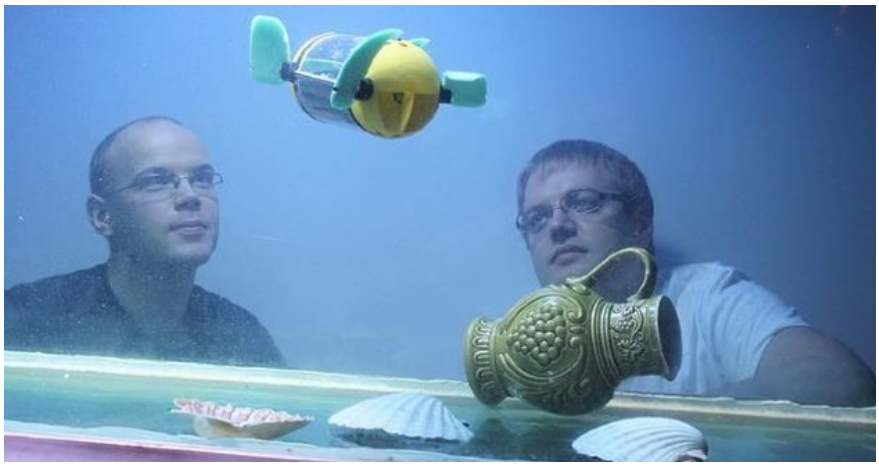
Turtle robots help archaeologists study shipwrecks underwater

Turtle robots designed by Estonian engineers can assist in exploration of shipwrecks by archaeologists and reduce risk when studying in deep seabeds.

The Safari robot will launch **U-CAT** underwater robot - a small-sized turtle robot designed to penetrate shipwrecks at the London Science Museum.

U-CAT's movement principle is similar to sea turtles. U-CAT robot controls four flippers independently, it can move mobile and flexible in all directions such as: swimming forward or backward, swimming up or diving deep.

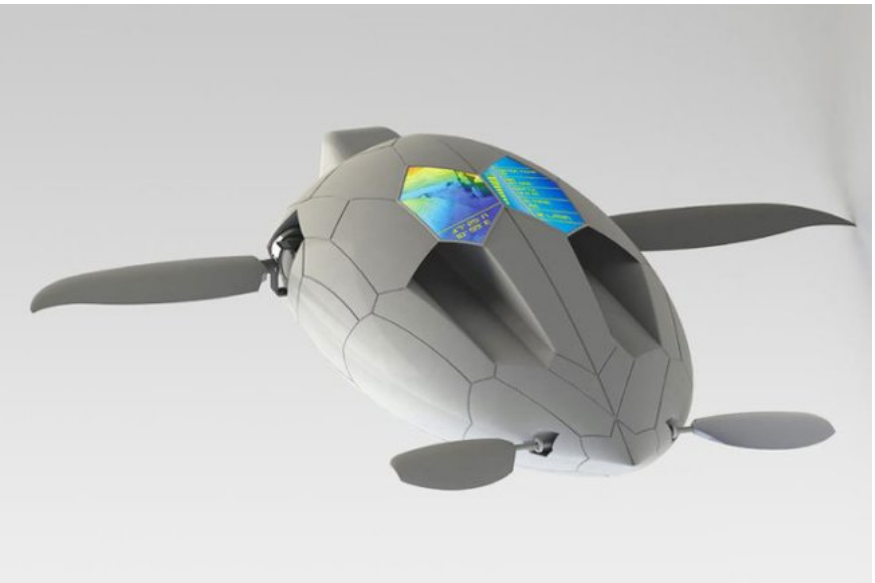


Two engineers Asko Ristolainen and Taavi Salumae are watching U-CAT robots swim in the aquarium at the Biological robot center.
Maneuverability is an essential feature when testing in confined and confined spaces like inside wrecked ships. Besides, the robot is also equipped with a camera to help scientists record images in areas to be observed underwater.

" *U-CAT is specially designed to meet the needs of users,* " said Taavi Salumae, a scientist, who designed the design ideas and researchers at Tallinn University's Biological Robot Center. *Other common underwater robots often use propeller systems to move, U-CAT stabilizer pushers can help robots move in directions without creating strong whirlpools and entraining mud layers. This is one of the reasons that limits observations in wrecked ships.* "

Professor Maarja Kruusmaa, director of the Biological Robot Center, said: " *U-CAT is a biological robot, designed based on animal and plant inspiration. This is a trend in existing robotics research. This helps us solve*

some limitations in technology with natural solutions. "



Currently, these types of robots are mainly used in oil and gas exploitation and defense. Those robots are too big and too expensive to use for divers to enter the wreck. Although divers currently continue to study shipwrecks, doing it this way not only takes time and money but is also dangerous for divers. Therefore, U-CAT is designed as an alternative for humans in this dangerous job.

U-CAT is part of the ARROWS research project funded by the European Union, aimed at developing advanced technologies that support underwater archaeological activities. Technologies within the ARROWS project will be tested in the Mediterranean and the Baltic Sea - two important historical areas and with different environmental characteristics from Europe. Dr Sebastiana Tusa, an underwater archaeologist, said: " *In the ARROWS project, U-CAT robots will work with larger underwater robots and technologies to capture images to search, identify and record underwater images, this will greatly support the stages in the archaeological campaign.* "

This research group will present U-CAT robots as well as interactive operation models with U-CAT robots in the aquarium at the London Science Museum and after that, Safari Robot will open visitors.

Below is a video introducing the sea turtle robot.