Skeppa - Modular Shoe - Project Charter

Project purpose or justification

The shoe market in today's society is enormous. There is a myriad of shoe types, makes, and models that all encompass a wide range of shoe abilities. With a modular shoe that is able to have outsoles changed on the go, a single pair of shoes can become extremely versatile. We plan to explore sustainable sole materials that hold up well to wear and tear, while still being flexible enough to contour to the human foot.

The ability to have a versatile shoe will allow the consumer to be able to own a single pair of shoes with a wide range of abilities. Other than the various benefits listed above, another key motivation to forming this product would be to experiment with new sustainable/reusable materials, given the state of pollution that the world faces today.

Short term goals would include 3 swappable outsoles of the most used treads based on a quick market survey, as well as 2-3 swappable insoles/tops to show proof of concept. The outsoles will be made from a sustainable/recycled material that passes wear and use tests, and the insoles will feature easily sourced material based on the design. Long term goals include creating a self sustaining company that produces these shoes while also working on R&D for future add-ons. During the year, members of the team will potentially take the Applied Entrepreneurship and Commercialization class through the Simone Center [unless it does not fit into anyone's schedule] as well as hopefully compete on Tiger Tank.

Measurable project objectives and related success criteria

- Manufacturability - **Outsole cure time <24 Hours**
- Comfortable for Consumer - **Average comfort rating of +3.5/5 of 50 subjects**
- Easy to Changeover - Mean swap time taken <**15-30 seconds - 100 tests**
- Long Lifetime - **>3000 uses for each deliverable of Outsole, Insole, Locking Mechanism**
- Low Cost - **Raw material cost <$80 on small sample run** [1 pair of insoles, 3 pairs of outsoles]

High level requirements - Easily Manufactured, Comfortable for Consumer, Easy to use, Long lifetime, Low cost

Assumptions and Constraints - US sizing conventions, <$1000 budget, responsibly sourced materials, using sustainable materials

Summary budget

- 1"x6"x36" Bar of 6061 Al - $113.83 from McMaster Carr, split into 3 blocks for 3 different molds. May determine that injection molding is not needed for this specific project, but will be utilized upon increased production
- <$100 for responsibly sourced, cloth materials based on preliminary research on Offset Warehouse, Organic Cotton Plus, and Silk Road Textiles
- Remainder of the budget will most likely go towards material selection experiments and testing

Stakeholder list - Shoe manufacturers, RIT MSD, minimalists, & people on the go

Resources Requirements

- **Faculty** - Any with an advanced knowledge of polymers, probably in the Chemistry Department. Rob Kraynik for machining out a injection mold.
- **Environment** - Material Science Lab [depending on material processing manufacturing]
- **Equipment** - CNC Mill, CNC Router, Vacuum pump
- **Materials** - Leather, Fabric, plastic, raw/recyclable materials, recyclable polymer