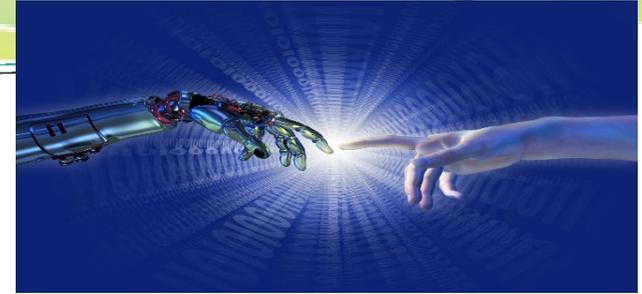


Camp BizSmart™ Product Innovation Case 2019



Magic Hand Eksoskeleton



Problem Statement:

We are currently in the very early stages of a revolution in human augmentation, or as The Wall Street Journal called it; *“Iron Man”* technology. Companies that use robotics to improve human performance are attracting enormous attention. Exoskeletons – wearable robots that can reduce workplace injuries, reduce manufacturing costs and improve human endurance and increase strength – are one such technology. An eksoskeleton is an external covering of the body that provides support and protection.

Exoskeletons have been successfully demonstrated as legs for walking, torso support for lifting, and shoulder support for working overhead, among others. Ekso Bionics has been a pioneer in many of these applications and develops technology to enhance human mobility, strength, and endurance.. Interestingly, exoskeletons that augment the **human hand** have not yet been successfully developed or commercialized. While there are some basic, early stage hand devices in the market, none of these live up to the promise of improving quality of life on a daily basis.

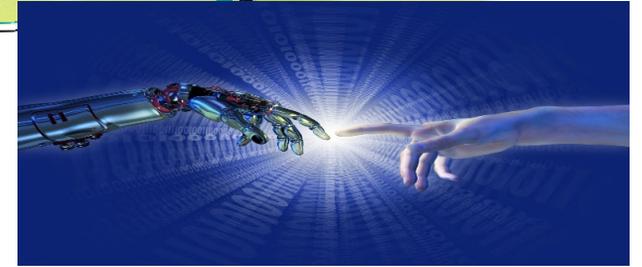
Design Challenge: The team will develop an **exoskeleton device to provide assistance for the human hand**. The target customer for the **Magic Hand** has moderate to severe weakness in one or both hands that prevents them from performing Activities of Daily Living (ADL). Examples of typical ADLs include : Brushing hair or teeth, Opening jars or containers, or eating with a fork or spoon. A successful product will be perceived by the user to dramatically improve the quality of life on a daily basis.

Objectives: To be useful with ADLs, the **Magic Hand** will augment the wearer’s strength and dexterity, and will need to determine what the wearer’s intent is (what are they trying to do). It should track the user experience and give them data to motivate improvement and augment their ability to function normally on a basis.

Product Design: The exoskeleton **Magic Hand** needs to meet the following requirements: Low profile. Large mechanical exoskeletons are not practical for ADL use. Easy to don (put on) and doff (take off) **without assistance**. Comfortable enough to wear all day. Weighs less than 2lbs, Battery powered, with a minimum battery life of 4 hours and easy battery replacement. Wirelessly monitored. Priced less than \$4,900 if the user pays for it themselves, or less than \$10,000 if it will be reimbursed by insurance or Medicare.

Customers: Potential customers for the **exoskeleton assistive Magic Hand device** include both adults and children. For adults causes of hand weakness include: age related loss of strength, varying types of arthritis, multiple sclerosis, and stroke. For children common causes include: muscular dystrophy and cerebral palsy among others.

Outcomes: 1. Demonstrate what an “experience will be like as if you are the customer”. 2. Identify a specific customer market that would gain the most traction and viability. 3. A marketing plan which describes product features, advantages and benefits (FAB’s). 4. Specific marketing tactics to drive sales.



Business Plan Requirements:

- A customer based product design which allows the user easy control of the eksoskeleton device for hand ADL's
- A basic physical prototype to demonstrate look, fit, feel and visual appeal and user benefit
- A product name, a product logo and packaging design
- Tell a real-life story to illustrate customer use & provide actual interview quotes to show you have listened to the voice of the customer (VOC)
- Competitive analysis: features, benefits, and advantages and how your product is better than the competition
- Pricing plan including cost of goods (COGs) and strategy for reimbursement by private insurance and Medicare
- How your **Magic Hand Exoskeleton Assistive Device** will generate revenue
- The Magic Hand **MUST** have a revenue stream from data collection. In addition to improving the daily life of the wearer, the device should also provide feedback on the wearer's condition. To do this, the eksoskeleton device for the hand, will collect and send data to the cloud for analysis and visualization. Information about how the patient is using the device and how their condition is progressing will be accessible to the wearer, their family, caregivers, and physicians
- A marketing and sales promotion strategy
- Name companies that would make strong partners and describe how they will add value

Constraints:

- The device will weigh no more than two (2) pounds, and have battery life of at least four (4) hours
- The product will meet all FDA guidelines and requirements for exoskeletal assistive devices
- Be sure that your product design matches the use and customer for whom it is intended

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A message from Jack Peurach,
President, Chief Executive Officer and Director, Ekso Bionics.

Hi Camp BizSmart World Shakers: I am so delighted that Ekso Bionics and I get to play a role in your entrepreneurial journey! Being an entrepreneur is *about the journey*.

One of our innovative products is called the **EksoVest** used by Ford auto workers. Imagine, making cars and having to lift a watermelon over your head 4,600 times a day. Workers, who take care of installations under vehicles, have to keep their arms raised for most of the day, and it can take a serious toll on muscles and backs.

That's where the Ekso Vest comes in. The spring-loaded device is adjusted to each worker and helps with the strain, effectively making their arms weigh nothing when they're raised horizontally or lifting equipment over their head. Ford employees, who use the device to take a bit of the strain off their demanding jobs love it!

Imagine creating a "**Magic Hand**" to allow individuals who lack the flexibility or strength in one or both hands, the ability to do all of the things they need to do every day. This is my challenge to you and your team & I can't wait to see what you will come up with.

Dream big, imagine and make a new future for people with physically compromised hands, to give them back the ability to move with ease, do everyday tasks we all take for granted and regain their independence. I bet there is someone in your life who this new invention your team will design can help.

Meet Jack:

Jack became interested in robotics early in his career and spent a number of years developing advanced robotics for all sorts of industrial applications. During this period of time, Jack's mother suffered from progressive multiple sclerosis, a disease which eliminated her mobility and left her confined to a wheel chair. Watching this happen influenced Jack to find better solutions.

In 2004, he was lucky enough to join a group of three others who were experts in human augmentation through wearable robotics, and they formed Ekso Bionics.

Jack eventually became CEO of Ekso Bionics in 2018.

See recent news coverage

<https://finance.yahoo.com/video/ekso-bionics-looks-asia-194908110.html>