# Byte 21549F

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## An Introduction To Tesla And Why We Chose Them?

During this project, we demonstrate how engineers at Tesla are developing their design everyday and their ingenious design process and how they are slowly becoming one of the most successful companies on Earth and compare to the qualities, and method of our VEX team and how we can further develop those qualities through Tesla's techniques. The reason we chose Tesla is because we decided to implement the 2 qualities that make Tesla who they are: success and enjoyment.



Tesla is changing the future of electric car
- Their technology in and research on comfortable, long mileage electric cars are advancing every day
- Their self-driving system is far more far advanced than any other company.
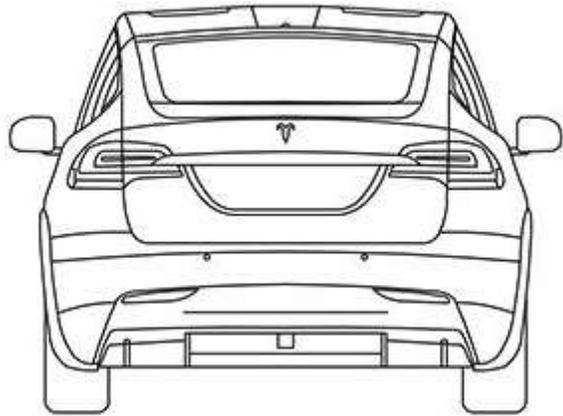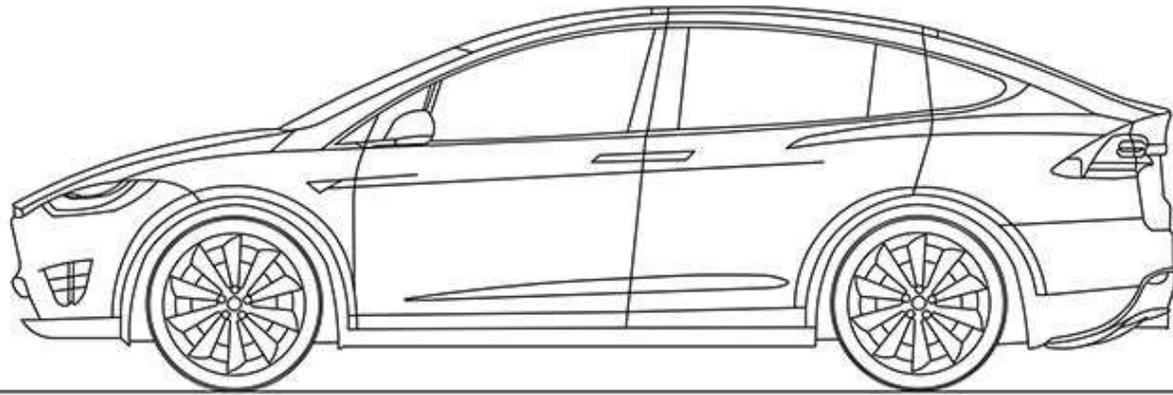
## How does Tesla design their vehicles?

As well as many other large manufacturing companies, Tesla uses a wide range of methods when designing a vehicle. They go through these essential steps:
- Understand
- Explore
- Define
- Ideate
- Test

# Understand And Explore

Tesla finds the aim of their next vehicle. Using the Tesla Cyber truck as an example, their aim was to make a modernised truck that was targeted at a younger audience. They understood that they needed to make the design sleek to appeal to that younger audience while still carrying out the properties of a truck, such as having a large boot space. Tesla used CAD (Computer-Aided Design) to explore different designs. And now they have the current design used today.

At Byte, we understood this year's VEX IQ competition, and decided to split the competition into 4 parts: Purple Dispenser, Yellow Dispenser, Blue Dispenser and Shooting zone. We understood that each dispenser had a different amount of points that could be gained and different speeds of releasing the discs. We understood that we had to have 5 mechanisms, each for one part of the competition as well as having a Drive Base to move around. We also used CAD to design

# Define And Ideate

Tesla defines the issue. When making the Cybertruck, they saw the issue with modern trucks looking old, and the point of having a electric car with futuristic abilities is to look Modern, so Tesla decided to test multiple designs. They went through a curvaceous design similar to the Tesla Model X or and aerodynamic design similar to the Tesla Roadster or Tesla Model S, but however decided to go with a sharp sleek design, which is looks fabulous, is aerodynamic for a truck and is modern/futuristic.

When making out bot, we defined each of the mechanisms. For the purple dispenser, we needed a circular disc of rubber bands that could spin at a fast rate. For the blue dispenser, we needed to have a mechanism that could lift from the back of the dispenser. For the yellow dispenser, we needed something that could push from the opposing side. We then had to think and how we could match the dispenser with the same mechanism because we had 1 too many motors and settled on using the same motor for blue and yellow and add this to our drivebase.

# Test

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| Tesla always tests their design, no matter how perfect they think it was. When making the cyber truck, they found 2 major flaws. They had intended that the Cybertruck would have bulletproof glass window, however when testing, it showed that this was not the case and the glass cracked. If Tesla had not tested this then they would be lying to their customers saying it was. So it is always best to test! | The major advantage of VEX IQ is that you are always testing. Parts are easy to fix so it's a good way to introduce VEX to a new audience. When testing our bot, we found that the space between our drivebase and our shooter was too small and was heavily limiting our ability to shoot the discs or even move around with the bot. We realised we had to create space and at the time we were using 2 long beams to hold the shooters gear upright. We realised that if we shortened the height of the beams, we would create space and improve our bot. Testing has helped us out! |

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