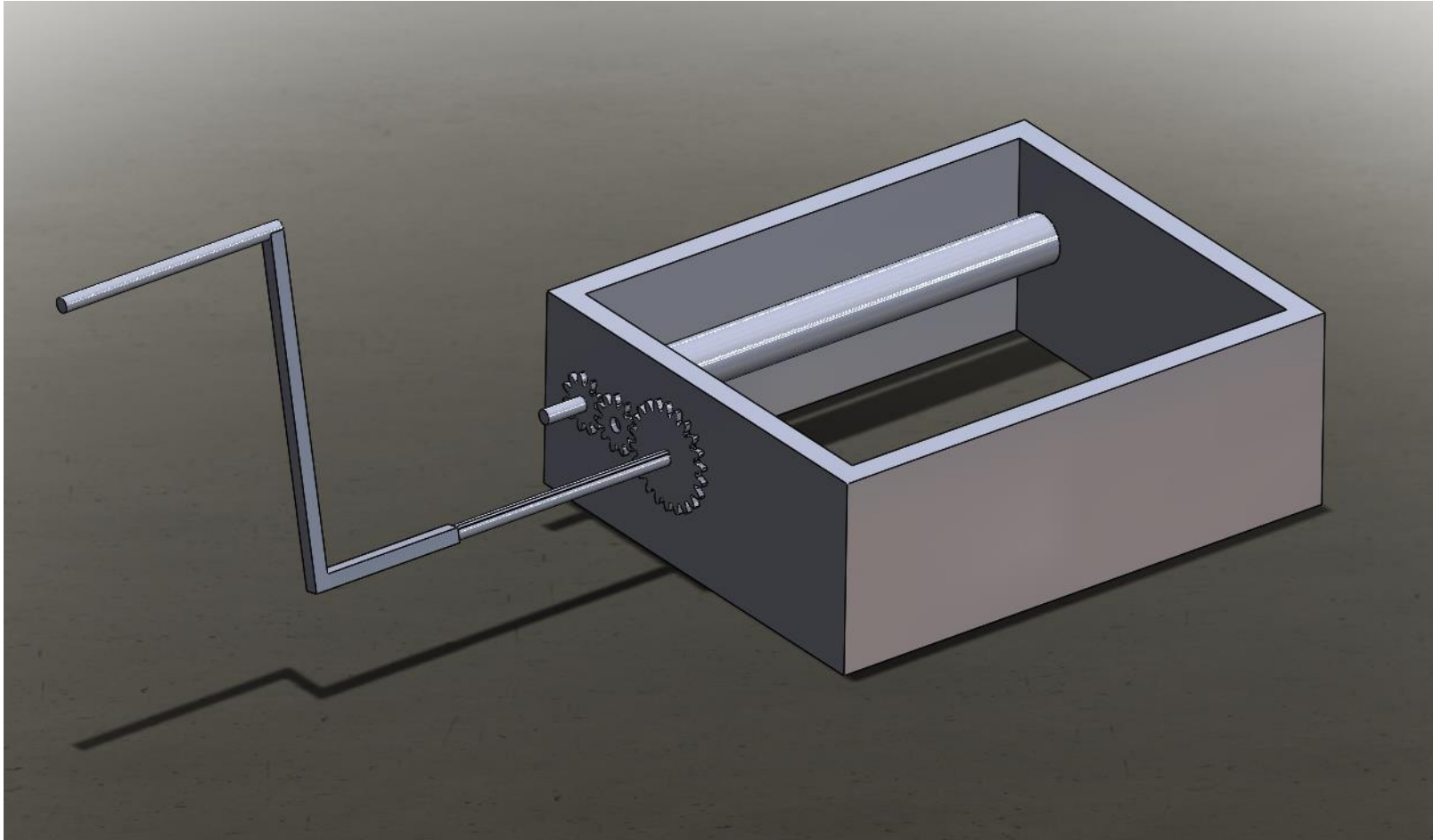
# Overview

- Introduction
- Old SolidWorks of Retrofit System
- New Design Concept
- Parts Overview
- Bill of Materials

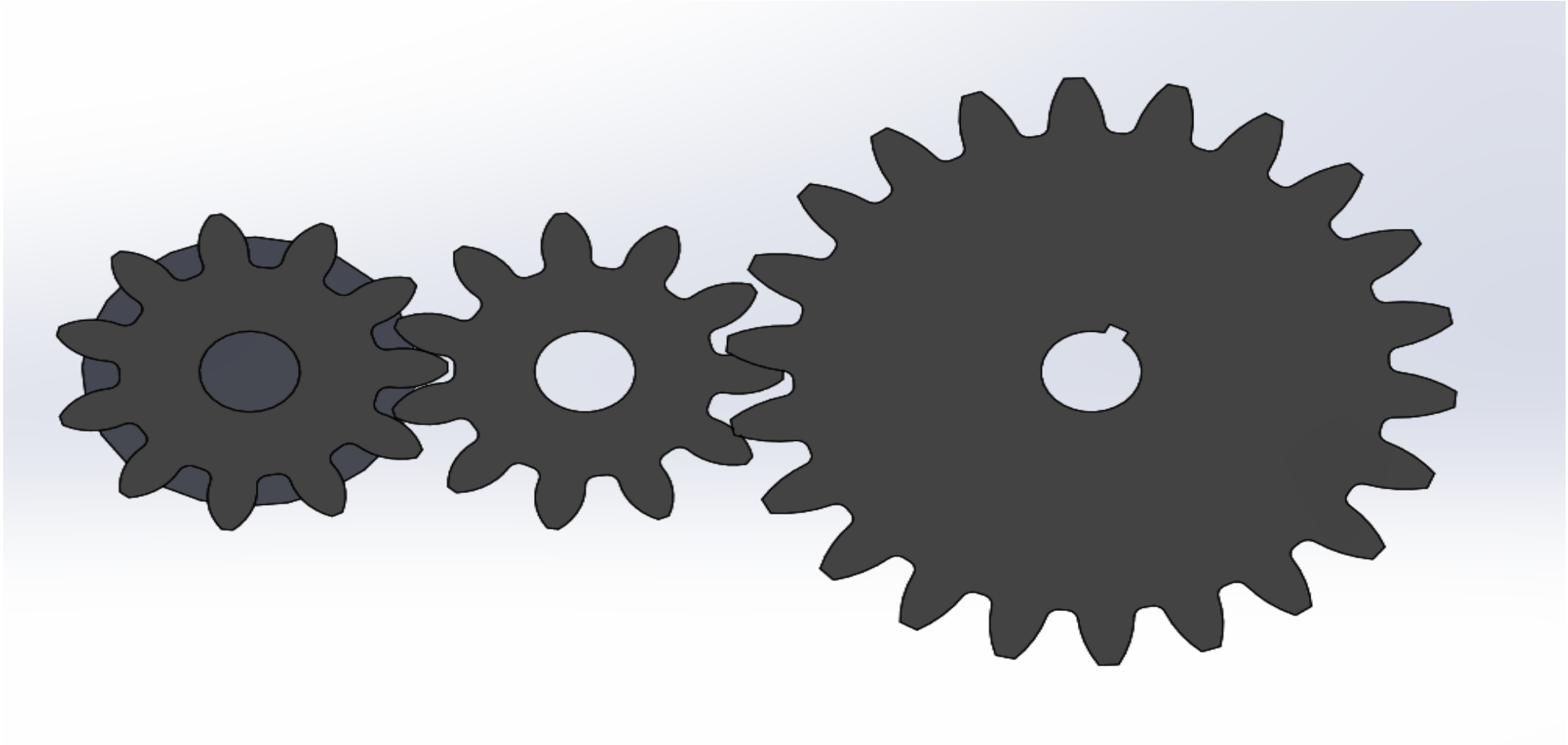
# Introduction

- Group was tasked with retrofitting an electronic paper shredder to be operated manually with a hand crank and operate as efficiently as common paper shredders.
- Multiple hand crank designs were considered, but decided on a final design of attaching hand crank directly to main shaft in shredder mechanism.

# Previous Design Concept/Issues



# Previous Design Concept/Issues Cont.



# New Design Concept

- Handle will be attached directly to main shaft.
- Motor shaft arbor extension will be used to extend shaft outside of system to the hand crank.



# Motor Shaft Arbor Extension

Bore Diameter:  $\frac{1}{2}$ "

Wheel Arbor Size:  $\frac{1}{2}$ "-20

Max Wheel Width:  $1\frac{1}{4}$ "

Flange Diameter:  $1\frac{5}{8}$ "

Overall Length:  $3\frac{1}{2}$ "

Motor Shaft Arbor Extension [2]



# Hand Crank With Revolving Handle

Thread Size: 1/2"-13

Hub Diameter: 1.58"

Overall Length: 7.29"

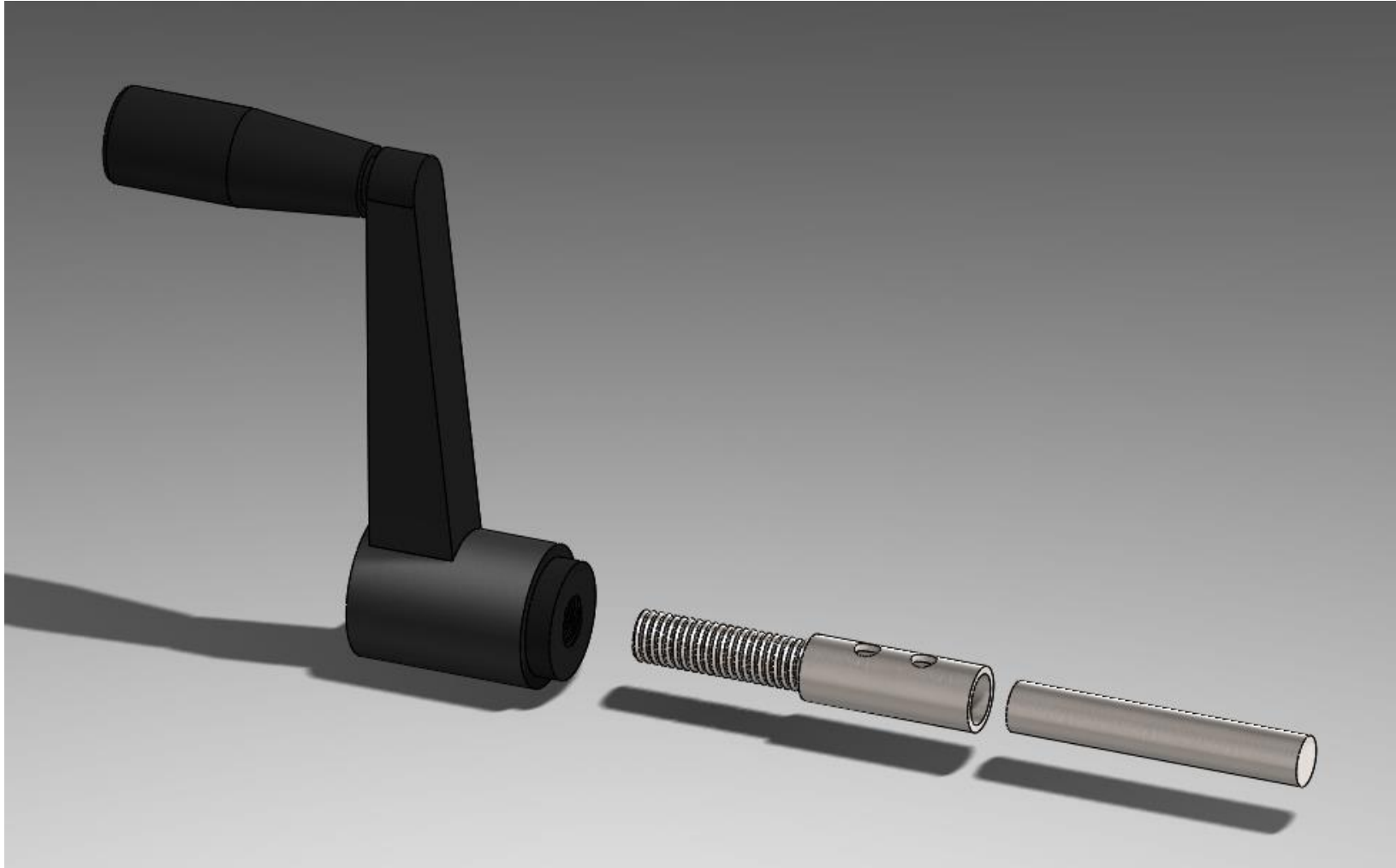
Material: Glass-Fibre Reinforced  
Technopolymer

Crank Handle With Revolving Handle [3]





# Assembly Drawing



# List of Parts and Prices

Parts	Price
AmazonBasics 12-Sheet Cross-Cut Paper, CD, and Credit Card Shredder [3]	\$54.99
1/2" Arbor Attachments for Electric Motors [1]	\$6.06
Crank Handle with Revolving Handle [2]	\$29.21
	Total: \$90.26

# Conclusion

- Previous Design would result in issues due to needing custom gears
- The group decided to work directly on the main shaft doing the most work and attaching a handle directly to the shaft.
- Needed a way of extending shaft outside of housing unit so Handle could be properly attached

# References

- [1] Amazon. *Amazon Basics 12 Sheet Cross Cut Credit Shredder* [Online]. Available: <http://www.amazon.com/AmazonBasics-12-Sheet-Cross-Cut-Credit-Shredder/dp/B005QAQFFS>
- [2] McMaster. *McMaster-Carr* [Online]. Available: <http://www.mcmaster.com>
- [3] MSC Industrial Supply Co. [Online]. Available: <http://www.mscdirect.com>