

# zipline

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Drone  
delivery to  
save lives.

STEM Squad

Robotics:

#6441G

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# What is Zipline?

Zipline is a drone delivery company that started out to assist people in Rwanda in 2016. Zipline uses launchers in specific locations near hospitals to send important medical supplies to save lives.



This technology is lifesaving because unlike cars or motor vehicles, Zipline's large drones can fly in the sky at speeds of 70 MPH. Plus, Zipline is made to be run on only electricity and reduces carbon emissions from cars by 97% but is still more efficient than electric vehicles because it does not need to stop for other vehicles to pass.

# Why Zipline

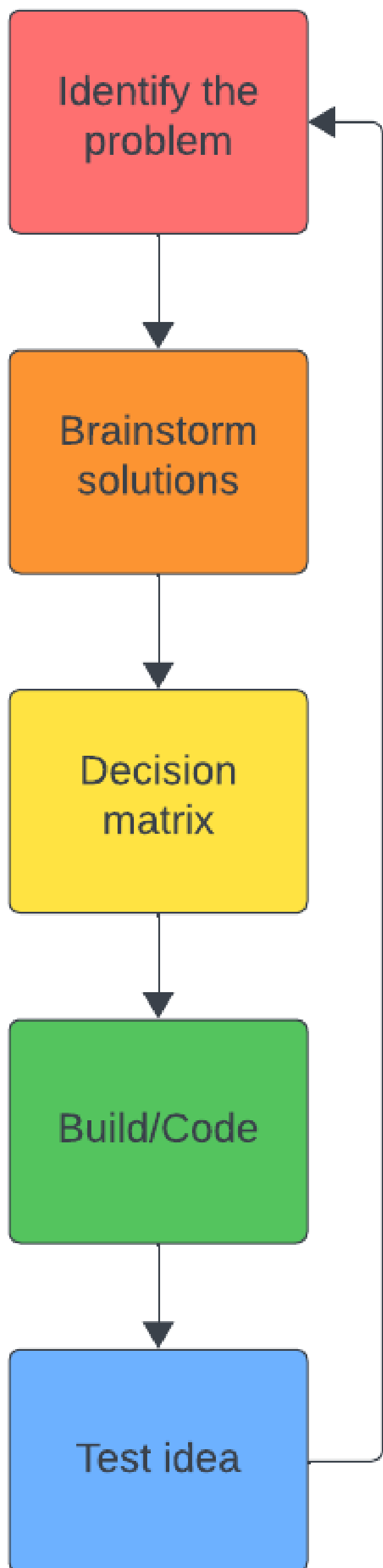


We chose Zipline because their infrastructure is going to help shape the future of delivery vehicles and transportation of goods. Every time we go outside to travel to school or work or to get groceries, we see many delivery vehicles. It is inefficient for a two-ton vehicle to transport dinner that only weighs a few pounds.

Besides the issue of those cars causing traffic, they are also producing CO2 that is polluting the air. However, drones fly overhead, so there would not be any traffic from them. Plus, Zipline drones are electric and therefore emit fewer polluting gases. The future of home deliveries and life-saving blood and vaccine deliveries to underprivileged areas is going to save many lives and allow for many more inventions and thoughts to be brought to life.



# The Engineering Design Process



Our design process

Zipline is very transparent on their fails and design process in interviews. Zipline often used alternatives before switching to the real thing. When the drone comes back from its trip, a bar comes up on the ground and hooks on to it with the back part. Before, they used a fishing hook and a mattress to retrieve the drone. The fishing hook would latch on and slow it down, causing it to fall on the inflatable mattress. However, the engineers realized that this system was slow and not efficient as someone would have to go on the mattress to get the drone which would not allow for another drone to land. When we use the engineering design process, our robotics team tends to test one, two, options as there just usually are not that many options for our robot when it comes to minor modifications. Zipline uses prototypes and modifies their drones with different items and puts them in the real world to see how it would work. If it does not work well, they change it.

# Compare and Contrast

The core principles of the engineering design process are the same. Those being identify the problem, research, brainstorm, and prototype solutions, decide on a solution, build solution, test solution, and repeat. However, the way we accomplish this is slightly different to those of the engineers at Zipline as we are in a different area of engineering than they are. Zipline is building autonomous drones for delivery services while this year's robot for the VEX IQ challenge is to put cubes into scoring zones. Therefore, our solutions and ways to get the solution are going to be slightly different but still hold the same core ideas.

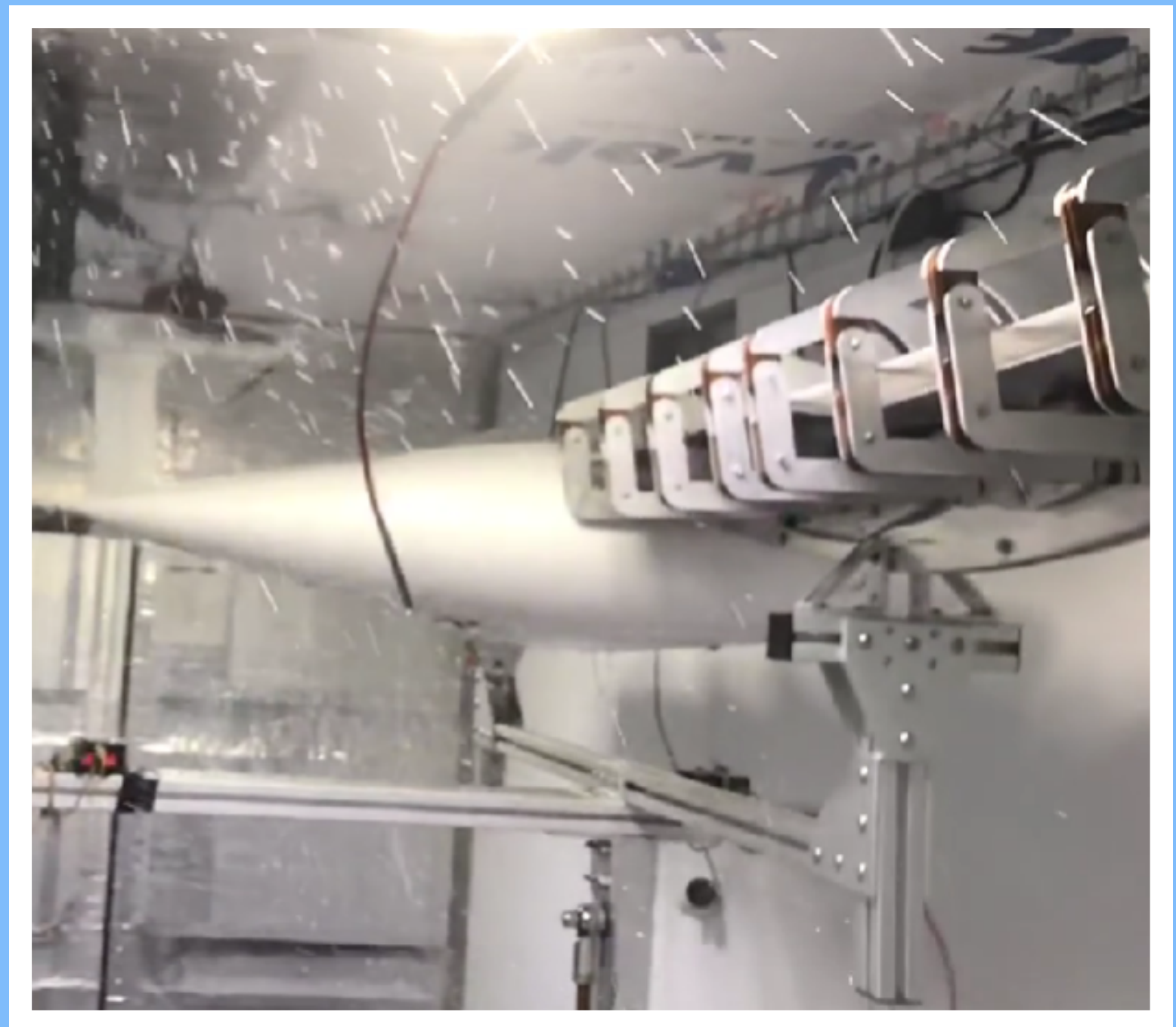
## Same

- Uses a system to document changes
- Research already existing ideas
- Test ideas in the world in which they will be used
- Use tools to decide on the right solution

## Different

- We do not use prototypes as often
- We have a different system of recording the process in the notebook
- Zipline is using AI and therefore needs a different type of coding for that

# Prepared for a Future Career



When we were first learning about Zipline, we were surprised to see how shockingly similar the engineering design process is across all different STEM careers, including those that do not use engineering. In fact, almost all careers use some form of the process, even students! If people have a problem, they will find a way to solve it and that goes for everything in life. Many times, before there have been problems that we could not solve. And so, we researched and thought of solutions and decided on the one that will work. Then we implemented it and tested it. And if it did not work, we tried it again. Because that is all the engineering design process is: If at first you do not succeed, try again.

# Citations

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