Step by Step Process

Part 1: PREPARING THE CONNECTION

1. Using a soldering Iron set to 350deg. Celsius, solder some wires to the output pin of the components.
2. Solder some wires to the SR04 pins: VCC, GND, Trig, and Echo. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
3. Solder some wires to the GPS Module pins: VCC, GND, TX, and RX. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
4. Solder some wires to the GSM Module pins: VCC, GND, TX, and RX. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
5. Solder some wires to the IR Distance Sensor pins: VCC, GND, En, and Out. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
6. Solder some wires to the MPU6050 pins: VCC, GND, SDA, and SCL. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
7. Solder some wires to the Start Button.
8. Solder some wires to the LED indicator.
9. Solder some wires to the L298N Motor Driver (for the Propeller) pins: +12V, +5V, GND, EnA, EnB, In1, In2, In3 and In4. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
10. Solder some wires to the L298N Motor Driver (for the Conveyor Motor) pins: +12V, +5V, GND, EnA, In1 and In2. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
11. Solder some wires to the Servo Motor pins: VCC, GND, and Sig. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
12. Solder some wires to the Boost Converter pins: IN-, IN+, OUT- and OUT+. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.
13. Solder some wires to the Battery connector. Add some shrinkable tubes or kapton tape to prevent pins from shorting with other components.

Part 2: PLACING THE COMPONENTS

1. Place the Arduino Mega at the center of the box, securing it with a hot glue underneath its PCB.
2. Place the other components in the Electronic Box in the same manner as the Arduino Mega such as the GSM Module, GPS Module, MPU6050, and the two Motor Drivers.

Part 3: CONNECTING TO THE ARDUINO.

1. You may connect to the bottom side of the Arduino Mega’s PCB where the pins are soldered or you may install a male pin header for your connections.
2. Connect the SR04 Ultrasonic Distance Sensor. Cut the wires to the appropriate length, in a way that nothing will snap when opened. Connect the VCC to 5V of Arduino, GND to GND, Trig to pin3, and Echo to pin2.
3. Then connect the GPS Module to the Arduino. Connect the VCC to 5V of Arduino, GND to GND, TX to Pin19, and RX to Pin18.
4. Then connect the GSM Module to the Arduino. Connect the VCC to 5V of Arduino, GND to GND, TX to Pin10, and RX to Pin11.
5. Then connect the IR Distance Sensor Module to the Arduino. Connect the VCC to 5V of Arduino, GND to GND, En to Pin22, and Out to Pin23.
6. Then connect the MPU6050 Module to the Arduino. Connect the VCC to 5V of Arduino, GND to GND, SDA to SDA(Pin20), and SCL to SCL(Pin21).
7. Then connect the LED indicator to Pin A7 in a common anode configuration with 220Ohm current limiting resistor.
8. Then connect the start button to Pin A8 in an active-low configuration with a 10K Ohm external pull-up resistor.
9. Connect the Propeller motors to the first L298N Motor Driver.
10. Connect the first L298N Motor Driver for the propeller motors to the Arduino. 5V to 5V of the Arduino, GND to GND, +12V to Vin, and the control pins, EnA to Pin6, EnB to Pin7, In1 to Pin51, In2 to Pin53, In3 to Pin52, and In4 to Pin50.
11. Connect the Conveyor motor to the second L298N Motor Driver.
12. Connect the second L298N Motor Driver for the conveyor motor to the Arduino. 5V to 5V of the Arduino, GND to GND, +12V to Vin, and the control pins, EnA to pin5, In1 to Pin49, and In2 to Pin48.
13. Then connect the Servo Motor to the Arduino. Connect the VCC to 5V of Arduino, GND to GND, and the Signal Pin of the servo motor to Pin4 of the Arduino.
14. Then connect the outputs of the boost converter to the Arduino. Out- to GND, and Out+ to Vin.
15. Lastly connect the Battery to the input of the boost converter. Battery- to In-, and Battery+ to In+.
16. Connect a voltage divider to the battery+ pin in a way that it produces ½ of the actual voltage of the battery (typically 2 resistors of the same values, in this case 10K Ohms). Then connect the output of the voltage divider to Pin A1 of the Arduino.

Part 4: CLOSING THE HOUSING

1. Before Closing the housing, make sure to align the wires neatly.
2. Load the Firmware.
3. Close the back cover of the housing. Done.