Project proposal

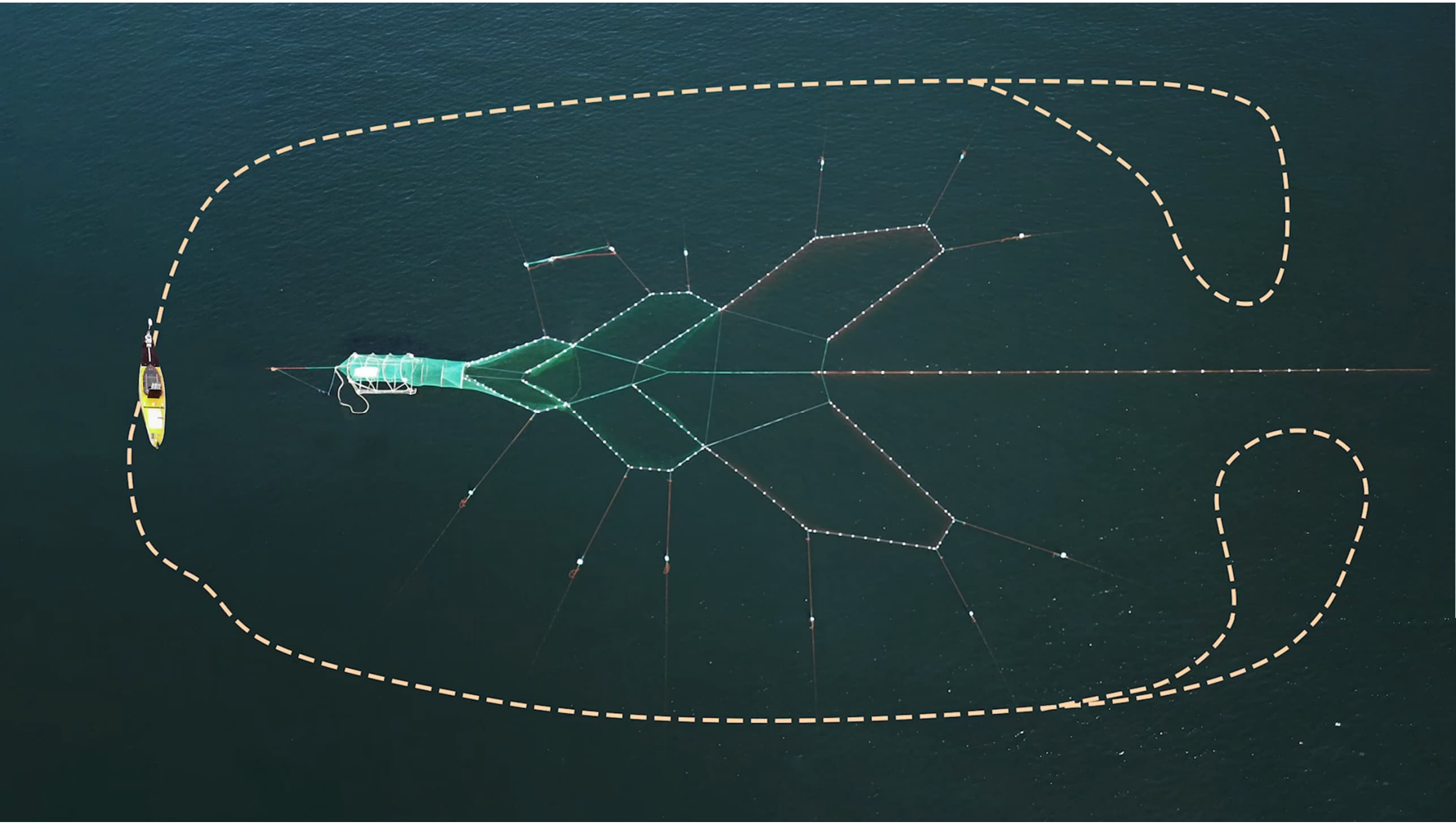
Steering mechanism for autonomous seal deterrent vessel

Aalto University
Design Factory

Luke
LUONNONVARAKESKUS

Problem: Seals causes damage to catch

- Competition for same resource
- Hunting is not desired –> need other solutions
- Static seal deterrent devices has a range of tens of meters
- Price 10k-15k Euros
- Each fisherman needs multiple devices



Seal deterrent device details

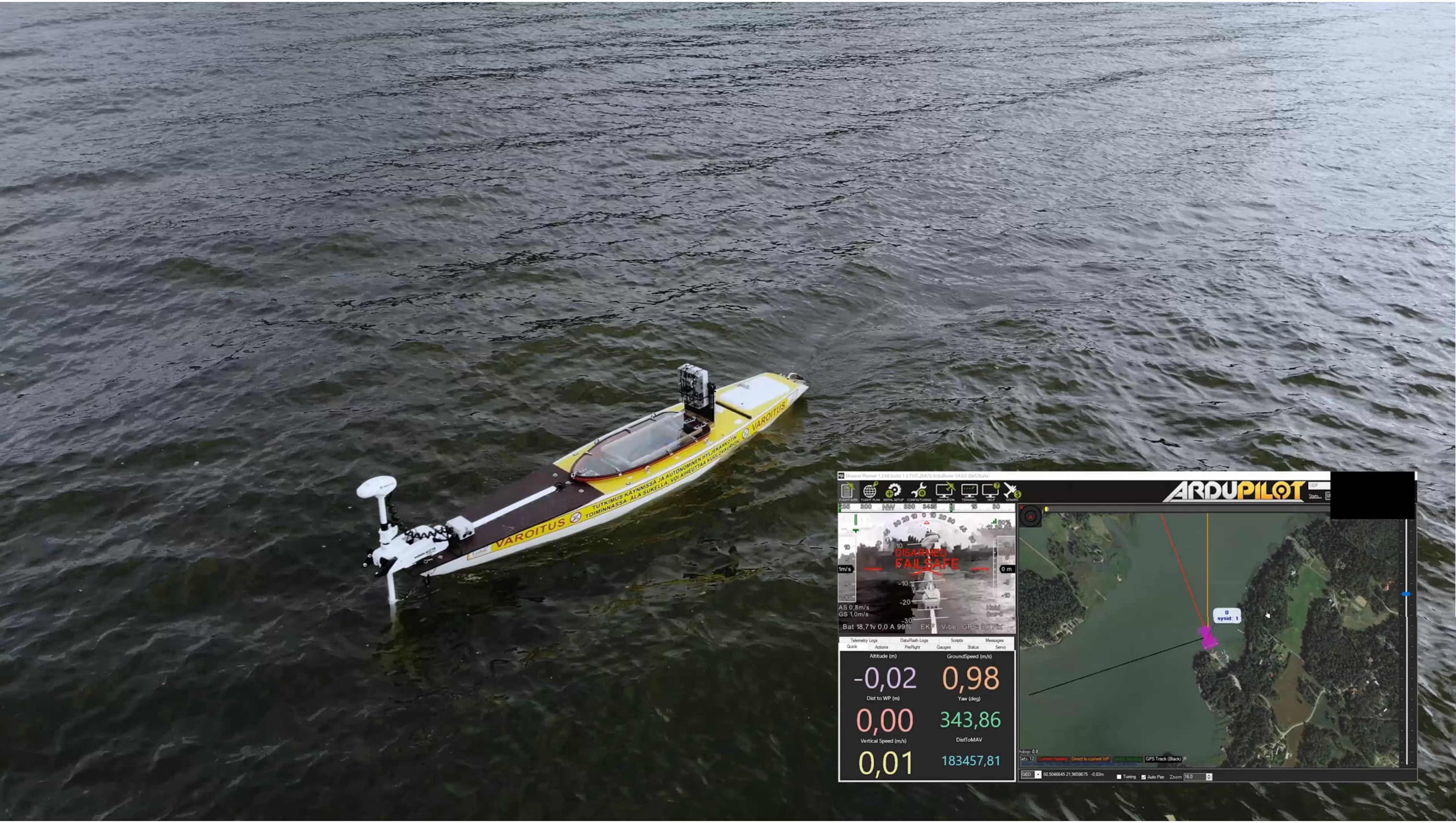
Sound maker

- Otaq portable seal deterrent

Keel weight 180 kg

Transducer

- Deters the seals using high frequency sounds


VAROITUS
VAROITUS
ARDUPILOT
DISARMED
FAILSAFE
Altitude (m)
-0,02
GroundSpeed (m/s)
0,98
Dist to WP (m)
0,00
Yaw (deg)
343,86
Vertical Speed (m/s)
0,01
DistToMAV
183457,81


VAROITUS
TUTKIMUS KÄYNNISSÄ JA AUTONOMINEN HYLJEKARKOTIN
TOIMINNASSA. ÄLÄ SUKELLA, VOI AIHEUTTAA KUULOVAURION!
VAROITUS
Luke
MINN KOTA
TERROVA

Issues with Watchdog 1

- Made from commercially available consumer parts
- “Autopilot” functions severely limited
- No solar panel energy generation
- Off the shelf trolling motor -> large inefficiencies
- Current motor cannot interact with advanced autopilots

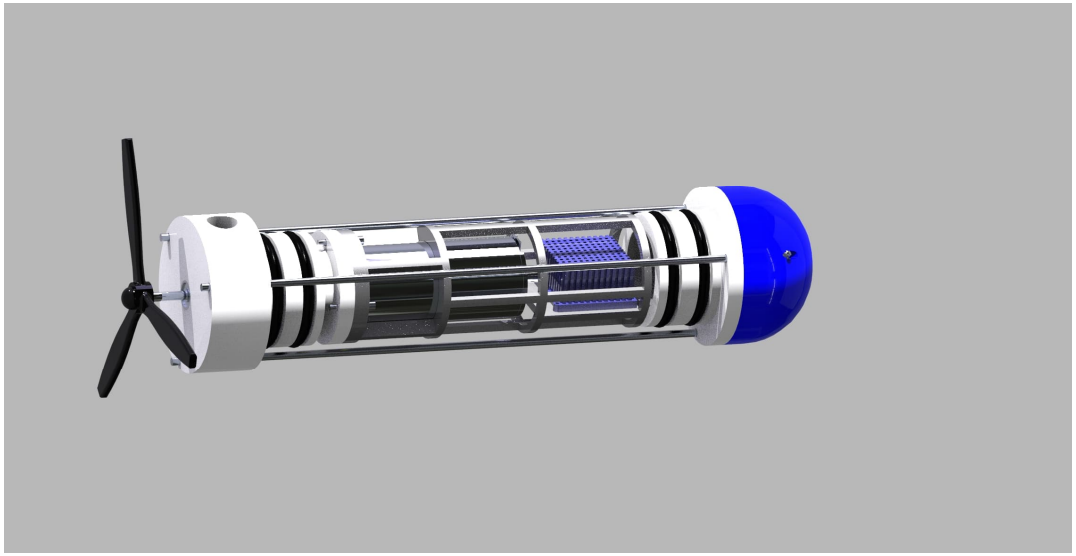
Proto 2 – Where we are now

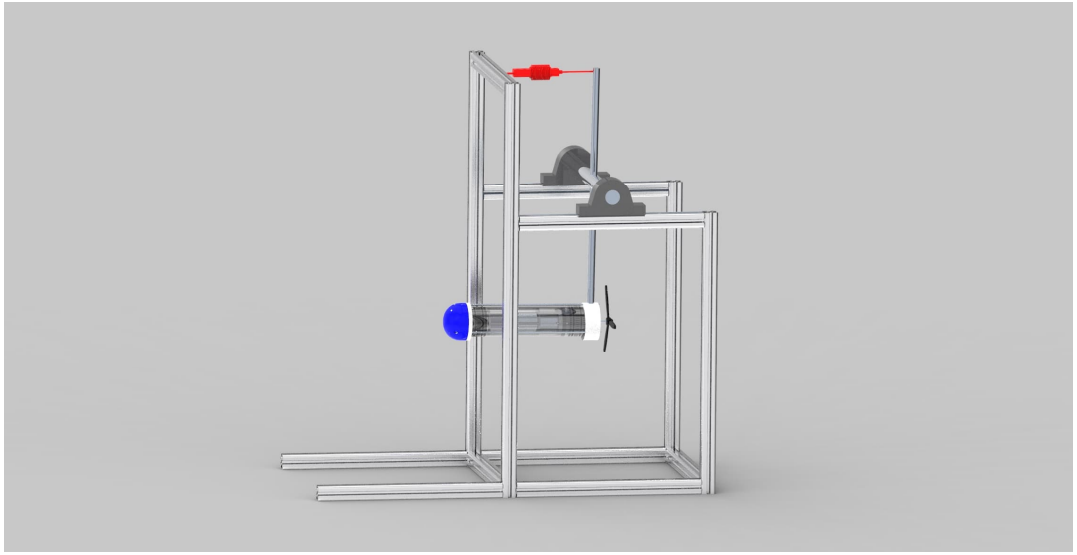
- Joint project between Aalto Design Factory and Luke
- 2 (potentially 3 master thesis's, if you are interested and think you have relevant skills for this; send me an email)
- Autopilot: Ardupilot or ROS
- PDP project

- The vessel and all supporting functions are built around the payload
- To be tested summer 2023
- Ultimate aim: commercial solution to aid a struggling fishing industry

Propulsion system optimization

- Finding the propeller – motor combination that gives the best thrust to power consumption ratio
- Creating a waterproof low water resistance container for it





Our challenge to you

- The “Pod” motor needs to be rotated to steer the vessel
- Developing the mechanism for this keeping in mind:

- Steering angle 45 degrees to both sides
- Waterproofing
- Multi year operational life
- Fail-safe in case of hitting a rock (breaks and can be easily fixed)
- Keeping costs down

Ideally it should...

- Be easily connected to a vessel frame
- Compatible with the pod motor design
- Weight reasonable for a 2-4 meter surface vessel

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