

Robo Collect intro

Complex solution to tackle riverine waste

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Parts of the solution

1. Learn the river!

Hydrological model prepared to project the movement of plastic floods on the river.

2. Keep your eye on the river!

Development of a camera system to recognize plastic flooding and sending early alarm.

3. Clean the river!

Development and building the prototype of the waste collection boat.

4. Separate the waste!

Development of a separator able to automatically separate the different fractions of waste.

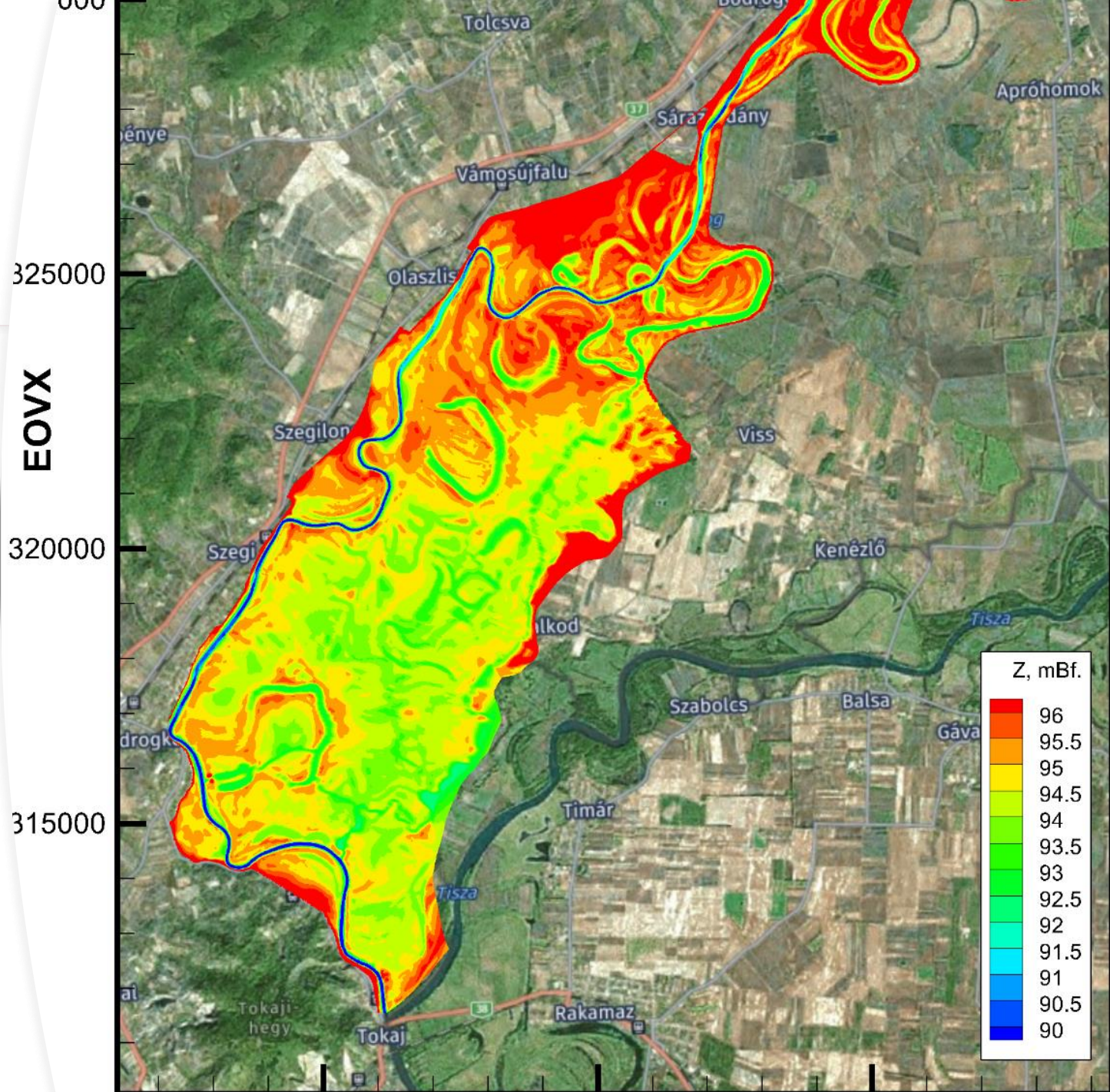
Background

- Experiences gathered during the 10+ years of Tisza Plastic Cup
- Experiences during the building and operation of the waste eating waste boat
- Winter actions with boat Petényi (video): [Made in Hungary: PETÉNYI, a hulladékékvő hulladékújó](#)



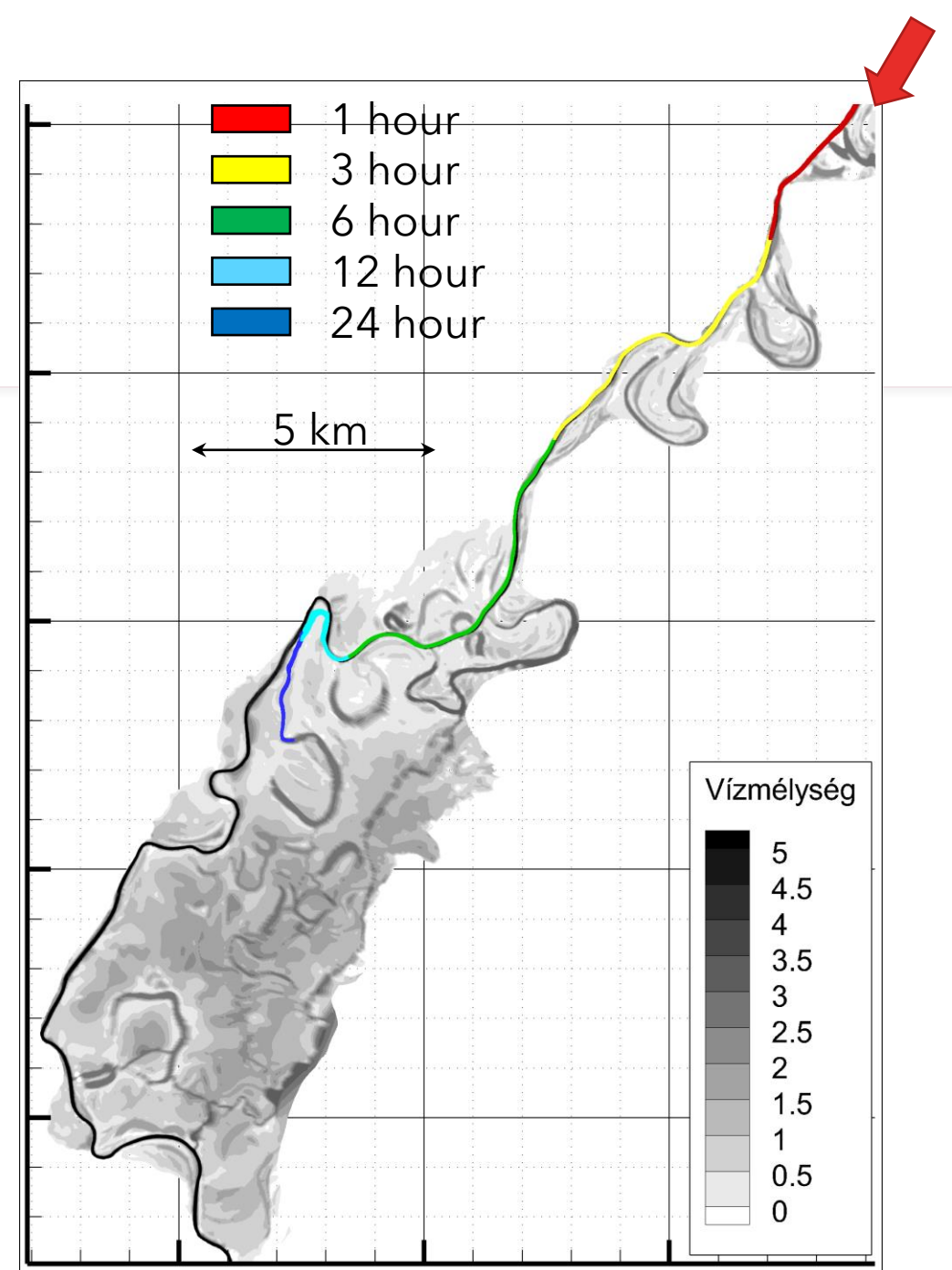
Hydrological model

- Prepared for the Hungarian section of river Bodrog
- Projects the movement of floating particles (such as plastic waste) during high water level periods
- Identification of trapping and intervention locations



Outputs of the model

- Spreading time of the waste - when and where to intervene
- Identification of good intervention points where the waste proceeds in a narrow path close to the shore
- Identification of trapping points where the waste leaves the riverbed
- Publication under review, the model is under constant development and validation



Camera system - working conditions

- Large recognition distance (up to 50 meters)
- Plastic items are often covered by different films (algae, mud, water, etc.)
- After accessing different options, we decided to apply cameras working in the visible spectrum



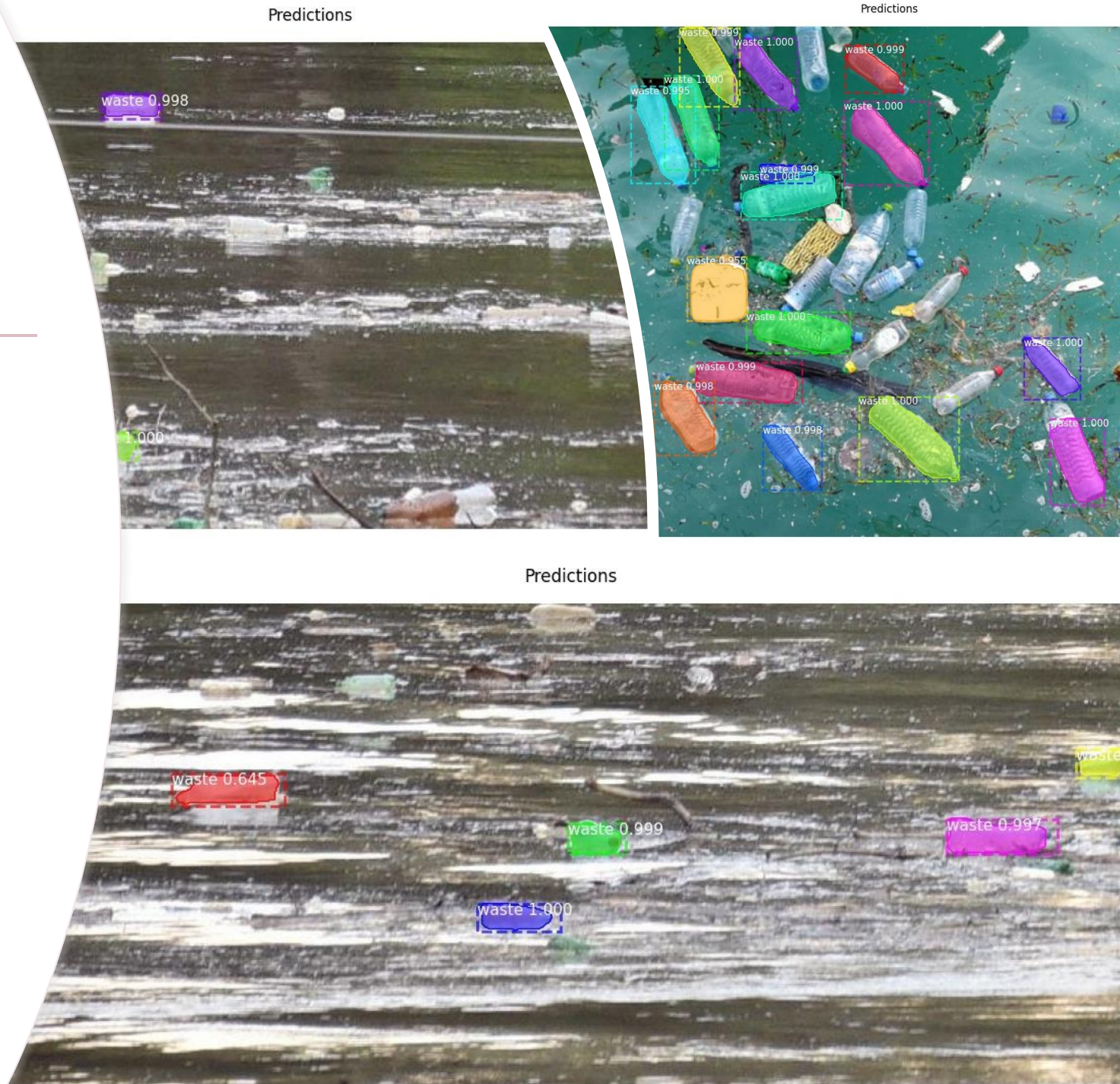
A photograph of a river at dusk. The water is calm, reflecting the sky and the surrounding trees. On the left bank, several boats are docked, including a white cabin boat and a yellow boat. In the foreground, a yellow boat is partially visible. The water is filled with a large amount of floating debris, including sticks, leaves, and other organic matter. The sky is a pale, hazy blue, and the trees on the banks are dark and silhouetted against the light. A red rectangular bar is visible in the top left corner of the image.

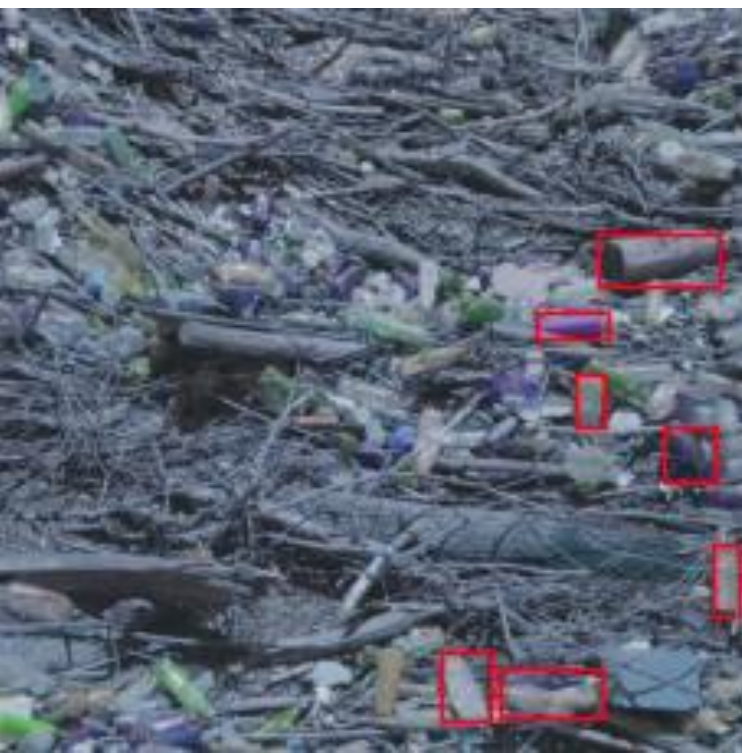
Waste is coming!

Example picture - 2020. június 20. 20:30

Machine learning

- Machine learning option is added based on different algorithm
- Object to find - plastic bottle as the iconic item of plastic floods
- Applicable for early alarm systems
- Constant development of the algorithm and learning is ongoing



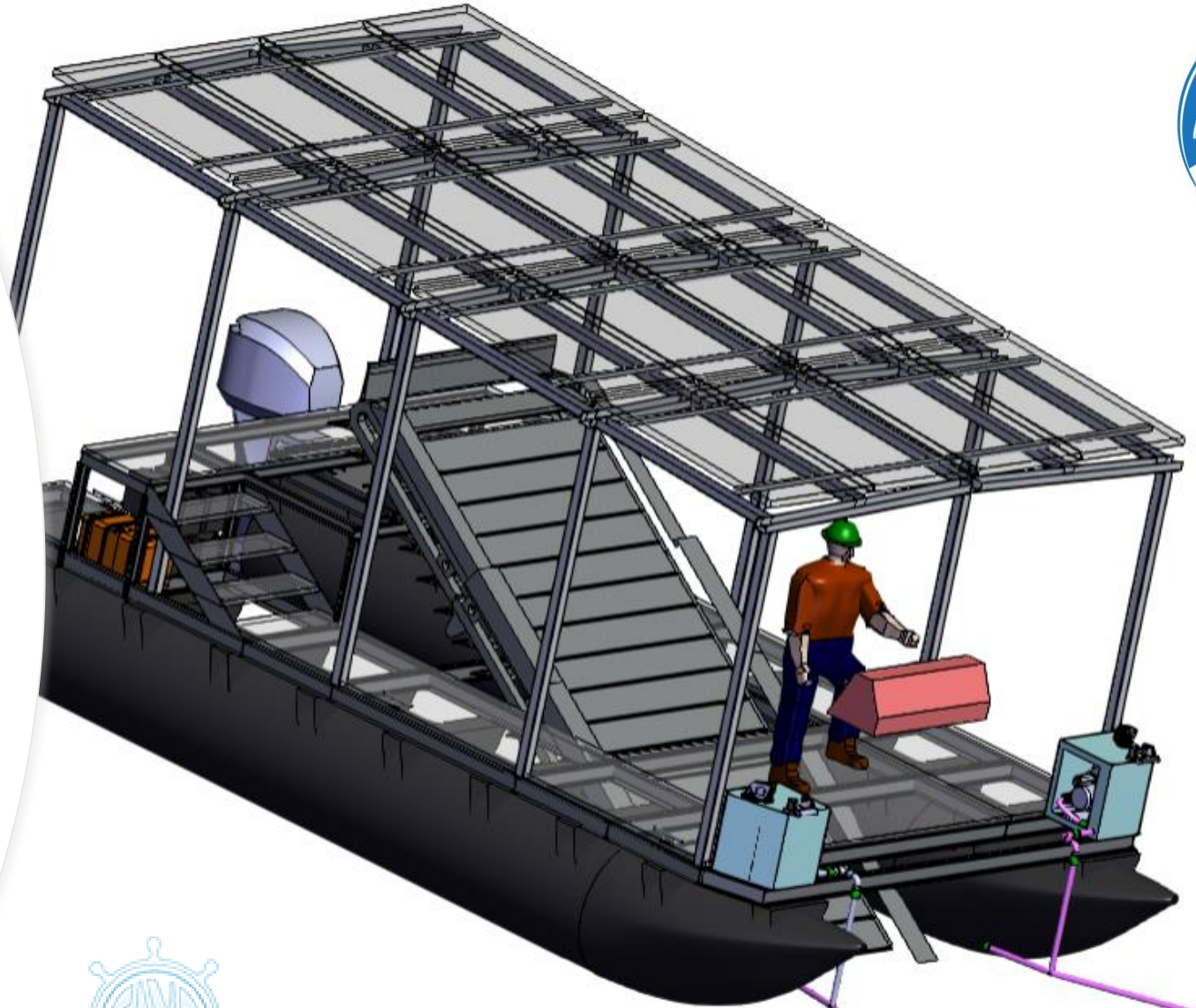


Example
photos

Robo Collect boat

- With conveyor and bubble wall
- Autonomous electricity system by PV panels
- For more details see the video:

<https://www.youtube.com/watch?v=CRtwyKMqEly>





Thank you for your attention!

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