



This project is co-funded by the European Union  
and the Republic of Türkiye



# MSCA SE 2026 Call



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**ORGANIZATION:** KTO Karatay University

**WORKSHOP NAME:** STEDEC (Smart Technologies Development  
Center)

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### Description of the Organisation

#### **1. Applied research and validation infrastructure**

STEDEC (Smart Technologies Design, Development and Prototyping Centre) is an applied research and innovation centre established within the AKİTEK Smart Technologies Center and supported by the EU and the Republic of Türkiye. The centre provides advanced prototyping, measurement, testing, and digital engineering infrastructure where technologies can be developed and validated under realistic operational conditions.

#### **2. Bridge between academia, industry, and users**

STEDEC operates as a continuous knowledge transfer interface between universities, SMEs, and end-users. Academic research outcomes are transformed into deployable solutions through prototyping, testing, and engineering services, while industrial challenges are translated into research and development activities, creating a circular innovation workflow.

#### **3. Living-lab and intersectoral learning environment**

The centre hosts living-lab-type environments (e.g., Farmlabs) where researchers, engineers, and practitioners collaborate in real-world scenarios. This structure enables intersectoral staff exchanges, hands-on experimentation, and operational learning, making STEDEC a suitable host organisation for mobility-based research and training actions such as MSCA Staff Exchanges.



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### Teams' Expertise

- Currently involved in an active **Horizon Europe project**
- In the previous call period:
  - **3 Horizon Europe proposals submitted**
  - **2 passed the evaluation threshold** (not funded)
- Currently preparing an **Erasmus+ KA220-HED project** with established European partners
- Project focus: **agriculture-oriented digitalisation and applied learning environments**
- Experience in regional innovation: **joint technical projects with 7 agricultural companies**
- Strong competence in **deployment, integration and real-environment validation**

#### **Core multidisciplinary team:**

- 1 Electrical & Electronics Engineer
- 2 Mechatronics Engineers
- 1 Biomedical Engineer
- 1 Assistant Professor (Electrical-Electronics Engineering)
- 1 Assistant Professor (Mechanical Engineering)
- 1 Associate Professor (AI-focused Civil Engineering)
- 1 Economist (experienced in project management)

#### **Extended capacity:**

- Access to a wider academic pool of **~400 university researchers** available on demand for complementary expertise



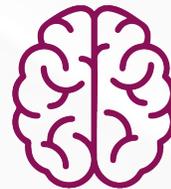
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### Research Fields

#### 1. Sustainability and Resource-Efficient Systems

Development and validation of technologies that improve energy, water, and material efficiency, supporting environmentally responsible production and operational practices in real-world environments.



#### 3. Smart Agriculture Technologies and Living-Lab (Farmlab) Environments

Implementation and evaluation of sensor-based, AI-assisted agricultural systems within operational pilot sites where researchers, engineers, and users collaboratively test and refine digital farming solutions.



#### 2. Prototyping and Applied Technology Development

Design, rapid prototyping, testing, and iterative improvement of mechatronic and electronic systems, enabling transformation of research concepts into functional and deployable solutions.



#### 4. Engineering Consultancy and Technical Validation

Provision of engineering analysis, system integration, performance verification, and technical assessment services to support industry adoption and ensure reliability of advanced technological solutions.





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### On-going Projects

- **MAPIT – Horizon Europe WIDERA Project (active participation)**  
International collaboration project aimed at strengthening research and innovation capacities and enhancing participation in Horizon Europe through knowledge exchange and institutional cooperation.
- **EDIH Anadolu (institutional involvement through the university)**  
Participation in the European Digital Innovation Hub ecosystem via the host university, enabling access to digital transformation services, industry engagement, and SME-oriented innovation support activities.
- **Erasmus+ KA220-HED (under preparation)**  
Cooperation partnership in higher education focused on agriculture-oriented digitalisation, applied learning environments, and intersectoral training methodologies together with European partners.
- **Farmlab Development and Deployment Activities**  
Establishment and operation of real-environment pilot sites where sensing, AI-assisted monitoring, and mechatronic systems are tested collaboratively with users and sector stakeholders.
- **Regional Industry Collaboration Projects**  
Continuous technical cooperation with agricultural companies supporting technology adaptation, validation, and implementation in operational conditions.



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## Project Idea

# Project Idea – Establishing a Farmlab-Based Knowledge Exchange Network

- STEDEC aims to establish a permanent Farmlab pilot site where technologies are tested together with real users (operators / farmers)
- The MSCA Staff Exchanges project will support the creation of this Farmlab through international staff mobility and knowledge transfer

We are looking for exchange collaboration in:

- Sensor technologies (field sensing, data acquisition)
- Digital twins of agricultural systems
- Sensor fusion and data interpretation
- Agricultural mechanisation systems
- Robotics and autonomous systems for agriculture

### Mobility logic

- Visiting researchers → test and validate technologies in real field conditions at STEDEC
- STEDEC staff → learn modelling, control, and analysis methods in partner laboratories

### Expected outcome

- Long-term collaboration network around Farmlab environments
- Faster technology validation and reliability improvement
- Practical adoption of smart agriculture solutions in real operations



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### Dates & Plan

#### Year 1 → Planning & Pilot Preparation Visits

Short exploratory visits to align research goals and define mobility pathways between partners. Activities include mapping knowledge gaps, defining individual secondment objectives, preparing data management protocols, selecting sensors and measurement strategies, and configuring the Farmlab pilot environment (infrastructure layout, communication architecture, and experimental scenarios).

**Outputs:** secondment roadmap, experimental plan, shared data standards, pilot deployment plan.

#### Year 2 → Technical Exchanges (Sensing & Modelling)

Researchers and engineers perform reciprocal secondments focusing on sensor installation, calibration, data acquisition, and preprocessing in real operational conditions. Partners jointly develop modelling approaches (prediction, monitoring, anomaly detection) using field datasets generated in the Farmlab.

**Outputs:** validated datasets, calibrated sensing workflows, initial digital models, joint technical reports.

**Preferred mobility period:**  
2027 – 2030 (flexible within project duration)

#### Year 3 → Integration & Deployment Exchanges

Staff exchanges dedicated to integrating hardware, software, and control systems into operational workflows. Robotics and mechatronic solutions are tested in the field, and systems are adapted to environmental variability and operator interaction. Reliability, maintainability, and usability aspects are addressed collaboratively.

**Outputs:** integrated system prototypes, deployment procedures, integration guidelines, performance evaluation reports.

#### Year 4 → Validation & Training Exchanges

Longer secondments for full-scale validation under real conditions and preparation of transferable methodologies. Partners produce best-practice guidelines, training modules, and demonstration activities for researchers, engineers, and end-users.

**Outputs:** validated use cases, training materials, operational manuals, dissemination workshops and joint publications.



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Consortium - profile of known partners (if any)

No	Partner Name	Type	Country	Role in the Project
01				
02				
03				
04				
05				



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### Consortium – required partners

Expertise	Type	Country/Region	Role in Project
Applied integration, Farmlab operation & system validation	Research & Innovation Centre (STEDEC)	Türkiye	Host Farmlab pilot site, coordinate field experiments, organise deployment-oriented secondments
Smart agriculture sensing & plant response modelling	University	Southern Europe (e.g. Spain, Italy, Greece)	Develop crop monitoring methodologies and host secondments on data analysis and biological interpretation
Mechatronics, robotics & control systems	University	Western Europe (e.g. Portugal, Germany, Netherlands)	Provide modelling, control and robotic system validation training; receive STEDEC engineers for algorithm development
Agricultural operations & field implementation	Farm / End-user organisation	Southern Europe (e.g. Italy, Spain, Portugal)	Provide operational environment for usability testing and adoption studies
Socio-economic analysis & technology adoption	Research institute / Social sciences	Northern/Central Europe (e.g. Germany, Austria, Sweden)	Evaluate user acceptance, economic impact and develop adoption guidelines



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PRESENTER CONTACT

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COUNTRY: TURKEY