

# My STEM Career

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Robotics in the  
Medical Field

Name: Paridhi Dhakal  
Team: 4568X Expiration Date  
Location: Apex, NC

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# Introduction

Our team 4568x has been doing Vex IQ Robotics for the last two years.

Why is this important to make a robot and how it is related to the medical field? There are a lot recent innovations in the medical field using robotics. A company named “**Intuitive**” has brought a robot assisted bronchoscopy used for lung biopsies. The robot In this presentation we will be taking a look at the design process of a robot-assisted bronchoscopy called “Ion” by Intuitive “Ion” uses a catheter which has a fiber-optic shape sensor which gives exact location and precise information through the biopsy. We will also be taking a look at the design process for other medical companies such as Starfish Medical.

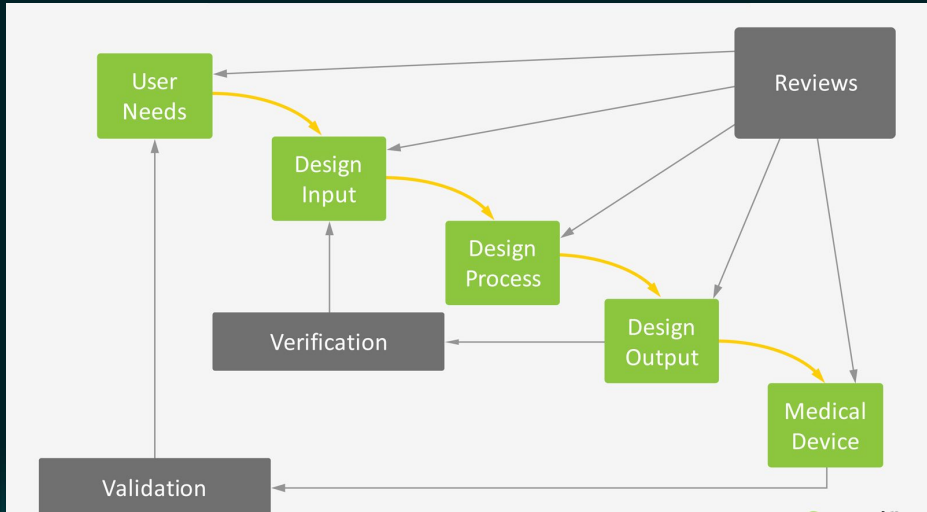
We will compare the engineering design process of “Ion” with the design process of our team’s robot.

The field of medicine has a lot to do with robotics even though it may not seem like it. I chose this topic for my Career Readiness challenge because I have always been intrigued and fascinated in the field of medicine. Joining VEX IQ made me realize that technology and robotics are vital for this field because healthcare and medicine requires a lot of problem-solving and thinking. We will need technology now, more than ever especially in healthcare as we find new and unknown diseases, drugs, disabilities, etc.

An abstract graphic in the top right corner consisting of a grid of small dots and lines, creating a sense of depth and movement in shades of teal and blue.

# Design Process

# Design Process



Intuitive Design Process



# Design Process - Similarities and Differences

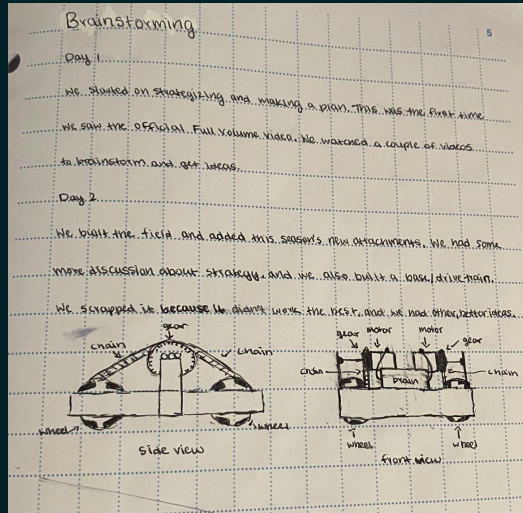
The engineering design process for our team is quite the opposite of the design process of Intuitive, but similar in some aspects. On the design process for our team, what start off by identifying the problem, then collecting information. Intuitive however, starts off by identifying what their user wants, they then put in input for their design.

The next part of our design process is brainstorming ideas and developing a model from those ideas. Intuitive starts designing their model. This is where our design process becomes similar.

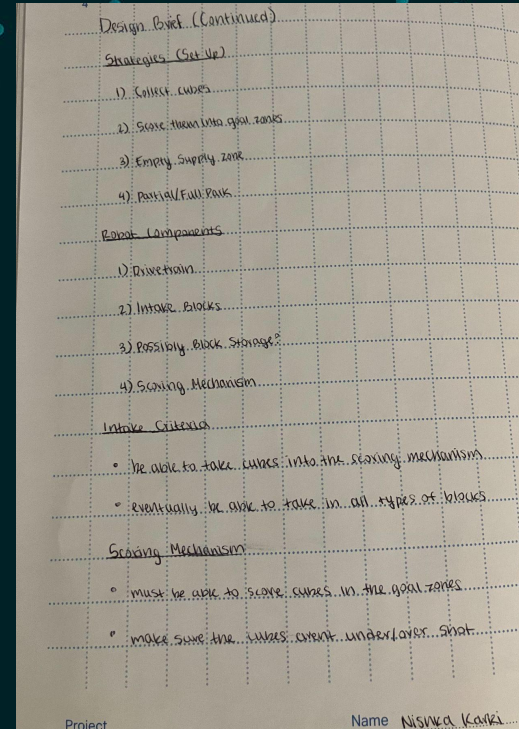
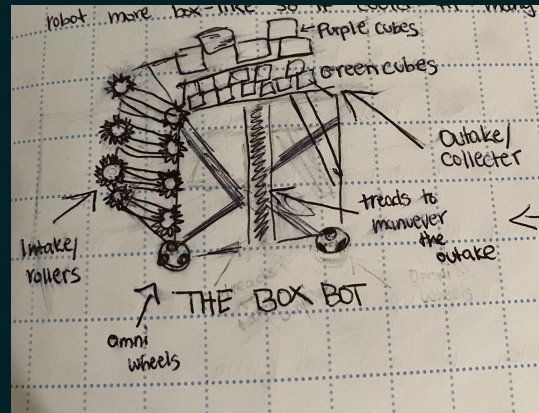
The penultimate part of our team's design process is testing the model out. Intuitives' penultimate step is quite divergent. They put out their design output and get validation from FDA review teams before finally releasing their medical device.

Finally, our team looks at our final product and improves and minor issues that we come across. Intuitive releases their final product after reviewing it with the FDA.

# Images

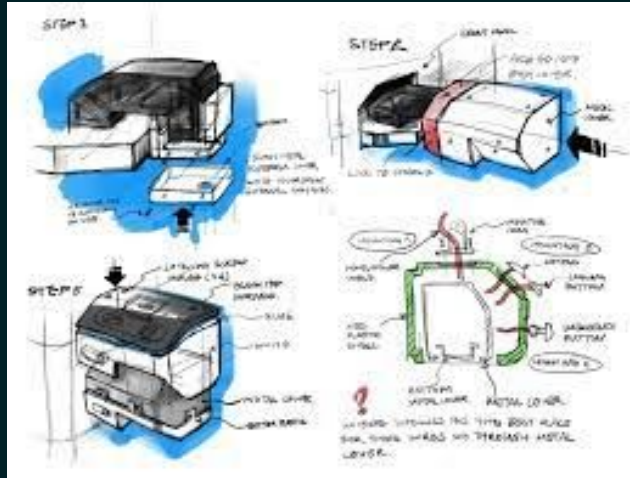


How our team brainstorms and starts off with a prototype.

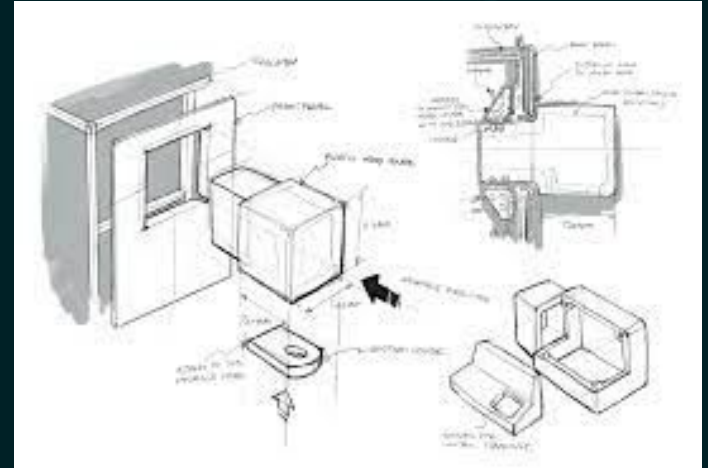


Our sketches and plans assist us with creating our final product

# Images



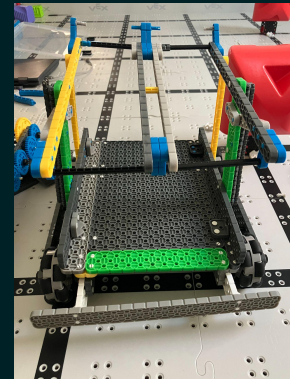
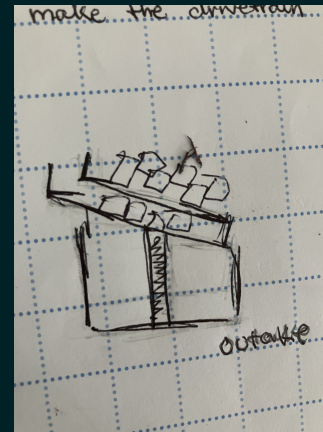
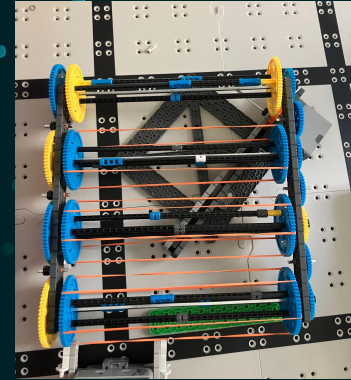
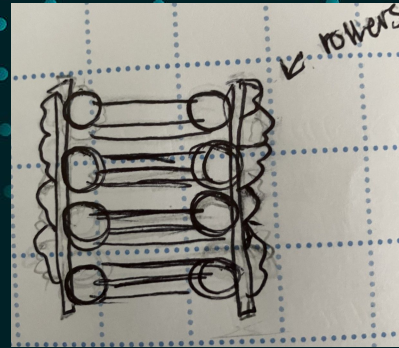
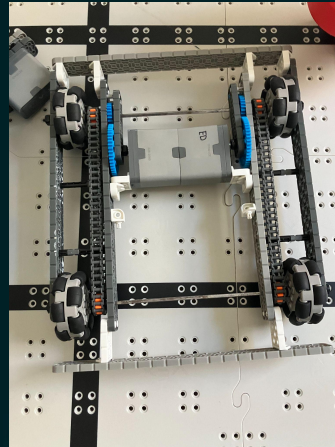
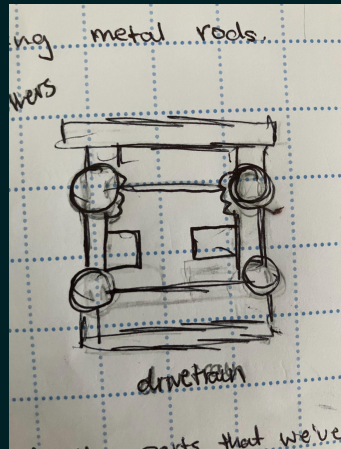
How medical device companies (such as Starfish Medical and Intuitive) sketch and brainstorm their ideas.





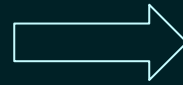
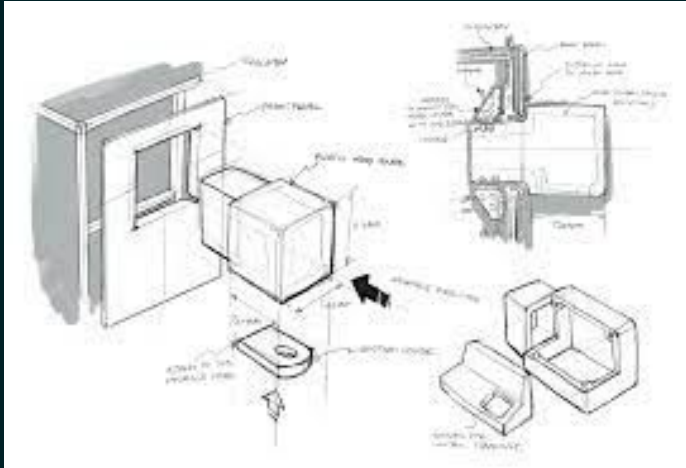
# Images

How Expiration Date produces their final product from their design process:



# Images

How Starfish Medical produces their product from their design process:



# How can VEX IQ prepare students for future careers?

Vex IQ is a wonderful way to give students interested in STEM careers to expand their knowledge in the world of technology. It can be beneficial for many careers such as software engineers, doctors, architects, etc.

My dream is to go to medical school and become a doctor. Vex IQ has given me a great opportunity to learn important skills such as teamwork, persistence, determination, and critical thinking. All of these skills are vital for our future career.

VEX IQ can help you pursue a career in medicine because it gives you a great head start on learning programming and using computer software. This can be very beneficial as doctors need to learn how to record data and how to interpret medical images such as X-rays and MRI scans. Doctors that know how to code will also be better at knowing how to analyze and handle data.

For a handful of careers, VEXIQ is a sensational startup to get you ready for your future.

## Sources

**Thank you!**

[How Ion Works | Robotic-Assisted Bronchoscopy | Intuitive](#)

[The Device Development Process | FDA.](#)

[StarFish Medical](#)

Team 4568X Engineering Notebook One