

# Swimming soft milli-robots to improve water quality monitoring in precision agriculture: SOMIRO project online now!

Digitalization is now an integral part of our daily lives and one of Europe's biggest priorities of the next decades: why not boost the use of robotics also in the Agri-food sector? This is the aim of SOMIRO, the Horizon 2020 EU funded project started on January 1st, 2021 that will develop and demonstrate the world's first energy-autonomous swimming milli-robot with immediate and major impact in the field of robotics and in precision agriculture.



## NEW PRODUCTS AND TECHNOLOGIES



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SOMIRO project, that will last 3 years, has received a contribution of about 3 million euros by the European Commission, it is coordinated by the Microsystem Technology Division of Uppsala University and it put together nine partners, from academia and industry, from six different European countries.

The SOMIRO project will develop a flat-worm-inspired mm-scale swimming robot with month-long energy autonomy, local intelligence, and ability to continuously generate data and optically communicate. The project should demonstrate the potential for reducing the environmental impact of farming in terms of carbon footprint, eutrophication, and excessive use of pesticides and feed. These swimming

robots would cover a much larger area than stationary systems and could be rapidly deployed and self-redistribute where most needed. They may serve as a stand-alone monitoring solution for indoor farming or complement drone-based remote sensing outdoors.

Until today, no energy autonomous (with local intelligence and untethered) milli-robot has been demonstrated capable to withstand hours of continuous operation. The major reason is power limitation: locomotion requires much power and small robots have very limited energy storage and energy uptake. SOMIRO milli-robots will be less than 1 cm long and look like flatworms in the ocean. They should show that soft and stretchable systems require much less energy for movement than other robots of comparable size. To power, they will not rely on any dedicated infrastructure but only on natural sunlight.

SOMIRO soft milli-robots will be initially tested in two different types of water environment, an aquaponic system and a paddy field, both located in Italy, but in the long-term, SOMIRO will be able to provide new tools for different areas of precision agriculture.

Visit SOMIRO's website and find out more: <https://www.somiro.eu>

#### PARTNERS:

Uppsala Universitet (Sweden), École Polytechnique Fédérale de Lausanne (Switzerland), Max Planck Institute for Intelligent Systems (Germany), Universität Linz (Austria), Fundación IMDEA Networks (Spain), Mycronic AB (Sweden), Battioli Paola Società Agricola S.S. (Italy), The Circle Società Agricola a Responsabilità Limitata (Italy), Warrant Hub SPA (Italy)

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