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H2O Robotics

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H2O Robotics is an SME company established 2017. The company is located in Zagreb, Croatia. Corporate R&D focuses on marine technology, autonomous vehicles and applications. The first commercial product was Autonomous Surface Vehicle (ASV) H2Omni-X (Figure 1). Overall, the company's mission after its establishment was to turn H2Omni-X into a market-ready product capable of launching a sustainable business in the ASV industry. According to the authoritative Gartner Inc. research (Gartner Inc.'s Hype Cycle of Emerging Technologies 2018 report), autonomous mobile robots were a technology on top among emerging technologies in 2018, exactly close to deep learning and IoT platforms. Motivated by this fact, H2O robotics believed to have solid arguments to apply for the FET (future and technology in emerging) commercialization call of the European Horizon 2020 program. In promoting its own innovation the company was very successful on EU Horizon calls for proposals. In 2017, the project "aPad - smaller, lighter, smarter autonomous marine surface vehicle" was funded. The project aimed to turn an autonomous drone/robot into a commercially attractive, sustainable and an innovative product that is highly competitive in global markets. As part of the aPad project, a business plan was developed that includes market research, intellectual property

management and a financial plan. The technology has advanced to the product-for-the-market level (TRL9) and the product was demonstrated at several fairs to potential end-users, customers and investors, but also to general public and civil society. The aPad project also assisted us in establishing the manufacturing process and supply chain. As a result, the product matured to the commercial level and was awarded the gold medal for innovation at the international fair for ideas and innovation IENA 2017 Nuremberg, Germany. The H2Omni-X was now a vehicle capable of autonomously doing various tasks such as dynamic positioning, path following, go-to-point, and so on, and it was equipped with the wireless link for data transfer to shore/boat-based users or generally to the cloud. It was also capable of carrying significant payloads, e.g. optical and acoustic marine sensors and devices. Therefore, ASV was offered on the market in a variety of options for different applications. In that venture to launch the first products to the market, another H2020 project Pladyfleet also played a significant role. The ASV was delivered to distinguished customers such as: DFKI - The German Research Center for Artificial Intelligence, University of Athens, University of Zagreb etc. Soon after, the wonderful effort was recognized. Since 2015, the European Commission has given the annual



Fig. 1. ASV H2Omni-X



Fig. 2. The annual Innovation Radar Prize to the best EU-funded innovators

Innovation Radar Prize to the top EU-funded inventors. The H2Omni-X was in the final among the four best innovations of the Innovation Radar Award 2018 in the category Excellent Science (Figure 2).

However, because every new technology and product has a limited lifespan, the focus of H2O Robotics business strategy was on the timely creation of new innovative products and applications. The Company has a pipeline of innovative ideas, potential applications and new products including lightweight and low-cost Internet of Underwater Things concept which was presented to potential investors as well as offered to different EU and national calls for proposals. Having substantial experience in preparing project proposals, H2O robotics was successful and was granted the national project “Lightweight portable autonomous buoy for diving support”. Market research done within H2O robotics indicated support for diving operations as one of the applications with high market interest and potential. H2O robotics’ original product autonomous surface vehicle (ASV) served as the link between the undersea and surface/terrestrial worlds in the proposed diving support system (Figure 3).

It tracks and locates the diver and allows for easy communication between the diver and the surface. The

system also includes a device for underwater acoustic localization and communication (USBL - Ultra-Short BaseLine system) with a probe on the robot and a small transponder mounted on the diver and waterproof portable device e.g. tablet for interaction with the diver and subsea navigation. During the 2 years of the project implementation, ideas matured and three new items were produced:

- H2Orbit - lightweight version of the ASV,
- H2Observe - a portable and affordable acoustic system for underwater localisation and communication and
- H2Orologio - a system that turns diving watch/computer into interactive device for divers.

In the meantime, the company was again successful in two other European calls for proposals. Both new projects complemented very well the existing project and H2O robotics business strategy. Project Teuta supported an innovation associate who assisted in the preparation, promotion, and introduction of new goods on the market. Project Tectonics is academia-industry staff exchange project that gives us an insight into new and relevant developments within Europe. The project is currently ongoing, and we anticipate seeing results in the next months.

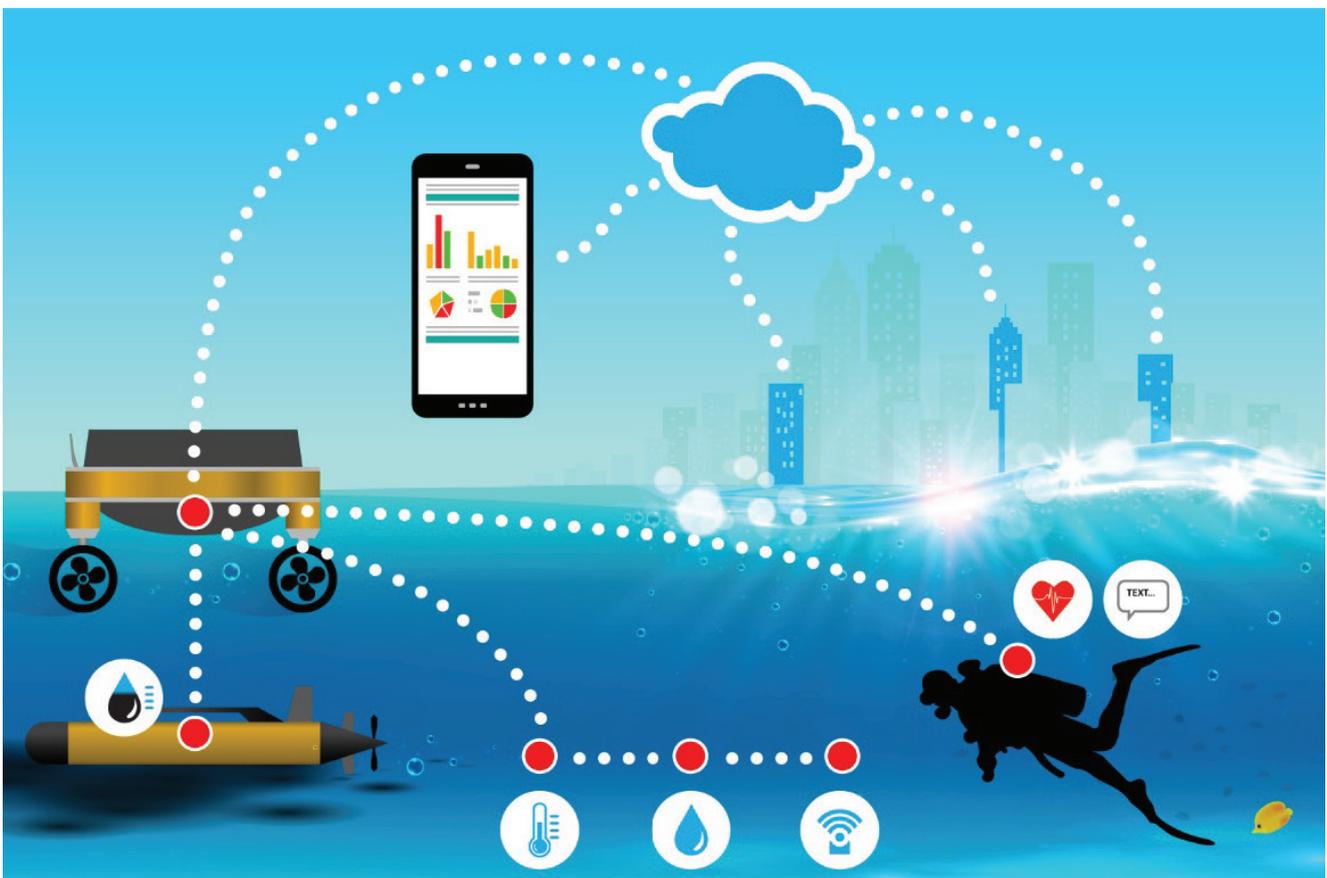


Fig. 3. The diving support system