TRIO

The Auto-Deploying Tripod

Greg Caso | Kevin Cruz | Davita Frankel-Bonacci | Clara Midgley | Rob Ritchie

THE PROBLEM

Existing Tripods

Long set-up time

Cumbersome to adjust

Difficult setup can lead to a moment vanishing

Market Opportunity

The consumer photo industry is worth about $80 billion in 2015 and is growing at approximately 5% per year. The demand for accessories that increase efficiencies will grow with the market. Trio is well positioned to be a game changer in the tripod market.

THE PRODUCT

Trio: The Auto-Deploying Tripod

Trio will solve the inconvenience of difficult tripod setup. Trio is a compact, lightweight tripod with automatically deploying legs. A release mechanism located at the top of Trio controls the extension of the legs through internal mechanical systems. Upon release, the legs automatically extend under the force of gravity in a smooth and stable manner until they each reach the ground. On uneven surfaces, certain legs will extend further than others allowing the camera to remain level without requiring the user to individually extend each leg to its appropriate length. To retract the legs, the user holds the release mechanism and pushes Trio down to its compact form.

Technology

- Innovation

Tripods today utilize a series of friction locks that require the user to unlock each leg segment, pull it out, and then re-lock it. When you add up the steps for this process – you reach 19 steps. Trio will be able to be setup in 3 steps, requiring about 10 times less set up time overall. Trio's locking system is comprised of spring loaded brake pads that connect the leg segments.

- Feasibility

Prototypes for two distinct leg locking mechanisms were evaluated in December. Aspects from both have been combined to create a superior design that is currently under testing.

THE MARKET

Target Audience

Trio aims to be an everyday consumer product that supports cameras as large as typical DSLRs and their accessories. We are aiming to fit in between the expensive $400 professional models and cheap $30 entry level models. Trio aims to meet the typical specifications of this market segment while standing out from the crowd with its innovative setup system. As was mentioned in an earlier slide, the consumer photo industry is growing, and the market for camera accessories will grow with it, presenting great opportunities for an innovative new product.

Competition

Manfrotto, a high end tripod manufacturer, produces the Neotec design which also eliminated the traditional locking mechanism. The patent pending design keeps the legs locked at each section, unless pulled by the user, or pushed closed with the activation of the release button. It costs $470 and is largely praised by customers in reviews, although the legs do have slipping issues. We feel that our product has an advantage over this one in that Trio unites the locking mechanism for all 3 legs, allowing them to be controlled simultaneously. Our target market will also have a wider reach than the $470 Neotec.

Market Research

We distributed a survey to Penn students and found that the most important features of a tripod are quick setup/take down, sturdiness, and compactness. When asked what tripod improvement would be valuable, survey respondents' most common answer was to decrease set up/take down time. The responses indicated that it takes most photographers about four minutes to set up their tripod.

Through product research, we have cataloged by brand, price, size, weight, material, and tripod features in order to understand the existing designs. These factors were taken into account when aiming to design a quality mid-level consumer product. With set up convenience at the forefront, Trio will ensure stability for typical DSLR cameras and accessories.

DEVELOPMENT PLAN

Timeline

Trio is currently in its second prototype phase. We are working to combine two original locking mechanism prototypes into one that takes the advantages from both to make an overall superior product. Trio is a MEAM Senior Design Project, so all technical development will be completed by the end of April, when the final design will be presented for MEAM Senior Design. All 5 members will be completing their Senior years at Penn, although one will be returning in the fall for a Masters program. There is interest on the team in continuing the project after graduation.

Development Funds

For the next 3 months, the team will be focusing on the technical development of Trio. We have received funding from the MEAM Department and the Berkman Fund for Undergraduate Innovation at Penn Engineering, and we are waiting to receive funding from Ricoh Imaging. We anticipate that this funding will cover the technological development of Trio. The next step for Trio will be business development and patenting, which will be pursued over the summer. We anticipate needing funding assistance in this area to help further our project to make it a reality.

Market Cost of Product

Determining the ultimate unit cost of Trio is a somewhat difficult task. Current design work is limited by the resources available at Penn and the material availability for small run prototyping. We intend to perform a manufacturability study once the final design is completed to determine what the unit cost would be given the current design and material composition, but our ultimate goal is to be within the mid-level tripod category. Ideally, this would put the unit cost between $75 and $150.

TEAM TRIO

Greg Caso

- Bio: MEAM ’15, Penn Men’s Lacrosse
- Role: Strength of Materials, 3D Design and Prototyping

Kevin Cruz

- Bio: MEAM ‘15
- Role: Strength of Materials, Product Research

Davita Frankel-Bonacci

- Bio: MEAM ’15, Chi Omega
- Role: Materials Selection, 3D Design and Prototyping

Clara Midgley

- Bio: MEAM ’15, Penn Women’s Soccer
- Role: Rapid Prototyping, Design

Rob Ritchie

- Bio: MEAM ’15, Penn Band, EDAB
- Role: Manufacturing, Design, Materials Selection, Project Management

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THANK YOU

Greg Caso | Kevin Cruz | Davita Frankel-Bonacci | Clara Midgley | Rob Ritchie