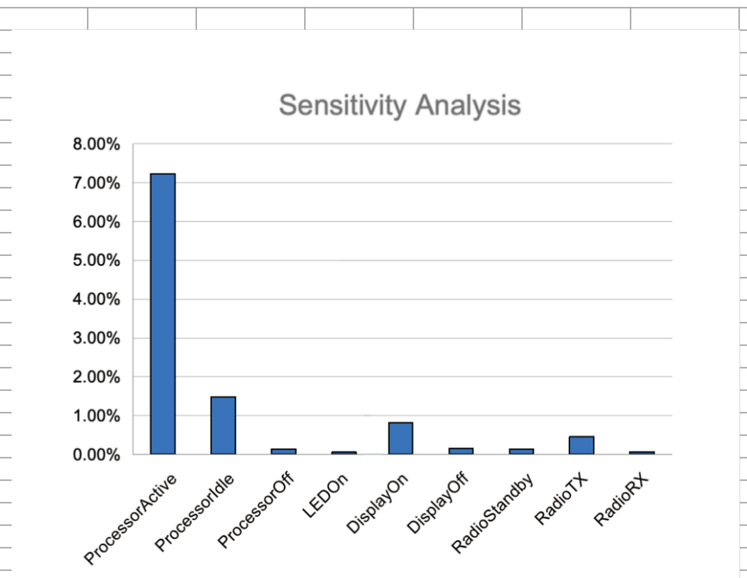
System Parameters (defined by hardware)				Profiles (usage of each component mode - defined by software and usage)			
	form the datasheets						
				"off"	"sensing"	"interactive"	
Processor (ESP32-S3	https://github.com/Michelleyukli/514-Final-Project/blob/main/esp32-s3_datasheet_en%20(1).pdf						
Active	1105.5	mW		0%	20%	25%	
Idle	69	mW		0%	80%	75%	
Sleep	1	mW		100%	0%	0%	
LED (4-pin LED)	https://github.com/Michelleyukli/514-Final-Project/blob/main/17-21-BHC-AP1Q2-3T_datasheet-51933.pdf						
On	40	mW		0%	2%	2%	
OLED SSD1306 Display							
On	60	mW		0%	0%	100%	
Off (leakage)	1	mW		100%	100%	0%	
Radio	https://github.com/Michelleyukli/514-Final-Project/blob/main/esp32-s3_datasheet_en%20(1).pdf						
Data Rate	1000000	bps		0%	0%	0%	
Standby Power	5	mW		0%	97%	97%	
TX Power	828	mW		0%	2%	2%	
RX Power	252	mW		0%	1%	1%	
Battery Li-Po battery (	https://github.com/Michelleyukli/514-Final-Project/b			20	2	2	hours/day typical usage
Capacity	748	mAh					
Nominal Voltage	3.7	V					
Regulator Efficiency	90%						



Total power in profile (mw)			Maximum Time	
"off"	2	mW	1245.4	hours
"sensing"	303.47	mW	8.2	hours
"interactive"	414.28	mW	6.0	hours
Effective Battery Capacity				
	2490.84	mW*h		
Days of Use	**1.69**	**days**		
Hours of Use	**40.52**	**hours**		

REFLECTIONS : WHAT DID YOU LEARN FROM ANALYZING YOUR POWER. TALK ABOUT SOME POTENTIAL TRADEOFFS.

How did you determine your "days of use" metric ? The "days of use" metric is mainly based on the anticipated duration of a Frisbee game. Considering that athletes might engage in practice sessions or games multiple times a week, each lasting for different durations, it is estimated that the device should maintain its functionality for at least one entire game (ranging between 2 to 3 hours) before requiring a recharge. This estimation assumes that users would likely prefer to recharge their devices following every workout, or at the very least, after several games, to guarantee the device's readiness for subsequent games or practices.

What do you think is the optimum size for the battery in your device ? The ideal battery size for the sensing device should strike a balance between ensuring sufficient power for at least one Frisbee game and keeping a lightweight, compact design to avoid hindering the player's performance. A small, high-density lithium polymer (LiPo) battery, capable of providing the necessary power without adding substantial weight or volume, appears to be the most suitable option. Such a battery represents an excellent compromise among capacity, dimensions, and weight, rendering it perfect for use in sensing devices.

What hardware/software/cost/effort tradeoffs could you make to improve the user experience? Incorporating power-saving algorithms, like dynamically modifying sensor polling rates in accordance with the level of activity, or increasing the reliance on sleep mode, can significantly prolong the battery life. The device's software could be engineered to activate specific features solely in response to particular triggers, thereby minimizing the overall power usage. This approach ensures efficient energy management, extending the operational duration of the device without compromising its performance.