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EIT AI COMMUNITY

Take Root Bio Technologies

AI Powered Training for Modular Farming Systems

AI Challenge 2025

TAKE ROOT BIO TECHNOLOGIES

Take Root Bio – **Adaptive AI Learning Platform to support TRB's Agrifood Ecosystem Borderless Training**

Challenge description

Develop an AI-powered education platform capable of delivering adaptive, localised training across multiple languages, qualification levels, and socio-technical contexts.
The goal is to prepare diverse learners to operate within Take Root Bio's **AgriFood EcoSystem**—a complex space farming technology designed for Earth—to address food security, local employment, and climate resilience challenges through modular urban farming.

The platform must:

- Align training with standardised certifications and qualifications
- Operate effectively across diverse geographies, languages, and education levels
- Be flexible to support both Earth- and space-based farming environments

Why is this a challenge/opportunity to overcome?

Unlike traditional Controlled Environment Agriculture (CEA), TRB's system integrates **aquaponics, fungi cultivation, dwarf tree agroforestry, and bio-circular waste loops**—demanding multidisciplinary skills
Educational infrastructures vary widely across Europe and globally; digital access, prior knowledge, and training standards differ
AI offers a path to **scalable, culturally contextualised learning experiences** that support both **local impact** and **international certification alignment**

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Did you try out a solution for this already?

We piloted a traditional LMS with static, English-only modules for aquaponics, fungi cultivation, and agroforestry. This approach proved **rigid and monolingual**, failing to engage non-English speakers or address regionally specific farming contexts. There was **no real-time learner feedback**, no adaptive difficulty, and no integration with widely-used systems—leaving content outdated, hard to maintain, and locally irrelevant.

What are your expectations about the solution?

We seek an AI-powered platform that delivers:
Interactive, hands-on exercises—auto-generated quizzes and simulations built directly from TRB training content.
Real-time feedback—learners receive hints and corrections as modules are completed
Adaptive difficulty and learning paths—questions and scenarios adjust based on learner performance and background.
Collaborative learning features—e.g., peer discussions or instructor reviews for deeper comprehension.
Progress analytics dashboard—allowing trainers to monitor cohort performance
Localization engine—translating and contextualizing content across English, Portuguese, Greek, Maltese, etc., adapting examples to local practices and infrastructure.

Additional information?

Take Root Bio's space farming technology has been reconfigured to regenerate derelict buildings into urban biospheres that create food, jobs, and innovation hubs. However, training operators for these systems—especially in underserved or linguistically diverse areas—has proven difficult using static LMS tools.
We aim to co-develop an AI system that not only translates training material but **adapts it to local environments**, including job market context, literacy levels, and technical infrastructure, while ensuring alignment with EIT Food missions and national qualifications frameworks.

Information about the challenge ownership

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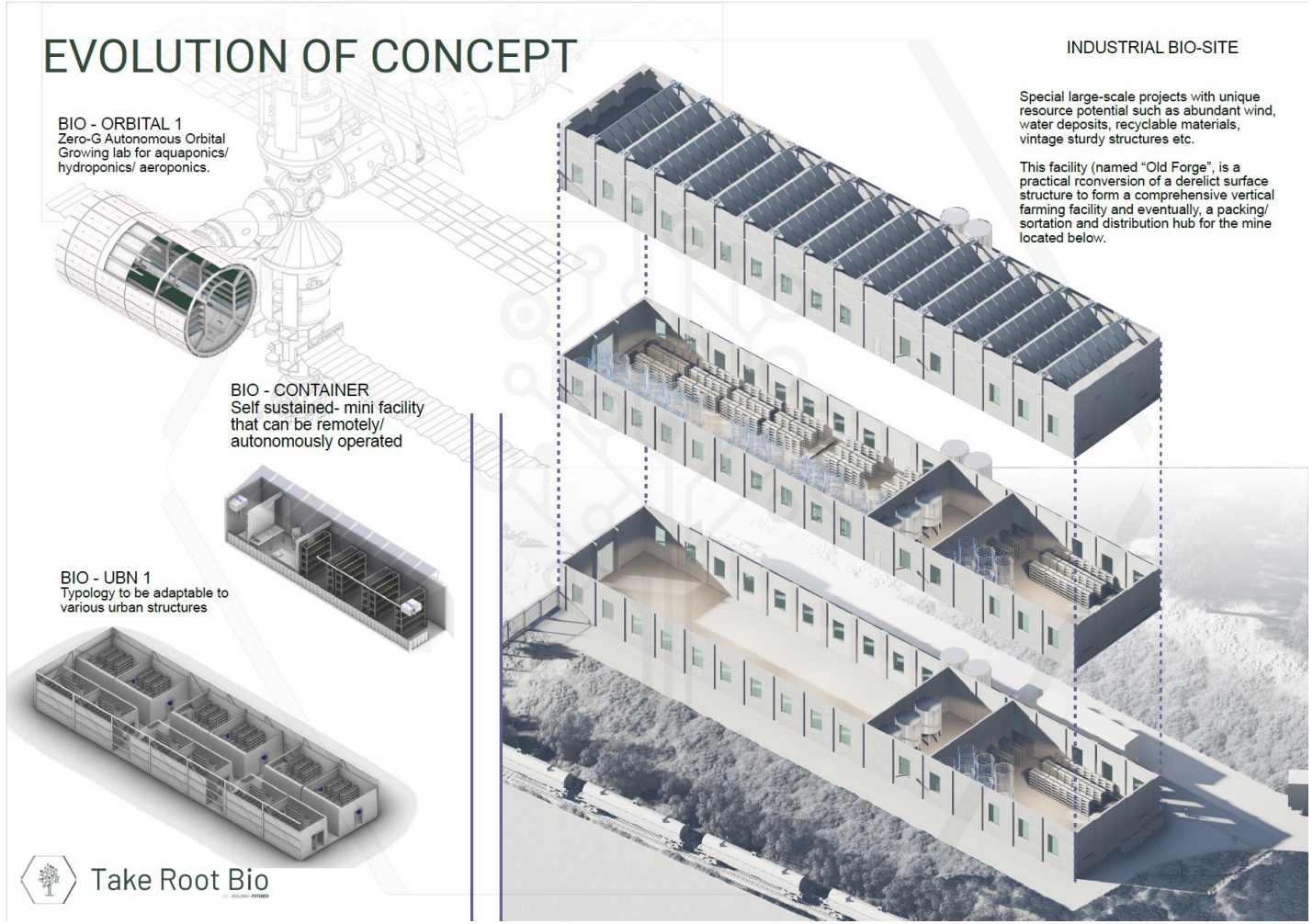

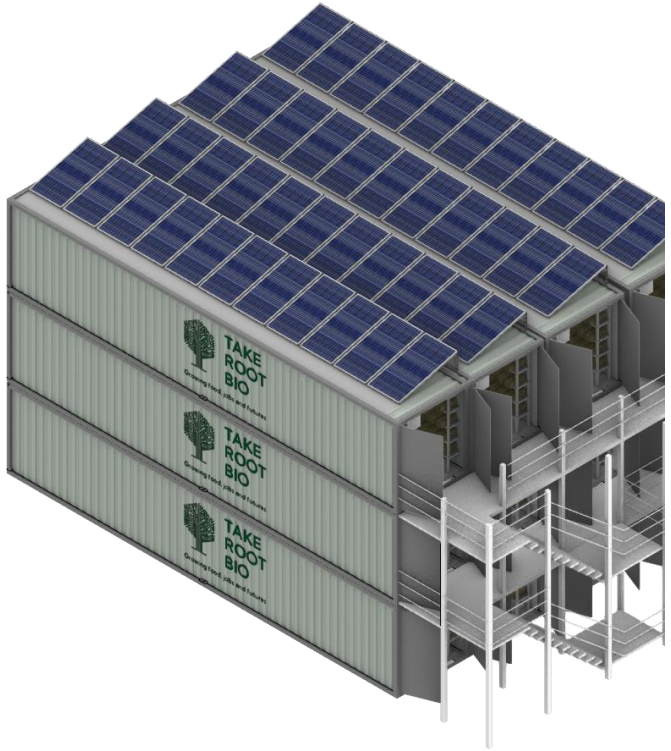

Our TRB BioContainer prototype is being developed to support harsh environment and humanitarian aid locations as our system is designed to 'grow' a complete diet.