

E 1.08 – Humpty Dumpty’s White Knights

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Background

Robotics is an expanding discipline in the engineering industry and has the potential to complete tasks with greater efficiency and provide an alternative to humans working dangerous jobs. This project will provide this group with valuable experience in robotics design and problem solving.

Requirements

Single egg retrieval: The bot will need to be able to locate a single egg in the arena and retrieve it to the red starting square

Multiple egg retrieval: The bot will need to be able to retrieve multiple eggs of one color in a field of eggs that are different colors.

Budget

Part	Quantity	Price / Unit	Total
ESP 32 CAM	1	9.72	9.72
Screws	10	0.505	5.05
TCRT 5000	2	0.88	1.76
Pi Pico	1	5	5
			21.53

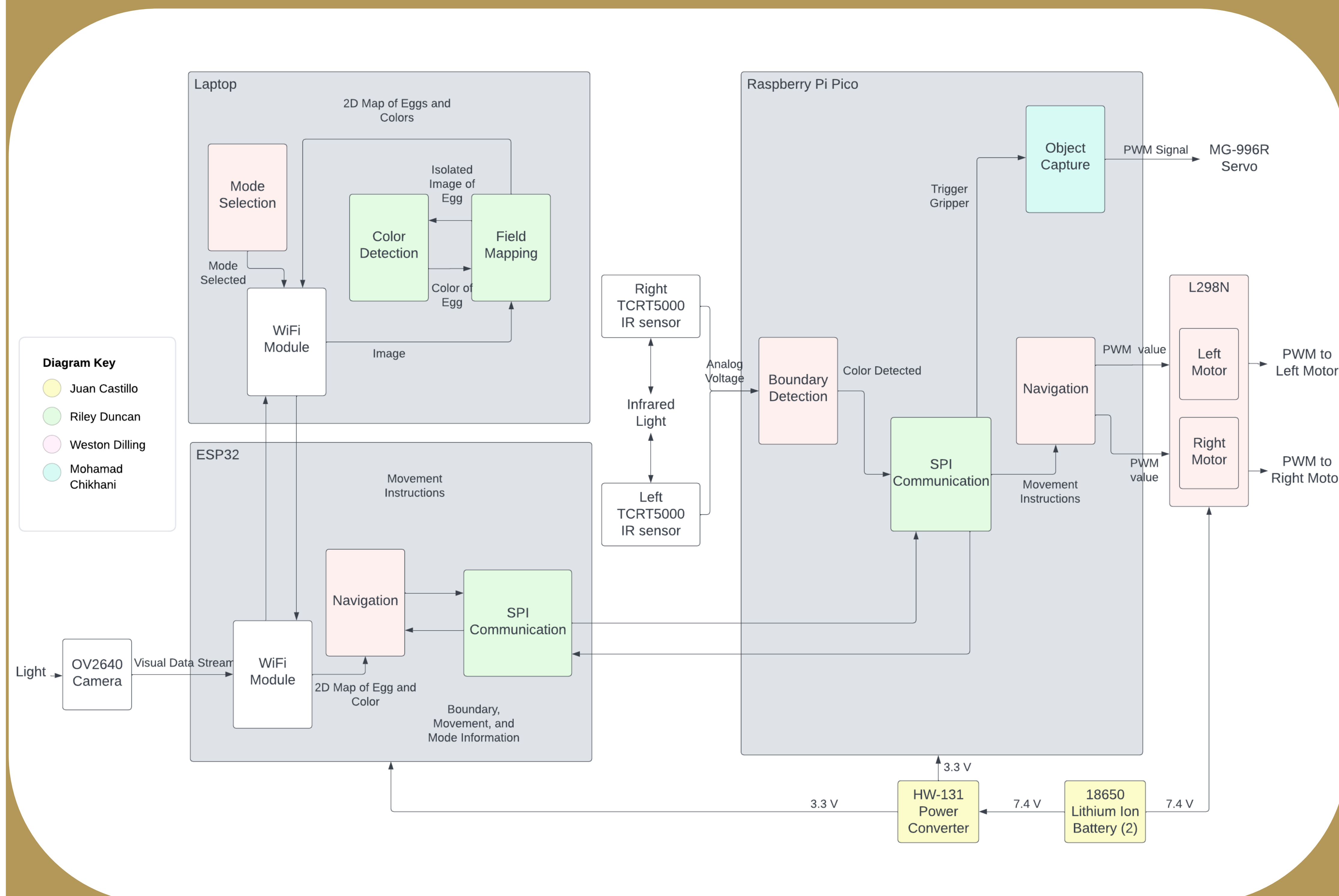
Power Budget

Micro Controllers / Sensors	870mA
L298N Driver and Motors	470mA
Total:	1340mA

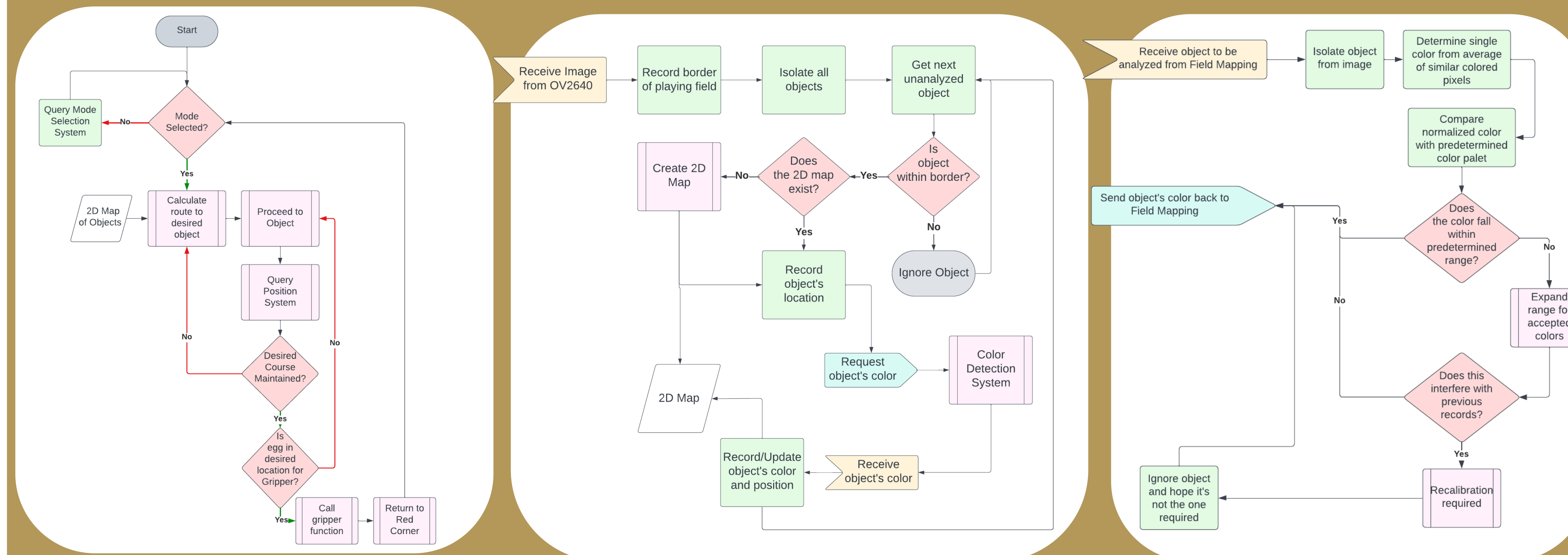
Acknowledgements

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- D2 mentors: 2.03 Robo Reapers
 - James Strong
 - Chadd Mingarine
 - Jacob Mitchell

Hardware Block Diagram



Software Flowcharts



Navigation

Field Mapping

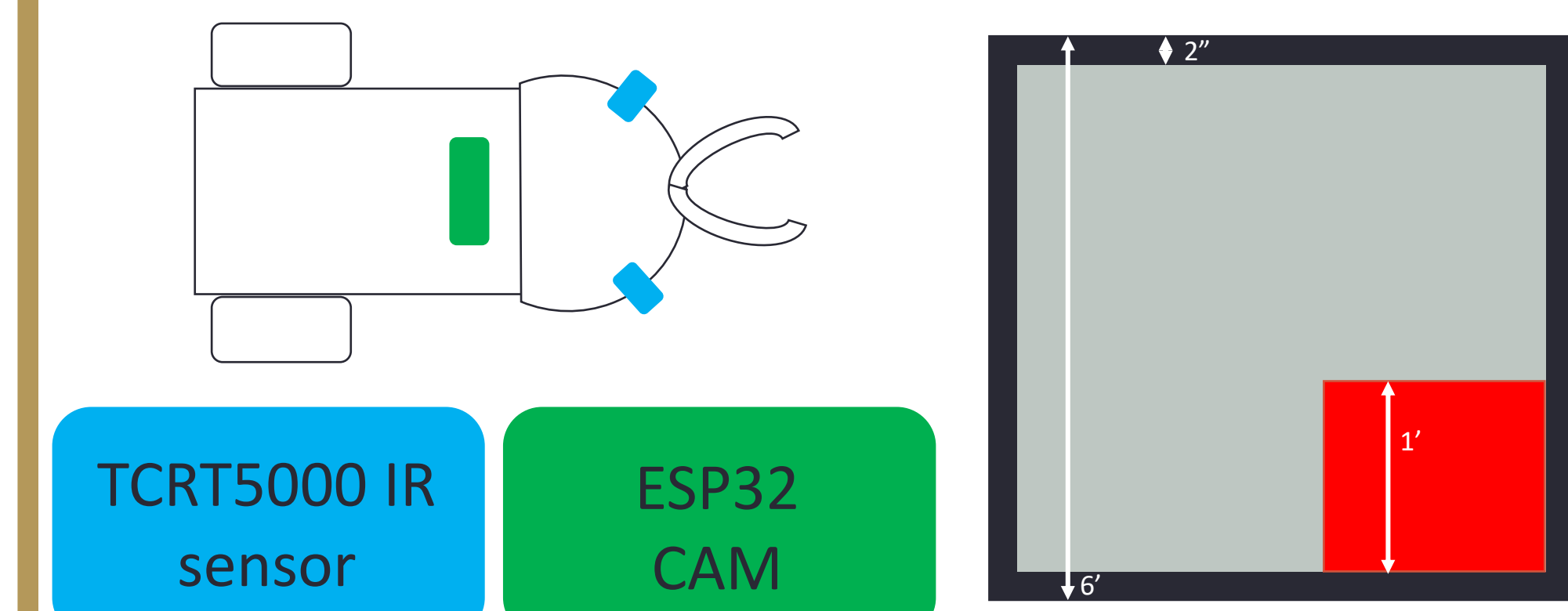
Color Detection

Group Members

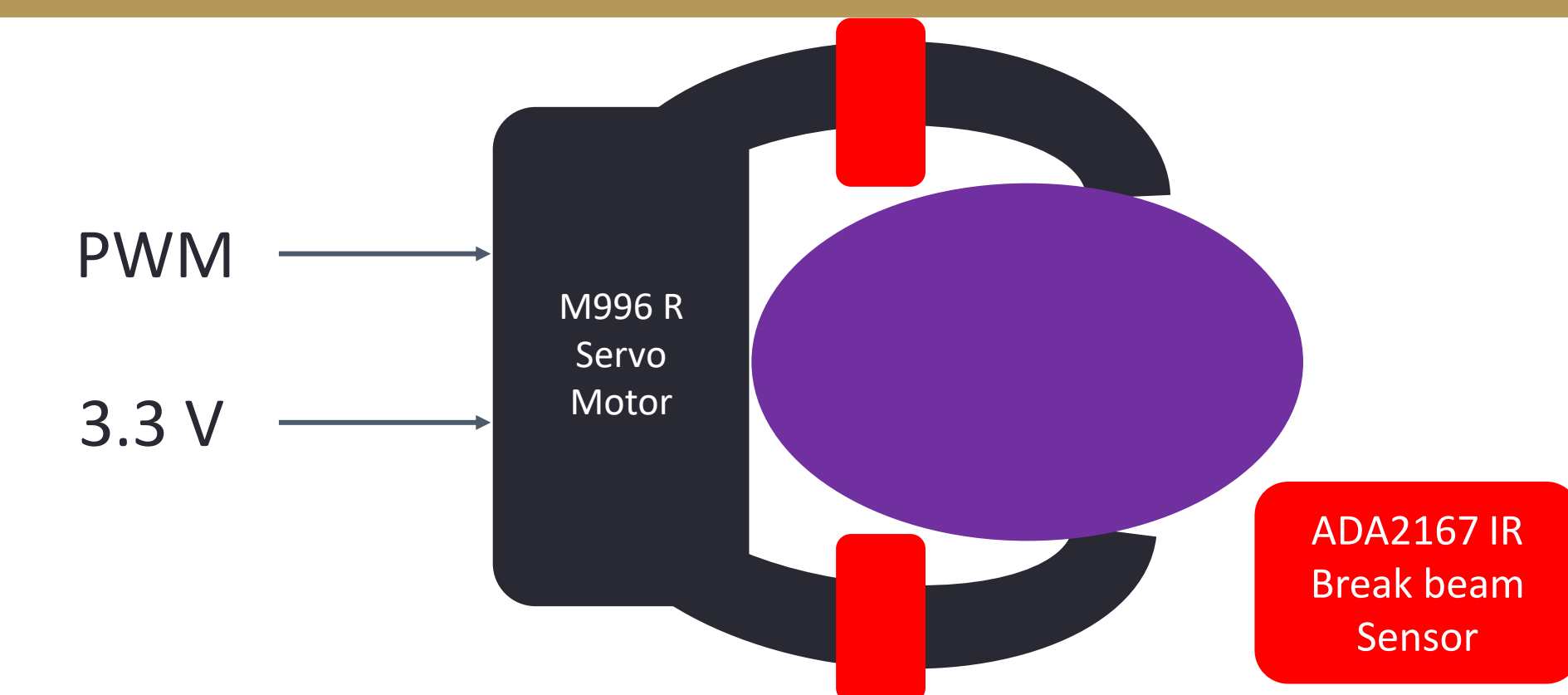


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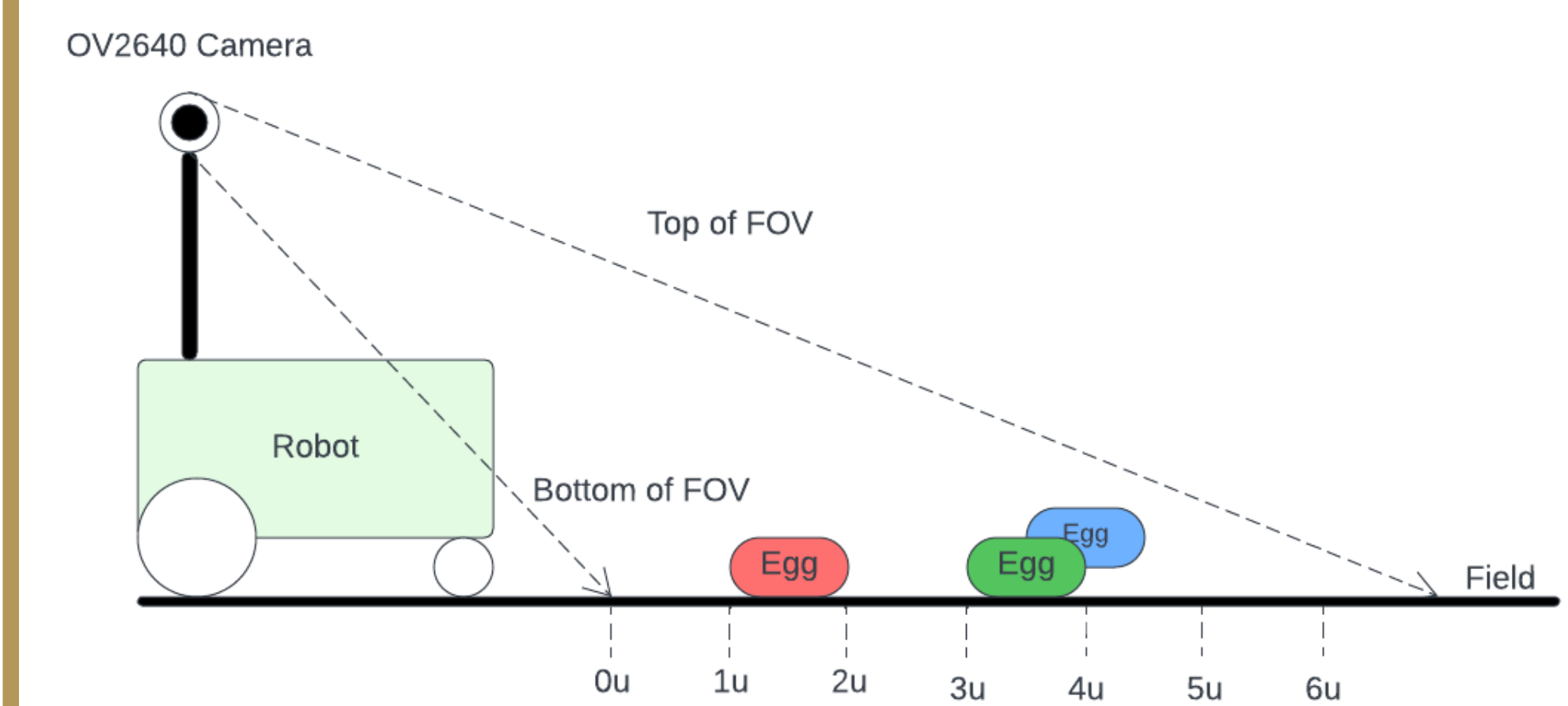
Sensor Layout, Arena



Gripper



Camera View



D2 Plan

- Integrate all subsystems together
- Complete development of navigation subsystem
- Rigorous testing of all subsystems and whole unit