

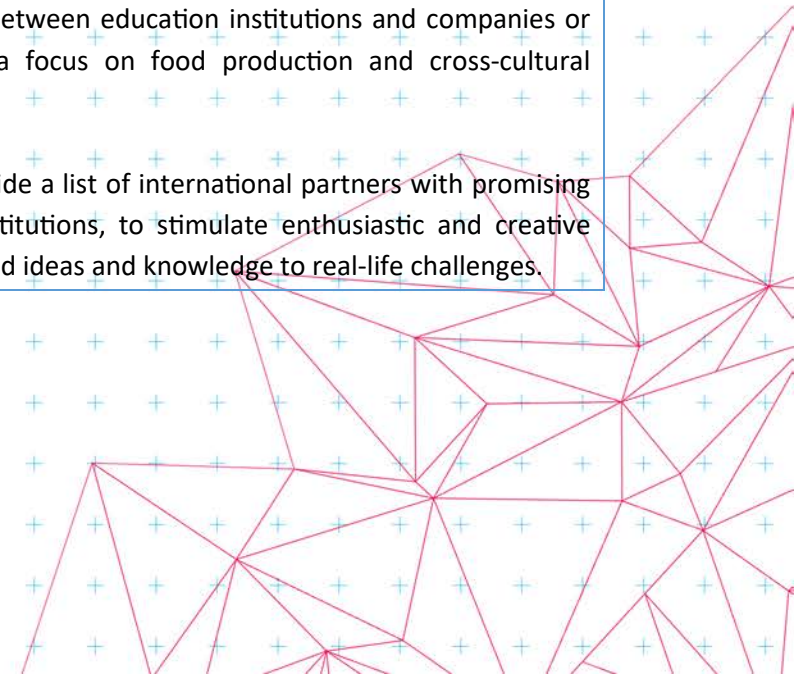
Challenge name	Smart-farming system in Tanzania
Challenge owner	Seed2Feed & Planetary Services (facilitators) Profyta – Tanzania (local organization)
	<i>X Company</i> <i>Y Research</i> <i>Y Student team</i>
	Frans de Jong (Seed2Feed) Otto Kroesen (Planetary Service) Ana Xambre Pereira (TGD Challenge Collector)
Brief summary	Do you want to contribute with your skills & knowledge to a more sustainable future in Africa? Yes?! Then this ISBEP is for you! In collaboration with Seed2Feed, Planetary Service & Profyta develop a smart farming system that monitors crops and collects relevant data for crop production optimization and research that can be easily tailored to different environmental contexts. Be part of the promotion of sustainable agriculture practices and local community capacity building in Tanzania. This is your chance to have a meaningful impact in the world!

About the challenge owner

Seed2Feed is a small-scale development organisation that supports sustainable agriculture and farmers entrepreneurship initiatives in the Global South, with a focus on sub-Saharan Africa. The mission is to connect local and Dutch enterprises in the agriculture value chain with governments, knowledge institutions and NGOs to exchange knowledge, support business development and promote international cooperation.

Planetary Service is a mediator for internships between education institutions and companies or foundations active in the Global South with a focus on food production and cross-cultural entrepreneurship.

Both organisations are working together to provide a list of international partners with promising projects and initiatives to higher education institutions, to stimulate enthusiastic and creative students to contribute with their solution-oriented ideas and knowledge to real-life challenges.



Challenge description

Profyta (<https://sites.google.com/view/profyta-smart-farming/>) is a farm management company that provides several services to farmers with protected cultivation of vegetables such as hygiene awareness, Mtumbwi system implementation (Africa version of soilless hydroponic system), team trainings, among others.

The overall company goal is to keep developing their smart farming system that allows remote monitoring of crops growing process, the acquisition of data for crop development research, production optimization and crop-tailored efficient use of water, nutrients, ventilation, disease prevention, among other parameters.

The challenge goal is to develop a smart farming system by connecting sensors (all forms of data communication - RS485 to 0-5V) to transmit data (e.g. via M2M, IoT, etc.) for further data analysis and applications (e.g. control valves, irrigation, fertigation, etc) with a user-friendly interface.

There is already an initial smart farming system being developed by the company from which lessons can be retrieved but the students are encouraged to develop their own solutions.

Challenge Picture



Input and involvement of challenge owner

Seed2Feed & Planetary Service will support the student group by connecting them to Profyta for local context background. Also, they can connect students with a Dutch and international network of relevant stakeholders that can provide their expertise and experience in this sector. Finally, both organization have extensive experience in supporting students in similar projects so they can guide students in the ISBEP project management.

Resources

What resources are necessary for the students to work on the challenge?

Access to relevant literature and contact with experts in the field to a better understanding of the feasibility of the solutions found in literature.

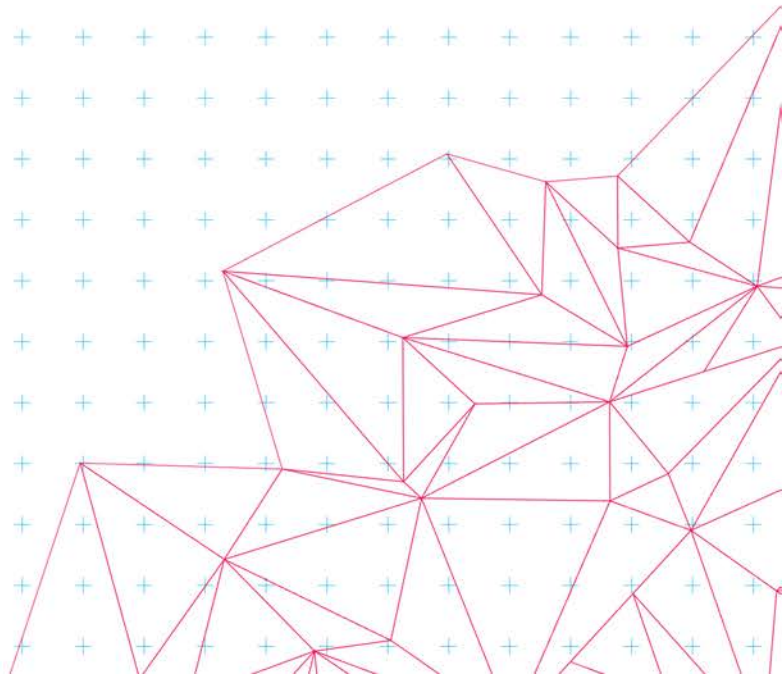
What resources do you offer to students?

Expertise; ...

Materials; ...

Workplace; ...

Other: Networking



Roles of different disciplines (only for ISBEP)

Please describe possible contributions you expect to see from as many disciplines as you see fit for this project.

(On the next pages you find descriptions of the different departments).

Automotive Technology	N/A
Biomedical Engineering	N/A
Architecture, Urbanism and Building Sciences	If the project actively engages with the buildings in which the farming system is implemented this could be made interesting for students from the built environment.
Computer Science and Engineering	Smart farming sensors system design & implementation in the African context (technological & socio-economic feasibility). Data communication systems (e.g. M2M; IoT). Data analysis/signals controlling practical applications (e.g. valves). Creation of information system software and/or app.
Data Science	Smart farming sensors data analysis. Data analysis farming applications. User-friendly data visualisation for farming parameters.
Electrical Engineering	Smart farming sensors system design & implementation in the African context (technological & socio-economic feasibility). Data communication systems (e.g. M2M; IoT). Data analysis/signals controlling practical applications (e.g. valves).
Industrial Design	N/A
Medical Sciences and Technology	N/A
Psychology and Technology	N/A
Chemical Engineering and Chemistry	Cultivation parameters research according to type of seed and environment conditions to support smart-farming sensor system.
Sustainable Innovation	Life Cycle Assessment and improvement of the technology and structures used in the sector. Socio-Economic & Technological Systemic Analysis, improvement and embeddedness in the local context .
Industrial Engineering	N/A
Applied Physics	Smart farming sensors system design & implementation in the African context (technological & socio-economic feasibility).
Applied Mathematics	N/A

Mechanical Engineering

Smart farming sensors system design & implementation in the African context (technological & socio-economic feasibility).

