REVERSE ENGINEERING CHALLENGE REPORT

TEAM NO. 750R

SOUTH BRUNWSICK HIGH SCHOOL

SOUTH BRUNSWICK, NEW JERSEY

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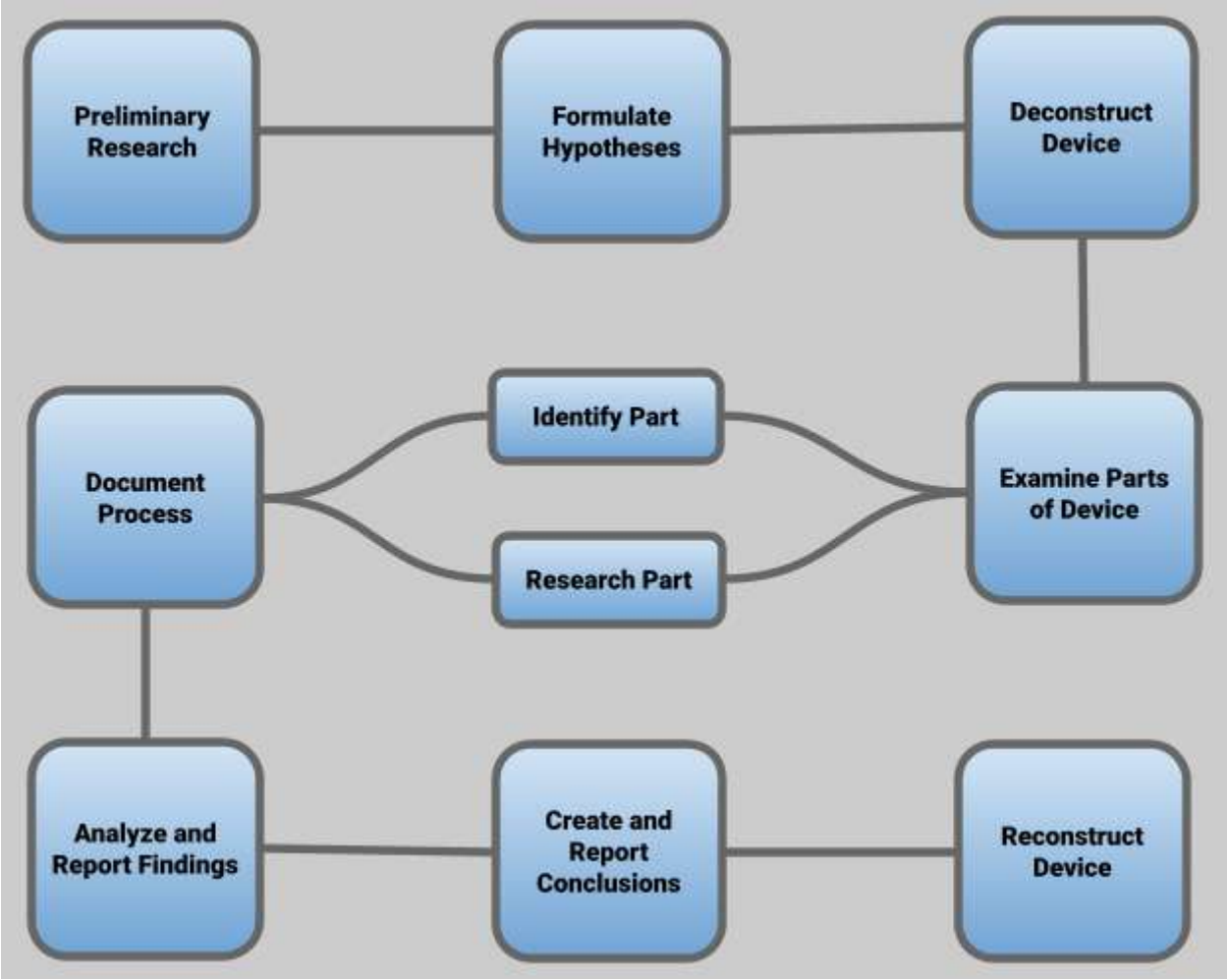
Introduction

Hello! We are 750R, a dynamic team of high school students from South Brunswick High School. With a mix of brains and ambition, we are highly motivated and dedicated to pursuing our passions in engineering. We are constantly seeking new challenges and opportunities to learn and grow in this field, and we approach every project with enthusiasm and determination. There are several reasons why we chose to disassemble a Nokia phone for our reverse engineering challenge. Nokia phones are known for their durability and long-lasting performance, with many jokes and memes circulating about their "indestructible" nature. By taking apart a Nokia phone, we can understand how it is built and how each component functions, which will allow us to learn about the design and engineering principles used in its construction. We may also be able to unlock the secret to its supposed indestructibility.

Our team :)

Approach

The first step we took as a team in our endeavor was to create an organized plan as to how we would approach this project.

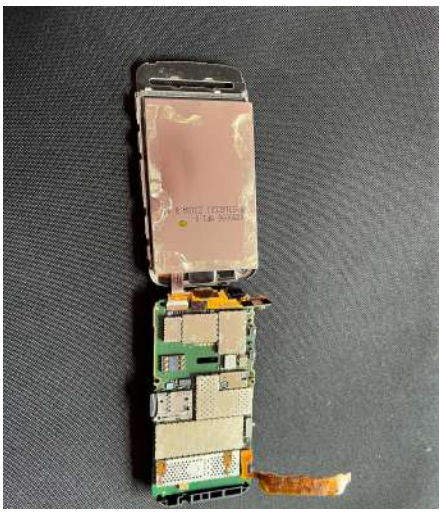


Disassembly

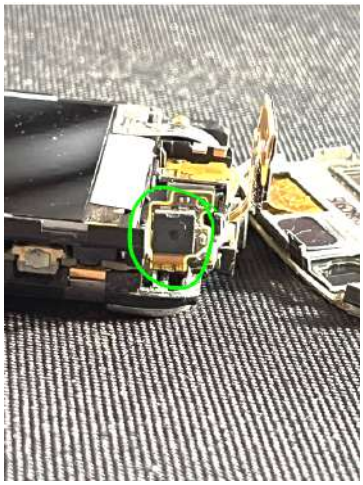
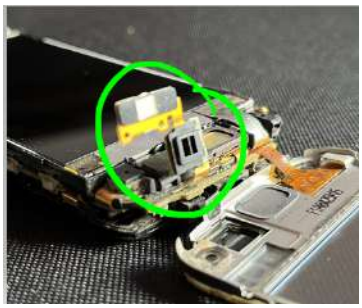
We disassembled the Nokia, taking pictures of all the important parts/steps.

Tools used:

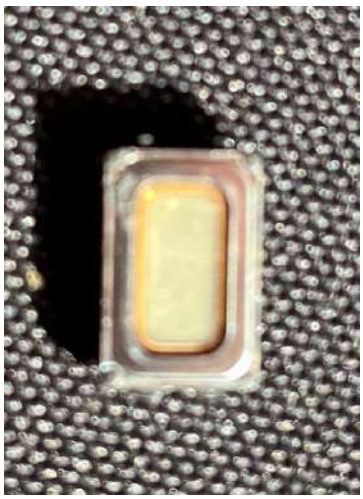
- T5 Screwdriver
- Bladed Screwdriver
- Separation tool
- Tweezers



Components

Name	Image	Purpose in device
Case		To protect the phone
Secondary Camera		Allows users to take photos, Typically used for selfies 3.2 Megapixels
Light + Proximity Sensor		Lights up logo; Checks if user's ear is close to screen(on call), turns off screen if they are

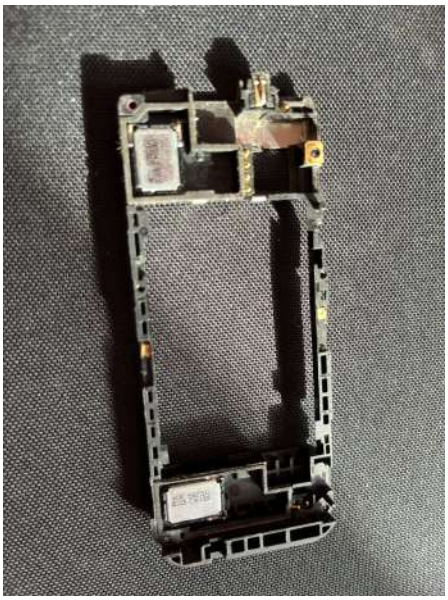
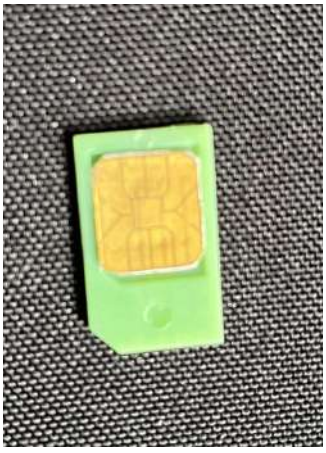
Components

Battery		Energy source 1320 mAh 3.7 Volts
Earpiece		Used to listen to the audio output of a phone
Digitizer (Touch Screen)		Converts analog touch signals into digital ones

Components

Frame/Bumper		Reinforced frame to hold the back cover and the screen together
Buttons		Used to power on/off the phone and increase/decrease volume
Battery Holder		Hold and connect to internal circuitry

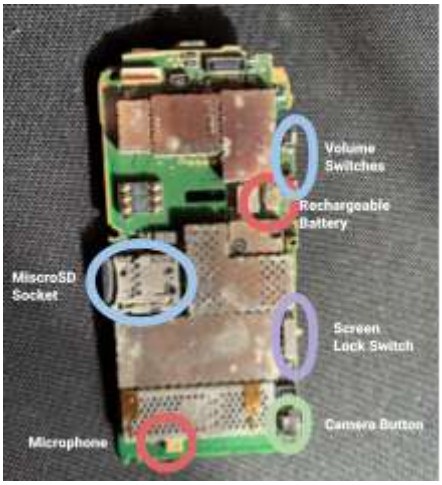
Components

Casing		Contains 3G antenna + bands for WiFi/bluetooth/gps
Micro Card		Memory of the phone
SIM Card + Holder		Holds the card securely

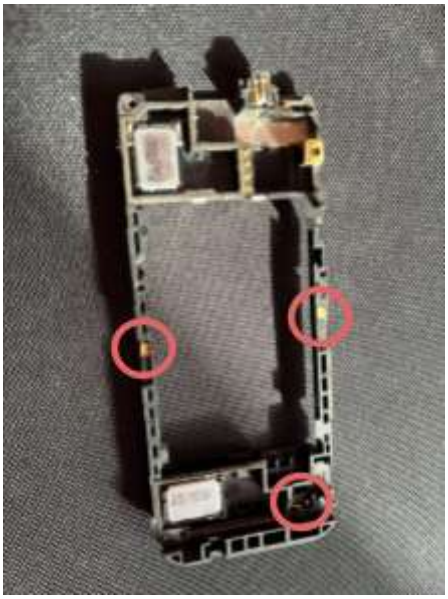
Components

Display		Visual output device
Button A/D Convertor		Converts analog button input to digital

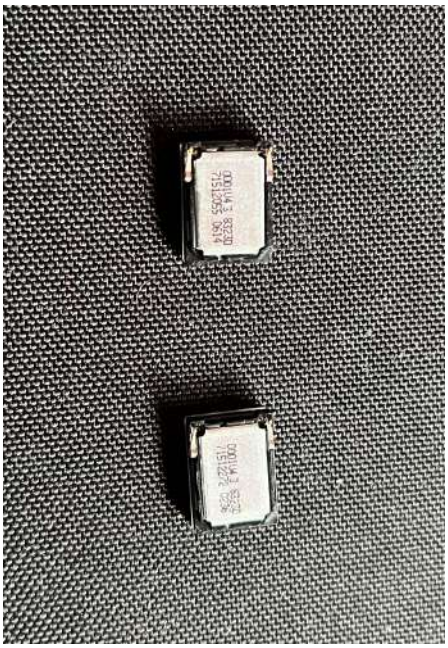
Components

Middle Frame		Separates the display and the board; adds support
Main Board		"Brain" of device, with essential components of device attached

Components

		
Casing		Houses bands for WiFi, Bluetooth, and GPS; allows connection to 3G Antenna

Components

Charge Socket		Allows for battery charge
Speakers		Primary audio output

Findings/Conclusion

Upon disassembling a Nokia cellular device, we gained a comprehensive understanding of its internal components and their functions. Through this process, we were able to identify various subsystems, including the power supply and communication infrastructure, which helped us grasp how each part contributes to the overall functionality of the device. Furthermore, we discovered that the device's exterior is crafted from high-strength materials, designed to withstand daily wear and tear. Additionally, the phone features double reinforced middle frames and intricate support structures inside the device, which further enhances its durability, giving rise to the meme that Nokias are virtually indestructible.