

# PEPR project AgriFutur: Toward Future Agroecology, Technological Integration and Ecosystem Modeling for Adaptive Management

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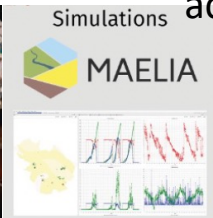
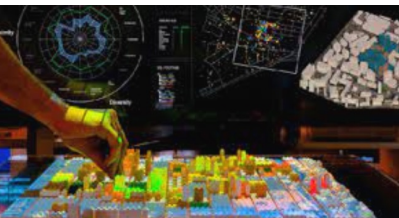
**Keywords:** Robotic-assisted Agroecological Systems, Multi-Agent Modeling, Smart Sensors, Heterogeneous Multi-Robot Systems, Monitoring and Evaluation, Decision Support

➔ How to design **viable and sustainable ecosystems supported by intelligent technical systems** (smart sensors, low-impact robots) and how to assess these solutions across environmental, economic, and societal scales

## 4 research axes:

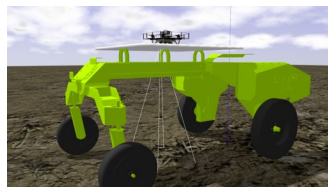
### Multi-scale ecosystem modeling

of interactions and exchanges among ecosystem components (animals, plants, soil, biodiversity, technical systems - smart sensors & robots, users, policy makers...) using **mechanistic multi-agent models**



### Deployment of technical systems

(smart sensors, heterogeneous robots, digital twins) **tailored to contextual constraints** (technology accessibility), agricultural task requirements (observation, measurement, evaluation), environmental conditions (terrain topography, accessibility, scale)

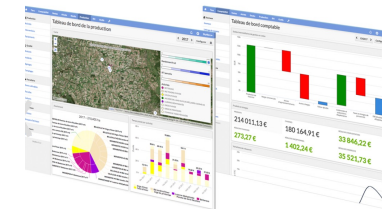


### Ergonomic & human-centric study

, participatory co-design, evaluation of socio-economic impacts of organizational changes and work methods supported by intelligent systems, effects on the attractiveness of rural areas & agricultural activities

### Data processing & management

, enhancing collected information to make it readily accessible to users

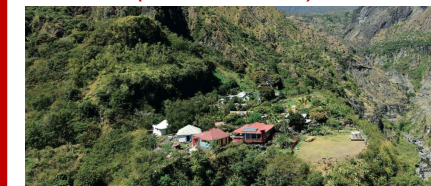


## 3 case studies:

### OSFarm/CNA pilot farms



### Experimental sites Digiferme network (La Réunion)



### Experimental site of Diohine village (Senegal)

