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## ABE Souvenirs

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## ABE Souvenirs

### Problem Statement

The ABE department at Iowa State University frequently hosts both international and domestic visitors. The challenge we were given was to design three ABE-specific brand souvenirs to give the visitors. The souvenirs should impress the visitors and be clear, attractive, useful, and memorable. These souvenirs are to be crafted out of metal, wood, or plastic and include the skills of all members involved. External help was used for the artistic aspects of the design via personal contacts in the design department. The project was completed over the course of the 2019-2020 academic year. The main stakeholders helped to determine the final designs for each of the souvenirs. The souvenirs included feedback from the voting.

### Disciplines

Bioresource and Agricultural Engineering | Industrial Technology

# IOWA STATE UNIVERSITY

Department of Agricultural and Biosystems Engineering (ABE)

TSM 416 Technology Capstone Project

## ABE Souvenirs

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## 1 PROBLEM STATEMENT

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### Problem Statement

The ABE department at Iowa State University frequently hosts both international and domestic visitors. The challenge we were given was to design three ABE-specific brand souvenirs to give the visitors. The souvenirs should impress the visitors and be clear, attractive, useful, and memorable. These souvenirs are to be crafted out of metal, wood, or plastic and include the skills of all members involved. External help was used for the artistic aspects of the design via personal contacts in the design department. The project was completed over the course of the 2019-2020 academic year. The main stakeholders helped to determine the final designs for each of the souvenirs. The souvenirs included feedback from the voting.

**Business Case Statement** – The ABE department needs department-specific souvenirs to give to visitors to the department.

## 2 MAIN OBJECTIVE

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- **Main Objectives and Specific Objectives**

Department of Agricultural and Biosystems Engineering ([abe@iastate.edu](mailto:abe@iastate.edu)) aims to be a premier team serving society through engineering and technology for agriculture, industry and living systems. ABE welcomes opportunities to discover and improve new technologies for all stakeholders. 1

- Create three unique and interesting souvenirs for the client to give to guests of the department and develop procedures for replicating and batch manufacturing the designs.

**Specific objectives include:**

- Design three different souvenirs at three different price levels.
  - The product must be identifiable to ABE while not infringing on ISU branding.
  - The souvenir must be both functional and reproducible.
  - The souvenirs must be made with prices of \$1, \$5, \$25, and it must fit in carry-on luggage.
- Ensuring that all criteria and constraints are met with the final product.
- **Rationale**
  - After completing this project, the client will have three souvenirs that can be given to visitors to the ABE department at Iowa State University.

### 3 METHODS/APPROACH

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#### A. Methods/Approach

- **Data collection:**
  - To collect data for our products, we utilized Google Forms. We sent out a survey to the department faculty (see Appendix) relating to what people generally look for in souvenirs. Using the information we gathered, we created three prototypes for each souvenir and then sent out a second form asking the participants to vote on our best designs and offer any criticism or input to improve our product.
- **Skills:**
  - Experience gained in metals and plastics classes such as TSM 240 and TSM 340 has been particularly helpful.
  - Each of us also has experience working with CAD software and machinery required to create the souvenirs.
- **Solutions:**
  - We began with brainstorming and drafting designs that we thought would be functional and met the scope and objectives of the project.
  - We followed up by sending a survey to ABE faculty to discern what it is that they would find appealing in a souvenir for the department.
  - After receiving the survey results and compiling them, we were able to utilize the data to draft multiple prototypes for each product.
  - We planned to deliver tangible prototypes with an SOP for use in future manufacturing.
- **Organization:**
  - We met weekly with our team to go over where we were on the project.

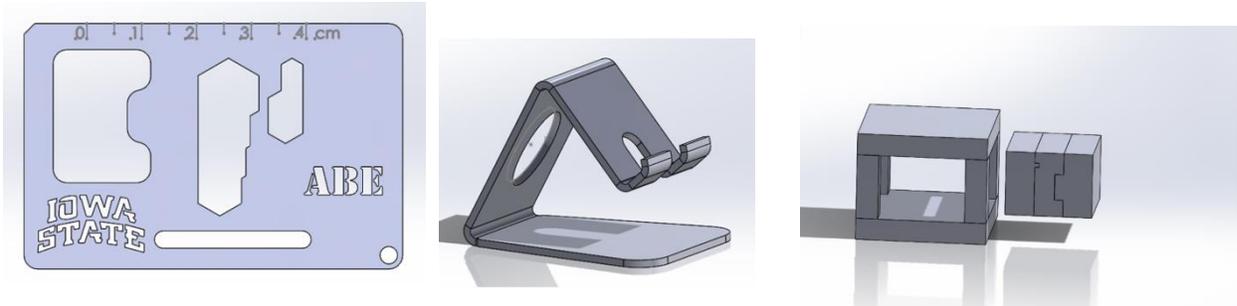
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- Major milestones were our surveys, prototyping, and finalizing our report.
- Our main setback was communication. We compensated by reaching out more often to the client to ensure no communication breakdowns would go unnoticed.

## 4 RESULTS

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### Results/Deliverables



- Our deliverable was the three souvenirs that we designed. These included a credit card tool made from stainless steel, a phone stand made from stainless steel, and a 3D printed puzzle made from the plastic filament.
- These souvenirs were consistent with our project requirements. Based on the cost of materials used, the credit card tool was around \$1 to produce, the phone stand was around \$5, and the 3D puzzle was around \$25.
- The project was completed mostly as planned. Because of the Covid-19 pandemic, we had to finish the final products remotely using help from members of the ABE department

### Recommendations

- Using the equipment in the ABE department and Sukup Hall, these souvenirs can be recreated in the future. The SolidWorks files for our parts are included in the Appendix.
- Manufacturing and improving souvenirs in the future are facilitated via downloadable files included in the report. These files can then be given to students or ABE lab personnel in order to create more souvenirs in the future.
- They could also be implemented in class structure, such as making the plastic puzzle in the plastic manufacturing class and making the card and phone stand in one of the machining classes.

## 5 BROADER OPPORTUNITY STATEMENT

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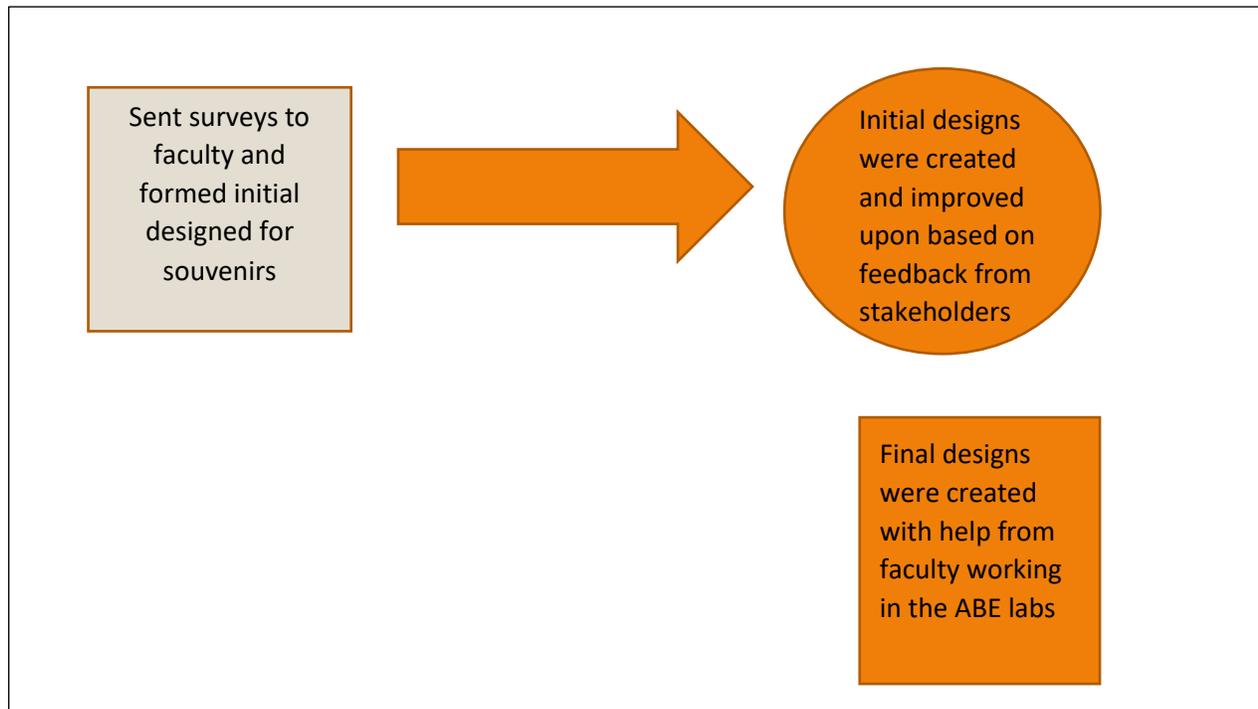
Our products will be able to be replicated and used by future generations within the department.

- To anyone in our department or visiting our department, they will be a representation and keepsake of the ABE department.

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- Our souvenirs will improve the quality of life, as well as build communities between our department and others.
- Some departments do not deliver the same quality of souvenirs. We hope to be an inspiration to them.
- These could be useful for anybody that does not have a souvenir for their department.
- Other departments address the problem by outsourcing their souvenir production.
- Departments should be willing to invest in souvenirs, as it will improve customer loyalty and remind them of the company and its products.

## 6 GRAPHICAL ABSTRACT



## 7 REFERENCES

The faculty and staff of the Agricultural and Biosystems Engineering provided valuable information by completing our surveys.

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