

graced

« An innovative, holistic and portable solution for food quality monitoring »



The **GRACED** project aims to systematise contaminants measurements on fruits and vegetables throughout the value chains thanks to **ultra-compact low-cost sensors**.

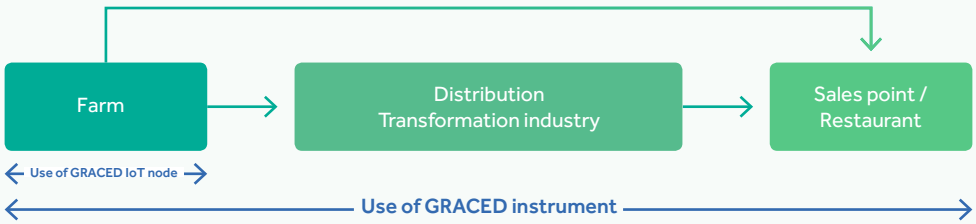


The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101007448.

In a context of **increasing demands for food security and traceability**, the GRACED project is developing a novel solution that will enable systematized quality measurements on fruits and vegetables from “farm to fork”.

Throughout the **value chains**, the GRACED sensors will be able to measure microbiological and chemical contaminants as the ones offered by portable spectroscopy-based devices currently available.

This European collaborative project seeks to enhance quality standards in the food production, transformation and consumption.



The heart of the concept is a **new type of plasmo-phonic bimodal interferometric sensor**. This will allow quick, affordable, on-the-spot and high sensitivity measurements for multiple contaminants simultaneously.

Two types of sensing devices will be developed to address mass production and robustness issues:

- The first PROTOTYPE is a portable instrument for laboratory & field analysis of all types of samples.
- The second PROTOTYPE is an autonomous sensing node for unattended field measurements, particularly useful for production systems that foresee minimum human intervention such as vertical-urban farming.

These sensors will be connected to a **data analytics and sDSS platform** storing measurements. An **app with offline capabilities** and a **cloud application** will complete the system and provide clear information and comparisons with the stored datasets.

GRACED instrument

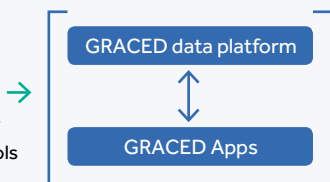
- 50x50x30 cm
- Analysis time: 20 min
- Production cost per (multi-parameter) sensor: 2.8€
- Suitable for all types of samples (liquid, solid)

GRACED IoT node

- 30x20x20 cm
- Analysis time: 25 min
- Production cost per (multi-parameter) sensor: 2.8€
- Suitable for liquid samples only
- Fully automated, on-line sensing (no human interention for sampling)

Input form

- GRACED devices
- 3rd party data
- Manual or ERP input on product/ production and additional controls



- Product lifetime quality monitoring traceability
- Faster & more effective controls and support of EFSA assessments
- Support for automated product quality certification

The sensors will detect some of **the most dangerous contaminants** of the food value chains. Early prevention of contamination enables to **avoid threats for the final consumer** and contributes to minimizing wastage. Thus, reinforcing a sustainable production and a safe consumption for farmers and consumers.

The GRACED project relates directly to the **Farm to Fork Strategy** deployed by the European Commission which aims to make food system fair, healthy and eco-friendly.

Molecules measured :

Multiple analytes detected such as Ochratoxin A, Salmonella or Acrylamide.

Key figures of the GRACED project:

- Duration: 42 months
- Funding: € 4,989,480.00
- 14 partners in 8 european countries
- 2 types of device prototypes
- 7 contaminants detected simultaneously

A multi-actor consortium:

System integration & cloud platform experts



Academia and Research



Food industry representatives



Photonic biosensors SMEs



A project led by **CyRIC** (info@cyric.eu)

www.graced.tech