In the case of an environmental or man-made disaster, humans may not be able to enter the area, because of exposure to chemicals. This robot is able to enter these area and complete recovery tasks with its arm, claw and remote camera system. If the need for a situation would be different, a new mechanism could be placed where the claw is. This means that one robot and different grabbing mechanisms are needed.

The robot is made of aluminum. This makes it lighter weight meaning less electricity is needed to make it run. Aluminum does not rust like steel making the frame last longer as well.

The mecanum wheels allow the robot to have more traction. This allows less energy to be used to move instead of using lots of energy to try to start moving. The mecanum wheels also give the robot the ability to move side to side. This saves electricity because with the mecanum’s you can move two feet to the left, but otherwise you have to drive forward, turn and back up to be two feet to the left.

The electricity comes from two batteries located on the front of the robot. Batteries were chosen, because they are the most constant and reliable source of power. The batteries could be charged using green energy to make the robot more sustainable.

The robot contains some plastic parts: gears, motor housings, and the inside of the wheels. These could be made out of biodegradable plastic so if the robot got stuck it would slowly degrade if it was in a humid environment.

Economy is used in this design, because very few pieces of metal are needed to build this robot. It contains 25 pieces of metal in everything but the mechanism. The claw has six main pieces of metal. The entire robot can be disassembled quickly because it is held together with nuts and bolts meaning a broken part can be replaced quickly. The base of the robot contains covers that keep the wheels and cortex safe from falling debris.

Autodesk Inventor helped with the design of this robot in many ways. Autodesk, and Vex both have the part files for every part in the vex system. Because of this, no parts had to be created; they only had to be constrained together in assemblies. Smaller assemblies like the claw and wheel sides were created and then placed the final design assembly. These assemblies can be made flexible, so parts can move in them, but it is still an assembly. A limit flush constraint was used on the elevator on the arm. This allows the elevator to go in and out, but within the limits of the secondary elevator piece. This robot is very close to the robot used in Sack Attack this year. It has many of the same components, so the assemblies of one could be put on the other.

By modeling the design first, before building less scrap would be produced from trial and error cutting of parts. It also saves paying people to build prototypes to test them. The center of gravity could be tested with Inventor proving that it would always be over the base of the robot under normal circumstances. Overall using Inventor was a good experience when designing this robot.