

Project TwoPager | EuroTeQathon III

Our third EuroTeQathon will be hosted in Prague (CTU) from Saturday June 10th until Monday June 12th 2023. In preparation of this event every (selected) Collider project is asked to submit a TwoPager on their project according to the locally communicated deadline and procedure. This document will be used by the jury to complement the final presentation on Monday and have a good overview of all the different projects

PROJEC DETAILS

Challenge Collaborator: **Photonics Integration (Bernat Molero)**

Team name: **OptiBerry**

Team slogan: **OptiBerry: Ripe for Success, Rooted in Sustainability**

Team members (full name | study program | university)

Kim Wintraecken	Msc. Industrial Design	TU/e
Pruthvi Krishnamurthy	Msc. Automotive	TU/e
Cihan Gülerüz	Bsc. Computer Science	TU/e
Sungwoo(Mason) Shon	Bsc. Mechanical engineering	TU/e
Raphael Nathan	Bsc. Mechanical Engineering	Technion (Israël)

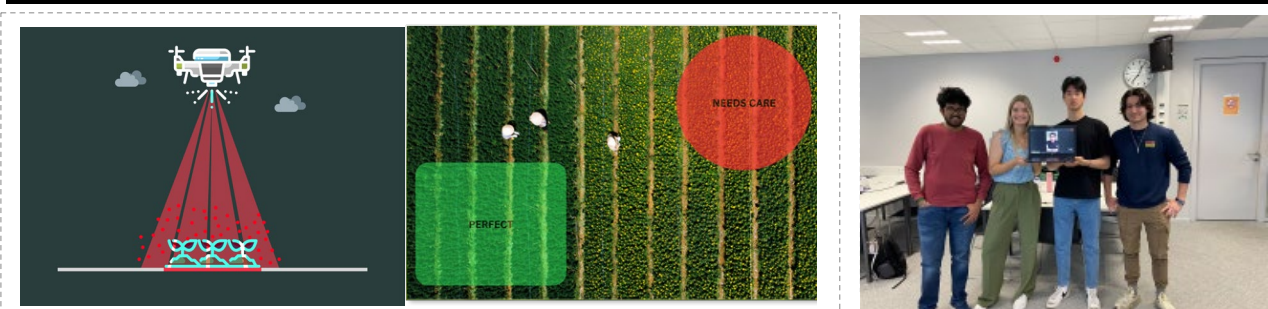


What is the target problem for your project (in one sentence)?

Addressing the critical issue of strawberry (crop) waste, our project aims to reduce losses, improve resource management, and ensure premium quality strawberries to meet consumer demands.

How do you solve it (in max. three sentences)?

OptiBerry revolutionizes strawberry farming by enabling real-time monitoring of nutrition and glucose levels in strawberries in the field. OptiBerry empowers farmers to produce high-quality, naturally sweet strawberries, reducing waste and simplifying post-development processes, while gaining a competitive edge in the market. With its compact size, and drone compatibility, OptiBerry seamlessly integrates into existing farming practices, saving farmers valuable time, particularly considering the average field size of 2-3 hectares.



Potential for impact

How does it contribute to a more sustainable future from an environmental, social and/or economic perspective? On what scale and what range of the population could your project have an impact? (regional, national, European, only a small group of people, a wide range of the population etc.)

Currently, overproduction and customer orders lead to wastage of soft fruits, particularly strawberries, with an average of 11% wastage at strawberry farms, resulting in a loss of approximately 125K USD per farm. OptiBerry minimizes these losses by optimizing the strawberry harvest and reducing unnecessary waste. Monitoring nutrient levels also allows farmers to adjust the use of fertilizers, pesticides and water, preventing waste. OptiBerry will initially focus on Dutch farmers using drones, with future expansion to other crops and large-scale crop farmers in countries such as China or America. Lastly, Optiberry meets the growing demands of health-conscious consumers and has a positive impact on public health and well-being. Contributing to a more sustainable and thriving community.

Innovation

How is the solution innovative comparing to existing ones (if exist) from an application area, business model, technological and/or customer experience perspective? Who are the main competitors?

We have identified two distinct areas of competitors. Companies that prioritize enhancing quality of the crop and those that specialize in real-time monitoring in the field. What sets us apart is our ability to combine these two elements. Two examples that provide monitoring and analysis of strawberries are Intello Labs and AgroSustain. What sets OptiBerry apart is its ability to analyze both the nutrient and glucose levels, and being able to directly monitor it in the field. From an application area perspective, OptiBerry provides comprehensive data on strawberry quality and nutrition, benefiting farmers and distributors. OptiBerry's business model simplifies the monitoring process and reduces the need for multiple tools. Technologically, its sensors utilize advanced imaging techniques without damaging the fruit.

Feasibility

To what extent can your project be self-sustainable? Are the means available to realize your innovations? What would be your ambition/the next steps with the project?

OptiBerry strives for long-term customer relationships in a high-demand industry by offering a high-quality product. With a niche market potential of 6 million USD in the Netherlands alone, and an estimated starting capital of 300k USD, OptiBerry could reach the break-even point with the sale of 150 units within 2 years. The company has the ambition to expand globally within 5 years, and with the growing precision farming market over the next 10 years, OptiBerry is well positioned to capitalize on this opportunity. We strive to expand OptiBerry's application beyond strawberries, to other soft fruit and crops. Next steps include field trials, feedback gathering and building strategic partnerships to maximize the impact of the innovation.

Inclusivity

Are the stakeholders (industry partners, governmental bodies, societal stakeholders, potential users, etc.) involved in the process of the solution development? How did you take them and their feedback into account? What disciplines (engineering perspective, sociological perspective, etc.) are taken into consideration in the development of the solution?

In the research phase, we interviewed an EngD candidate with specialty in sustainable agricultural systems, crop farmers and an agricultural consultant to understand the issues farmers face. With this information, we created a customer journey and persona to specify the farmer's needs and design requirements. An expert in agricultural robotics was consulted to make decisions about the solution direction, technologies, potential customers and collaborations. We also spoke to strawberry consumers to understand customer satisfaction and nutritional needs. We had regular meetings with a PhD researcher and a professor on Photonics to assess technical feasibility and risks. This week we have planned a meeting with MantiSpectra, specialized in hyperspectral imaging technology, to discuss possible collaborations. The involvement of various stakeholders helped us make validated design decisions and create a viable business plan.