# Clean oceans thanks to robots and AI

Today's oceans contain 26-66 million tons of waste, with approximately 94% located on the seafloor. So far, collection efforts have focused mostly on surface waste, with only a few local efforts to gather underwater waste, always involving human divers. No solution exists that exploits autonomous robots for underwater litter collection. A team of researchers at TU Delft, in a consortium of eight European partners from Croatia, France, Germany, and Romania are working on the development of autonomous robots for underwater littler collection. Bart De Schutter, professor at Delft Centre for Systems and Control, coordinates this Horizon-2020-funded project **SeaClear** (SEarch, identificAtion, and Collection of marine LittEr with Autonomous Robots).

Bart De Schutter: *"Our objective is to operate the robots autonomously, without remote human intervention, and to that end we plan novel developments in debris mapping, classification, and robot control. When fully operational, the SeaClear system aims to detect and classify underwater litter with 80% success rate, and to collect it with a 90% success rate."*
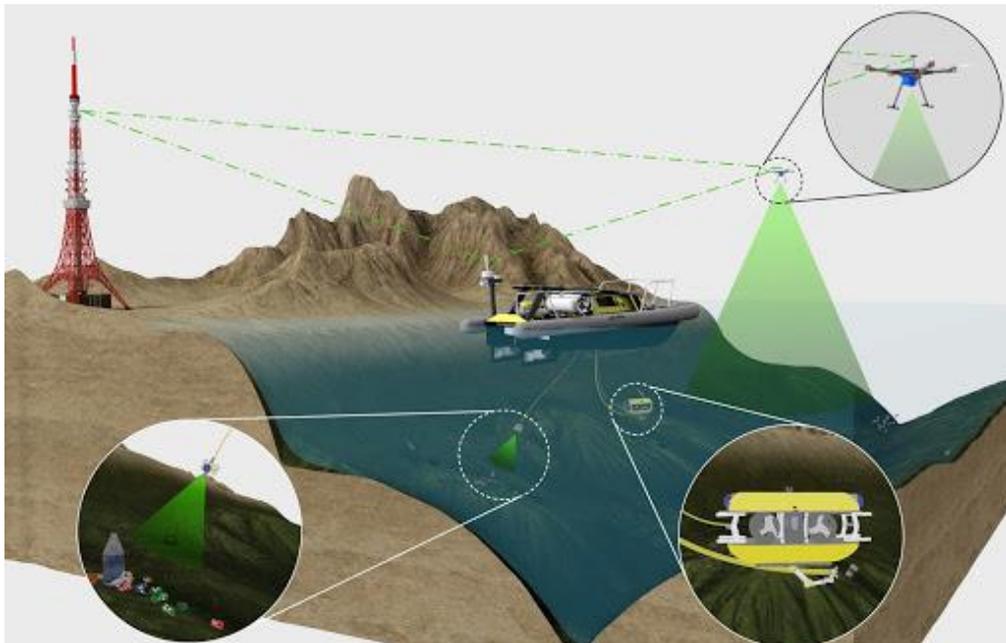
The SeaClear project will build a mixed team of unmanned underwater, surface and aerial vehicles to find and collect litter from the seabed. The project plans to use aerial vehicles to study the correlation between surface and underwater litter. The underwater vehicles will be fitted with special suction grippers for both small and large waste. The system developed will be demonstrated in two case studies: one in port cleaning (with end-user Hamburg Port Authority), and the other in a touristic area (Dubrovnik – with end-user DUNEA). Besides the two end-users, the consortium includes an SME supplying proven hardware for the platform, and four academic institutions with complementary expertise in underwater and aerial robotics, sensing, mapping, and control. SeaClear received €5M funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871295.