



FALCONS

supported by **ASML**

Falcons Project V1

Mechanical description

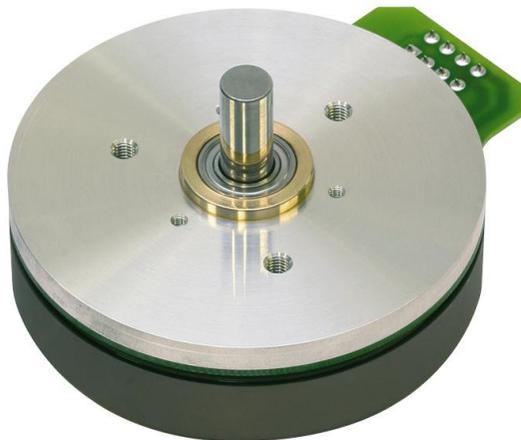
The need for a new platform



- The current robot electronics is based on the Turtle5k design. This design has not much room for improvement in terms of enhanced servo design.
- Next to this are the robots suffering from connectivity issues between the motor electronics and the CPU case.
- It is the aim of the team to improve the robot speed by at least 50%. This is only possible if the servo control has sufficient bandwidth and the motion electronics is stable and reliable.
- To comply with the rules also robot weight needs to be reduced, to allow for hardware additions in the future.
- The last requirement is modularity, the new platform is built in 3 big sub assies, to allow for quick repair and upgradability.

Why a redesign of the frame

To enable future proof motion



New 400W motors

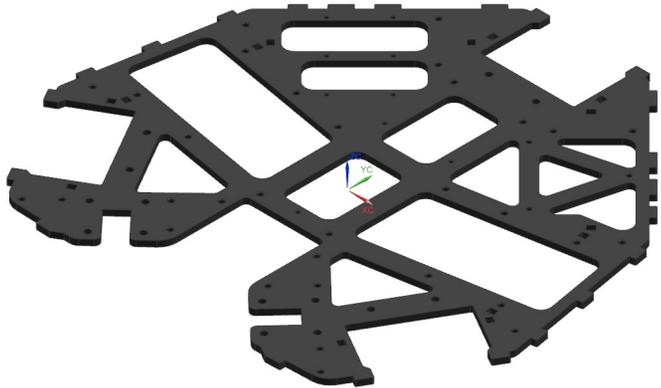


New motion controllers

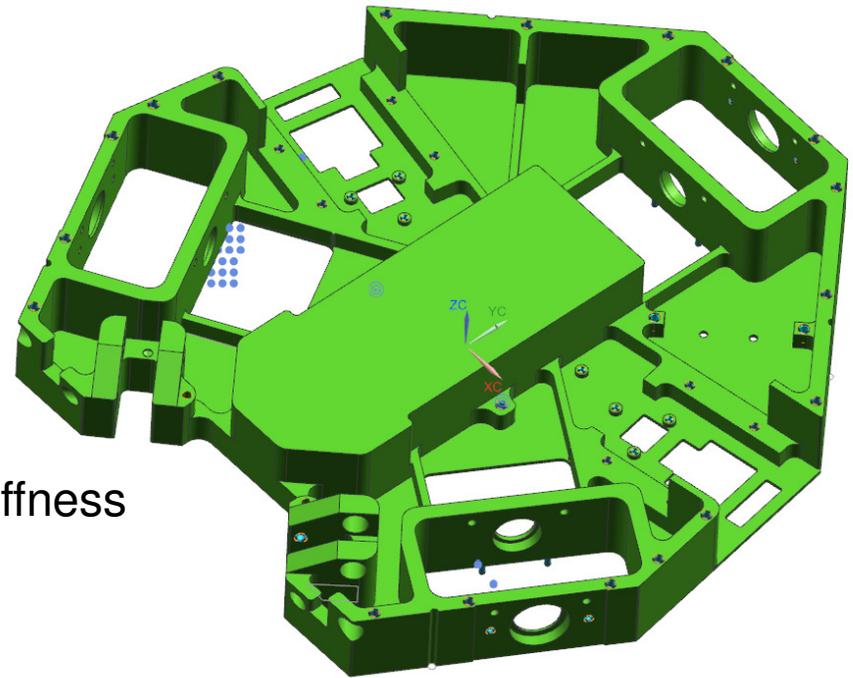


Triple wheel, for more traction and grip



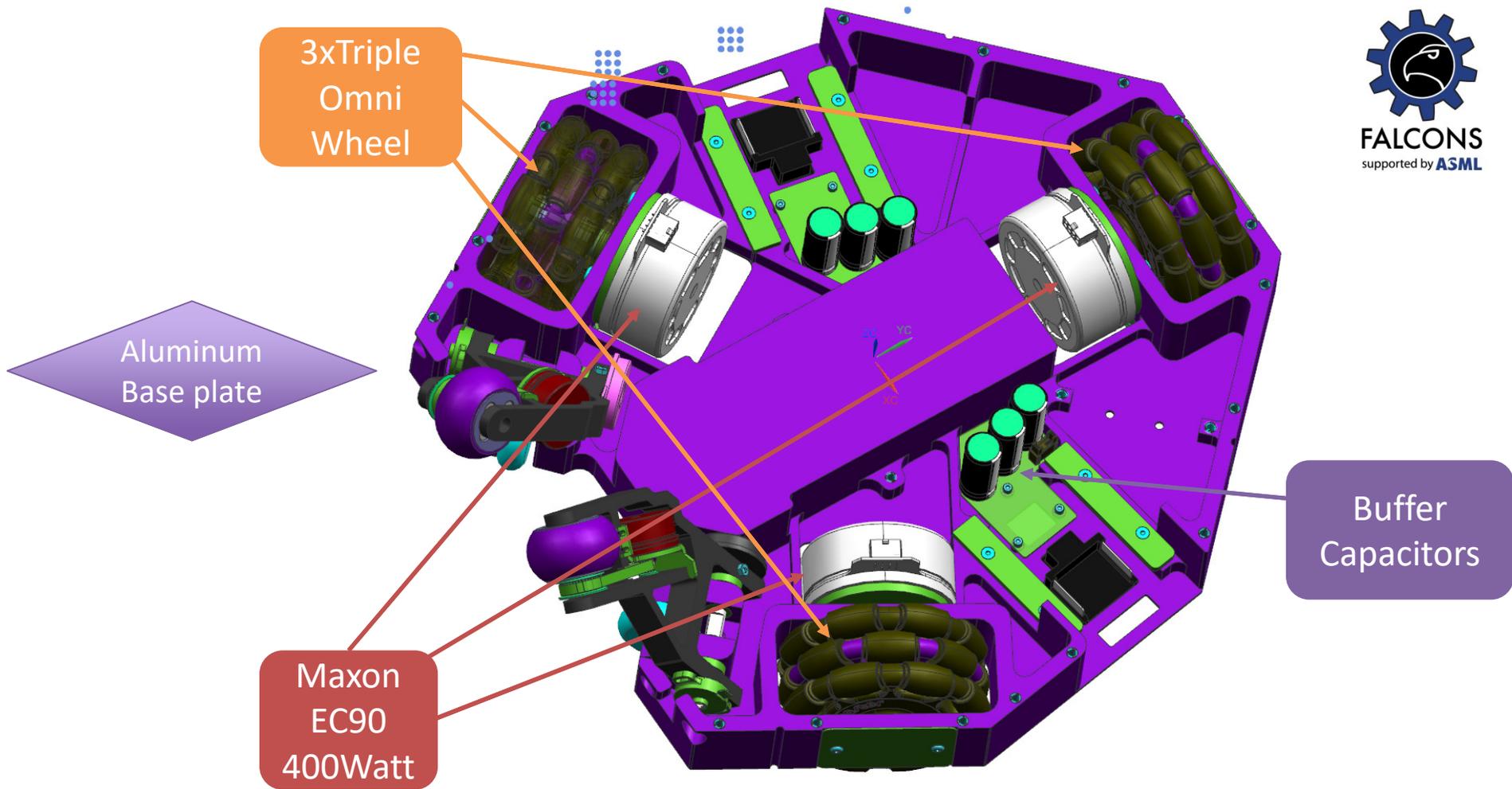


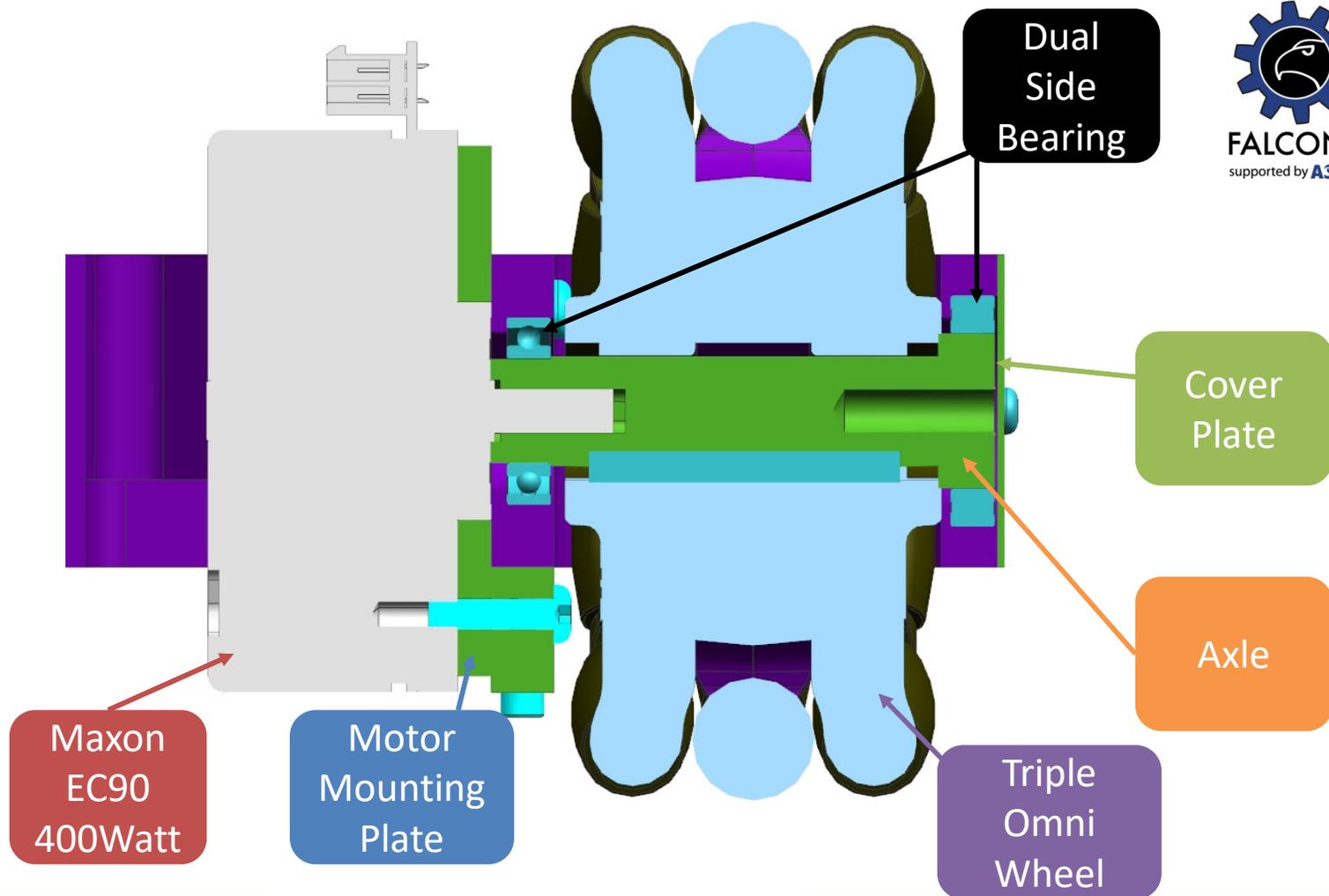
From Bolt on, To Bolt in



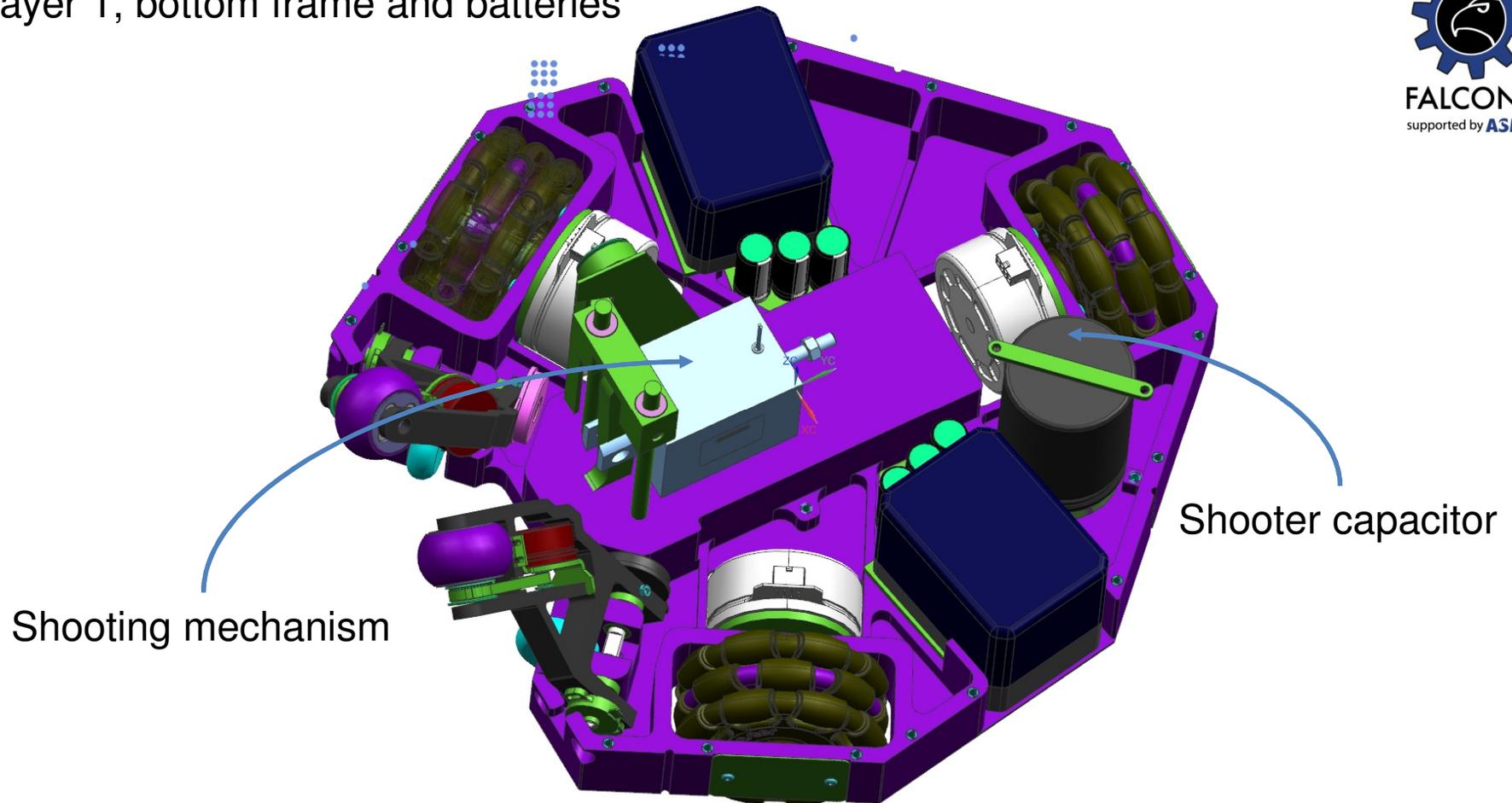
New base plate for maximum stiffness

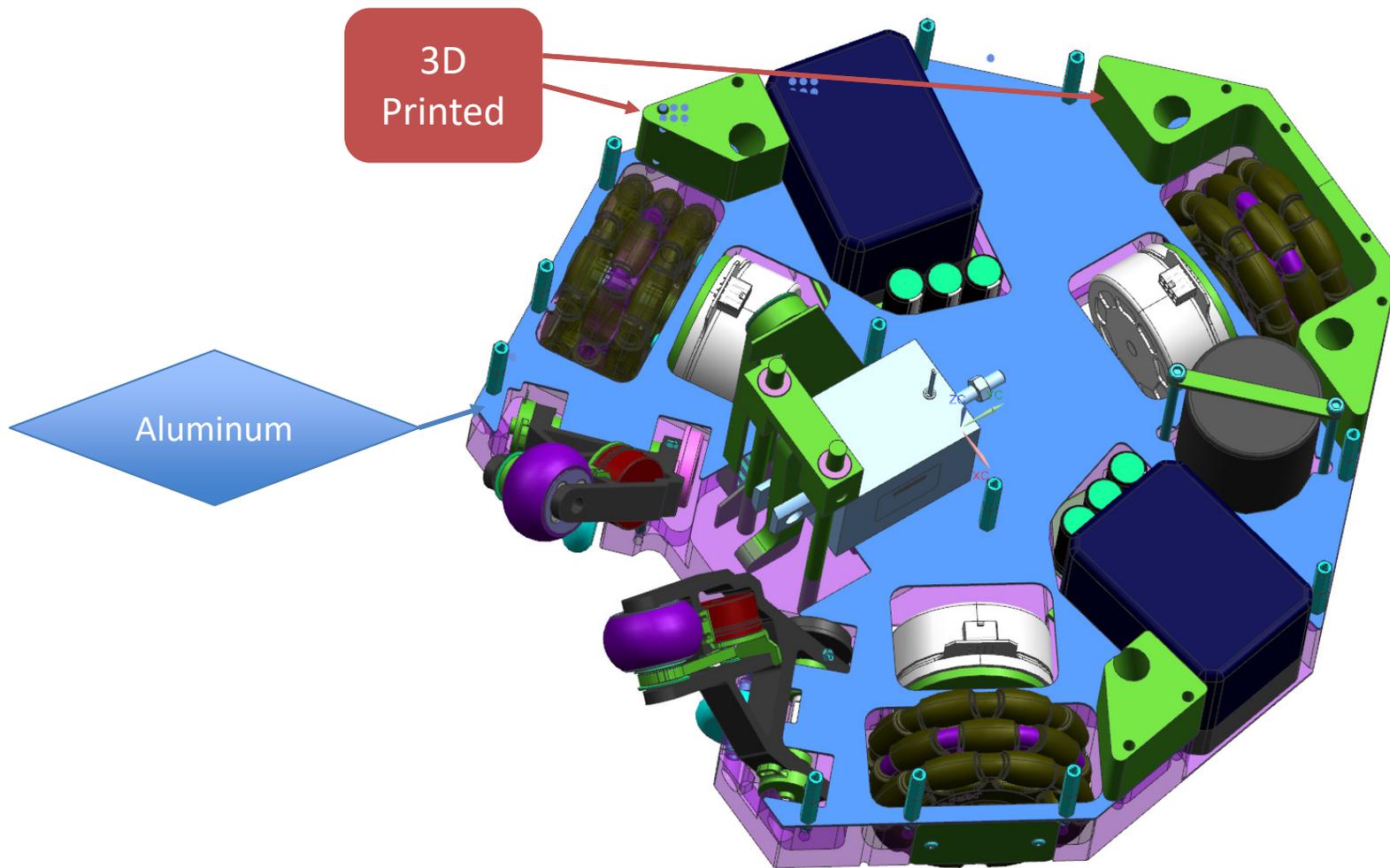






Layer 1, bottom frame and batteries



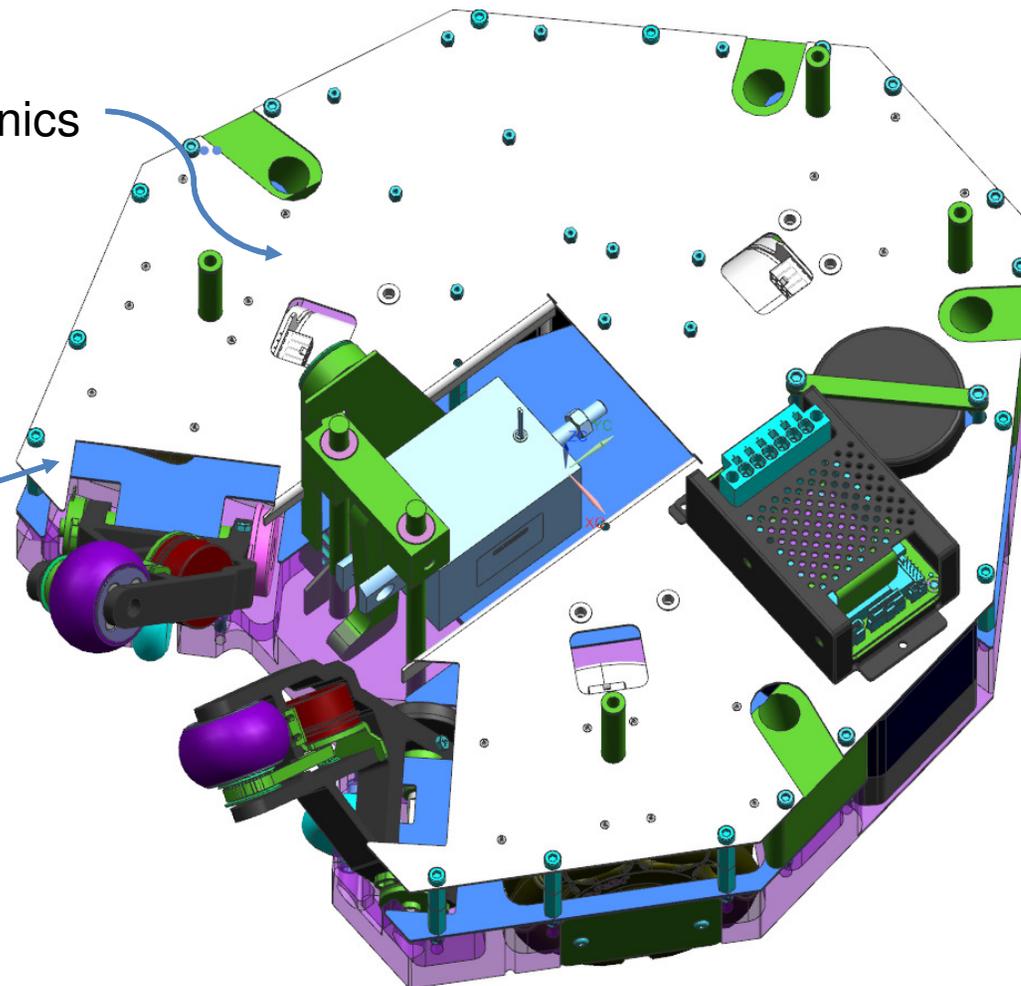


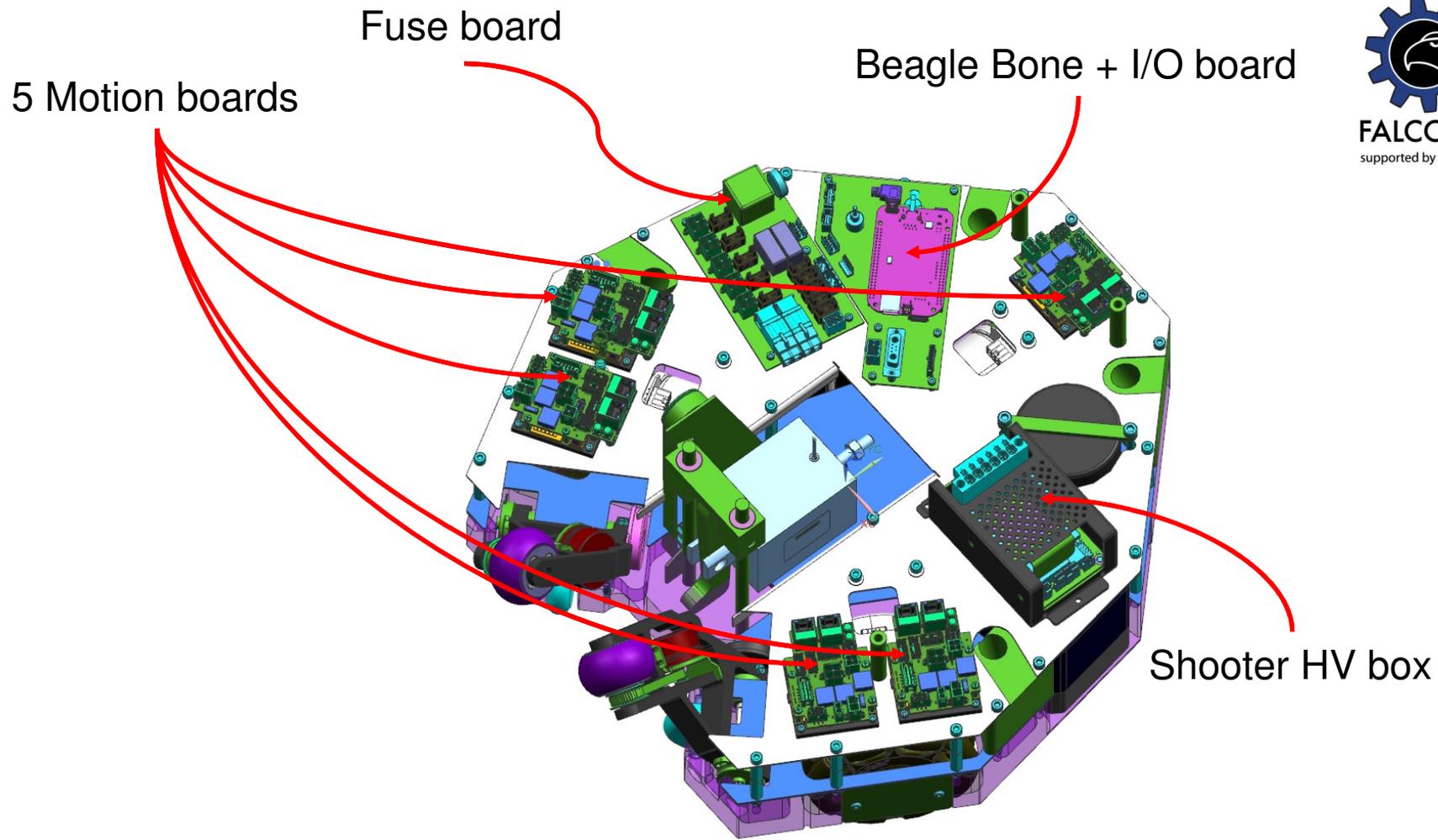


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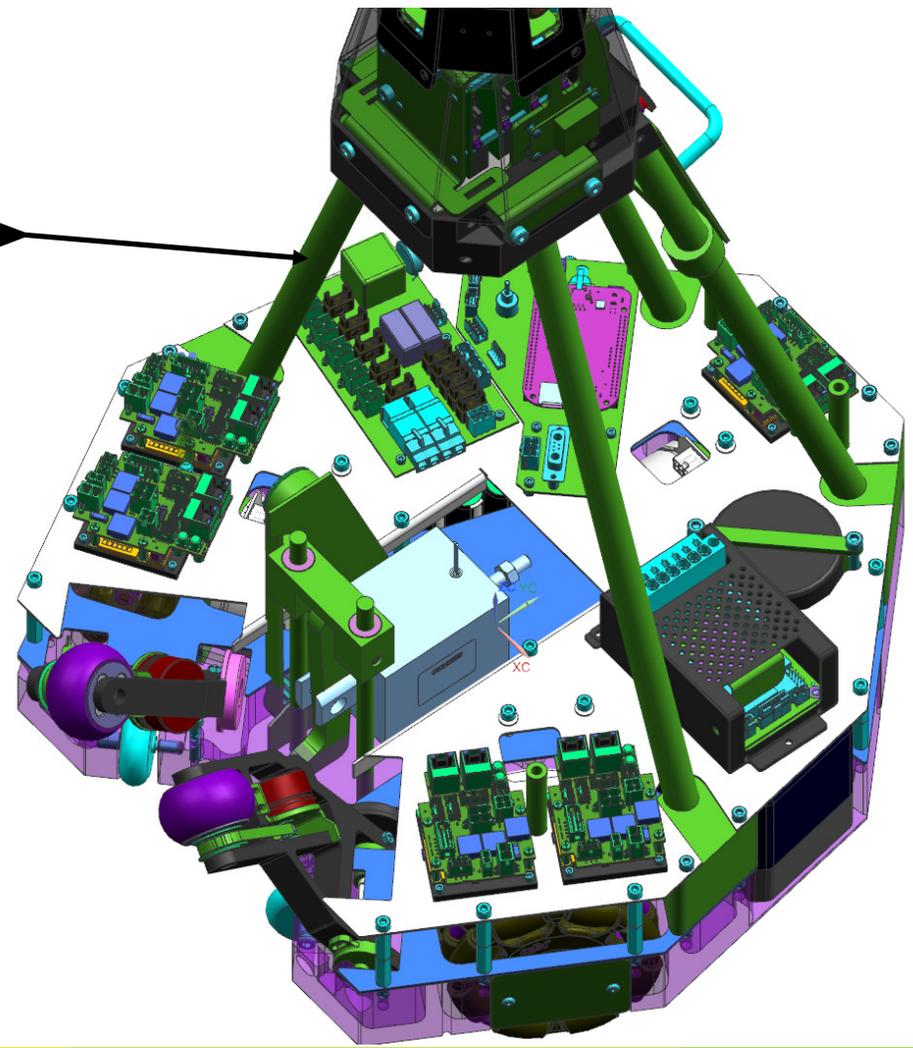
Plate for all electronics

Aluminum

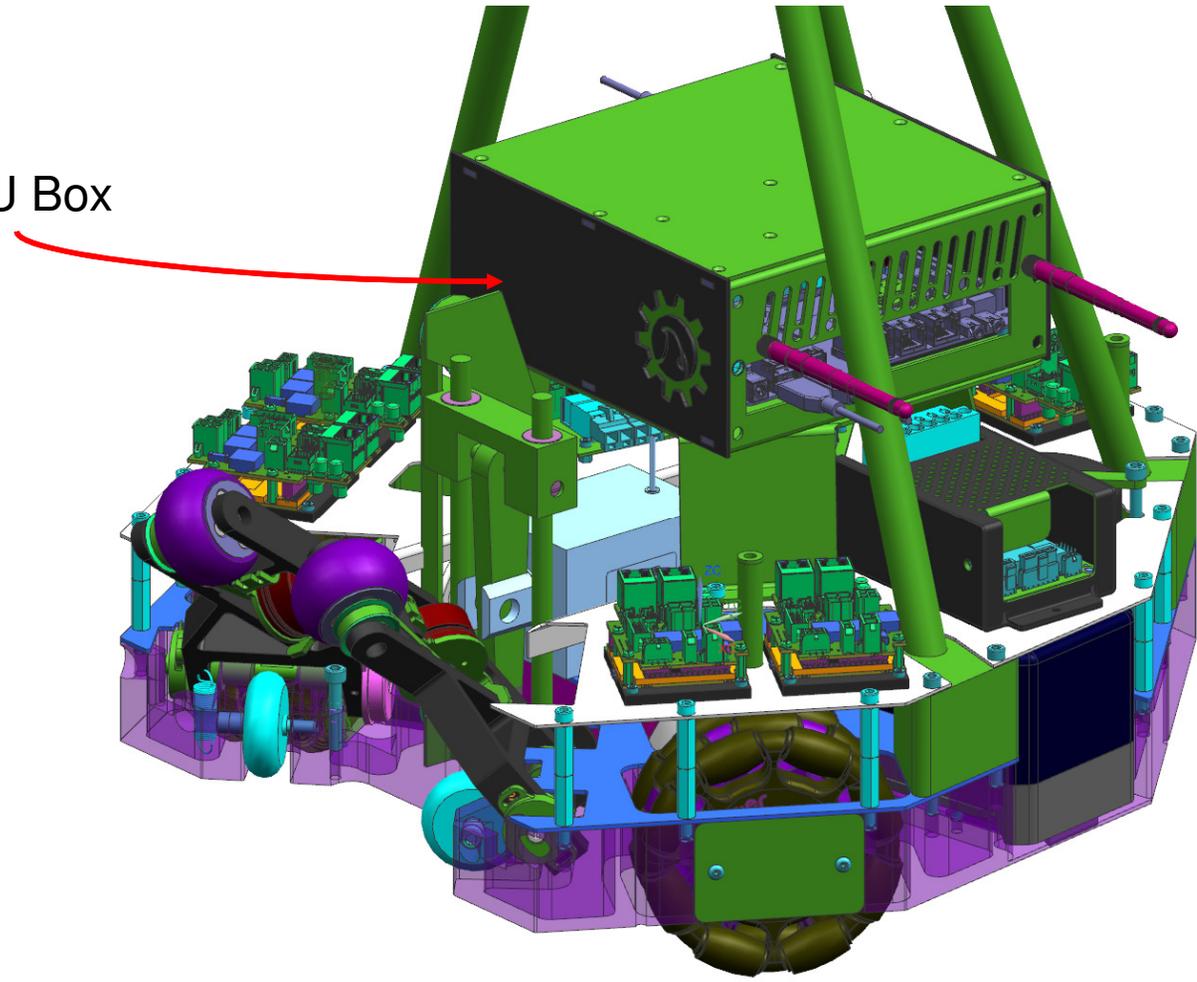


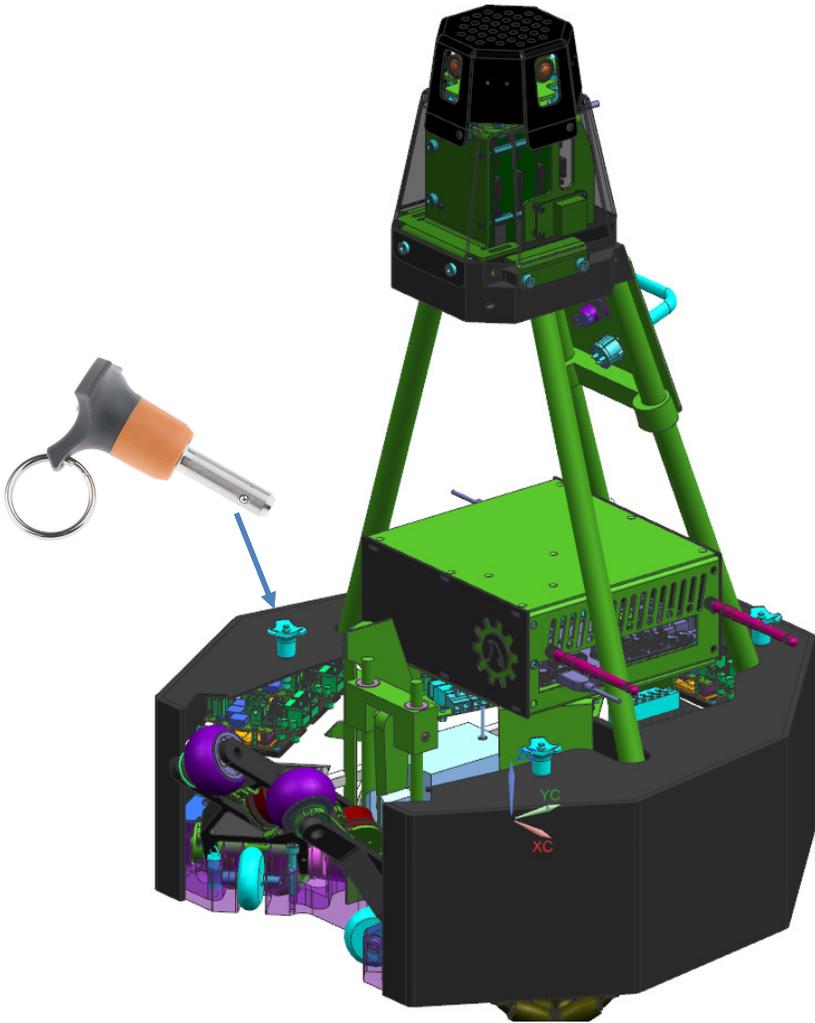


Carbon
Fiber
tripod

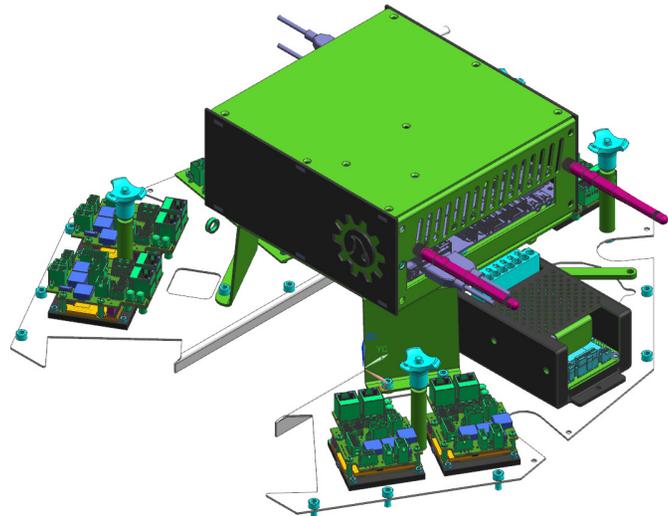


CPU Box





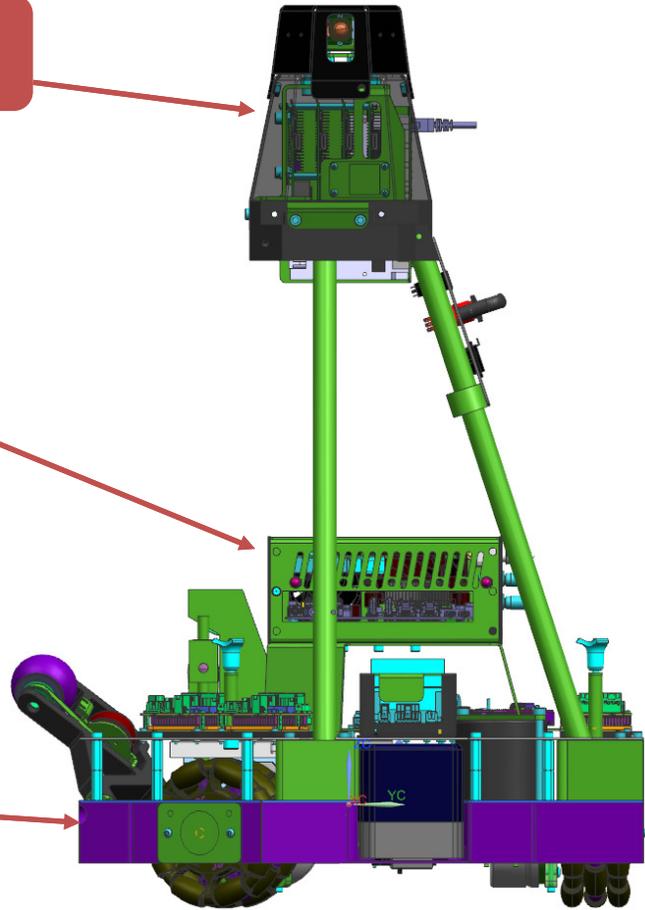
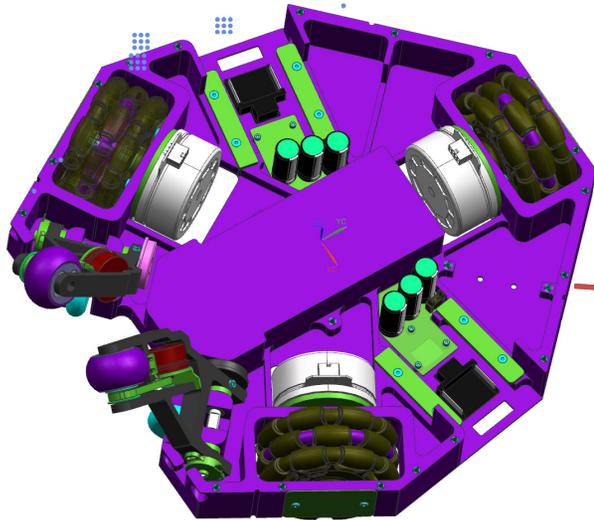
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Top
Module

Mid
Module

Bottom
Module



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New Ball Handler, still under development.



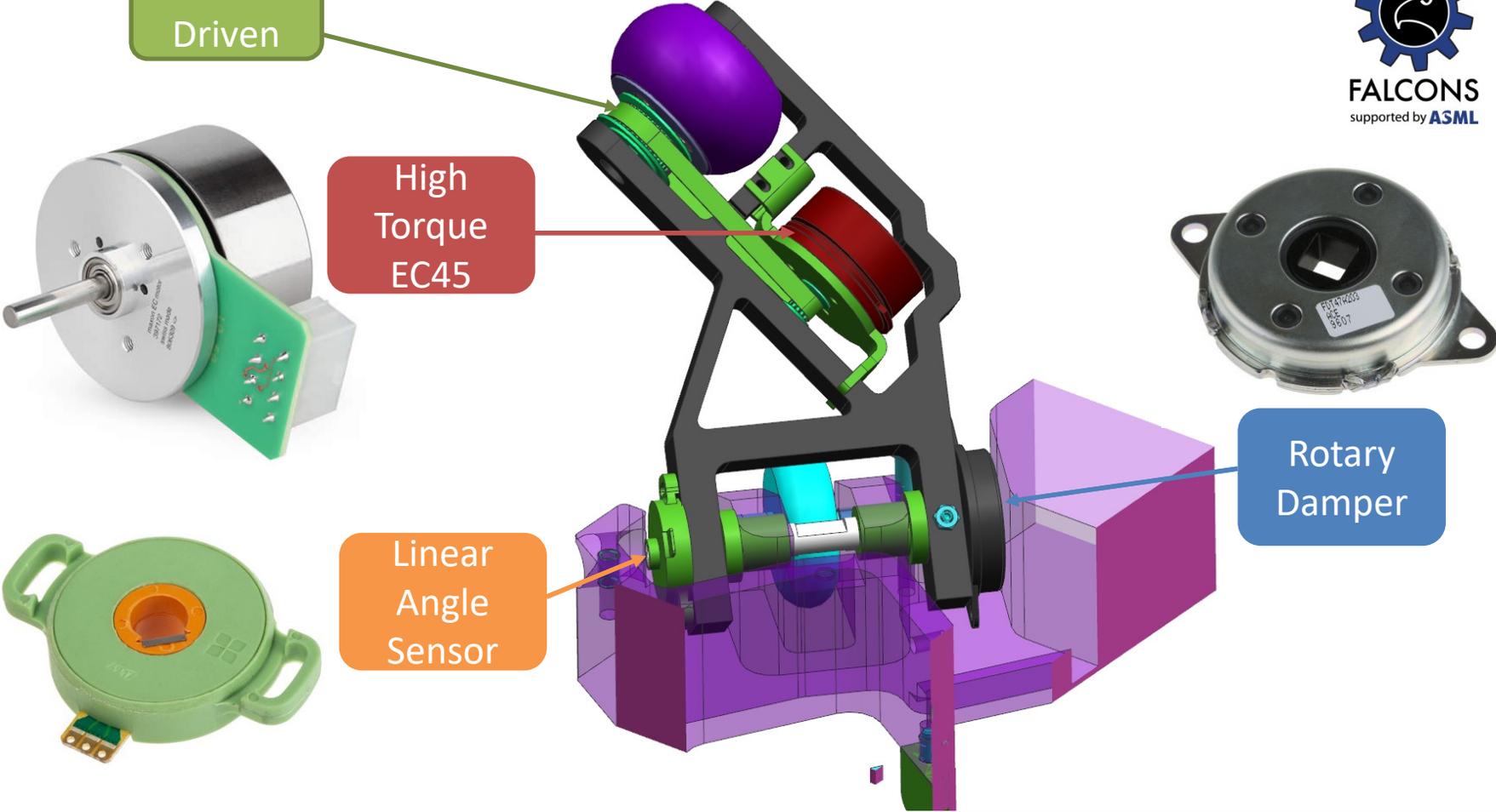
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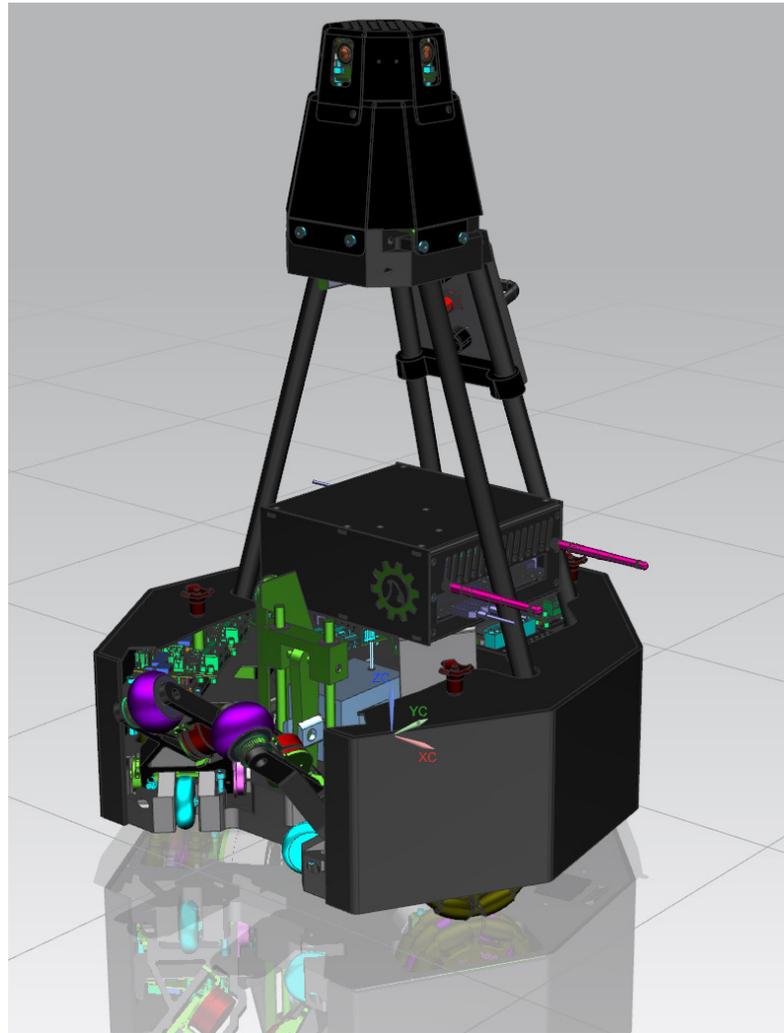
Belt Driven

High Torque EC45

Linear Angle Sensor

Rotary Damper





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