



Rural Environmental Monitoring via ultra wide-Area networks And
distriButed federated LEarning

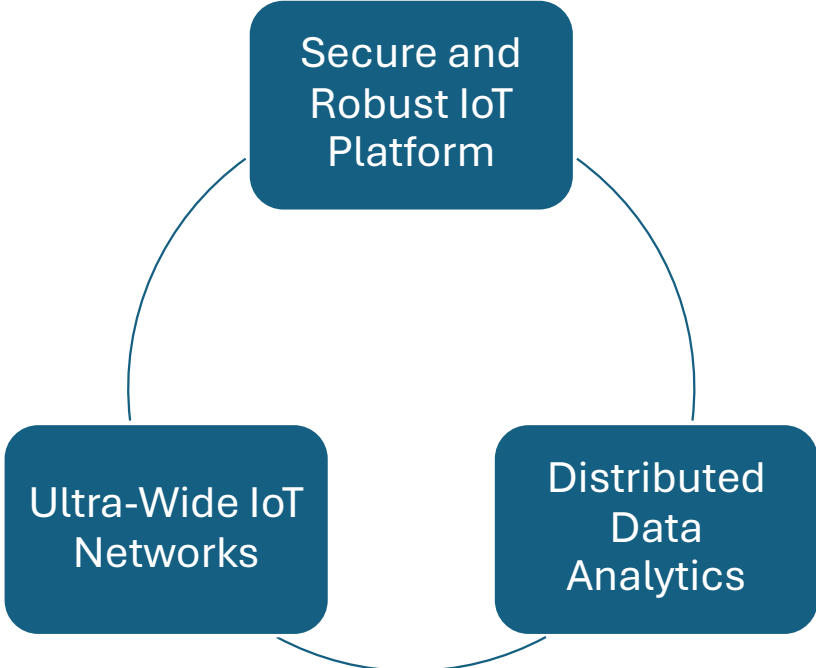


Main research objectives

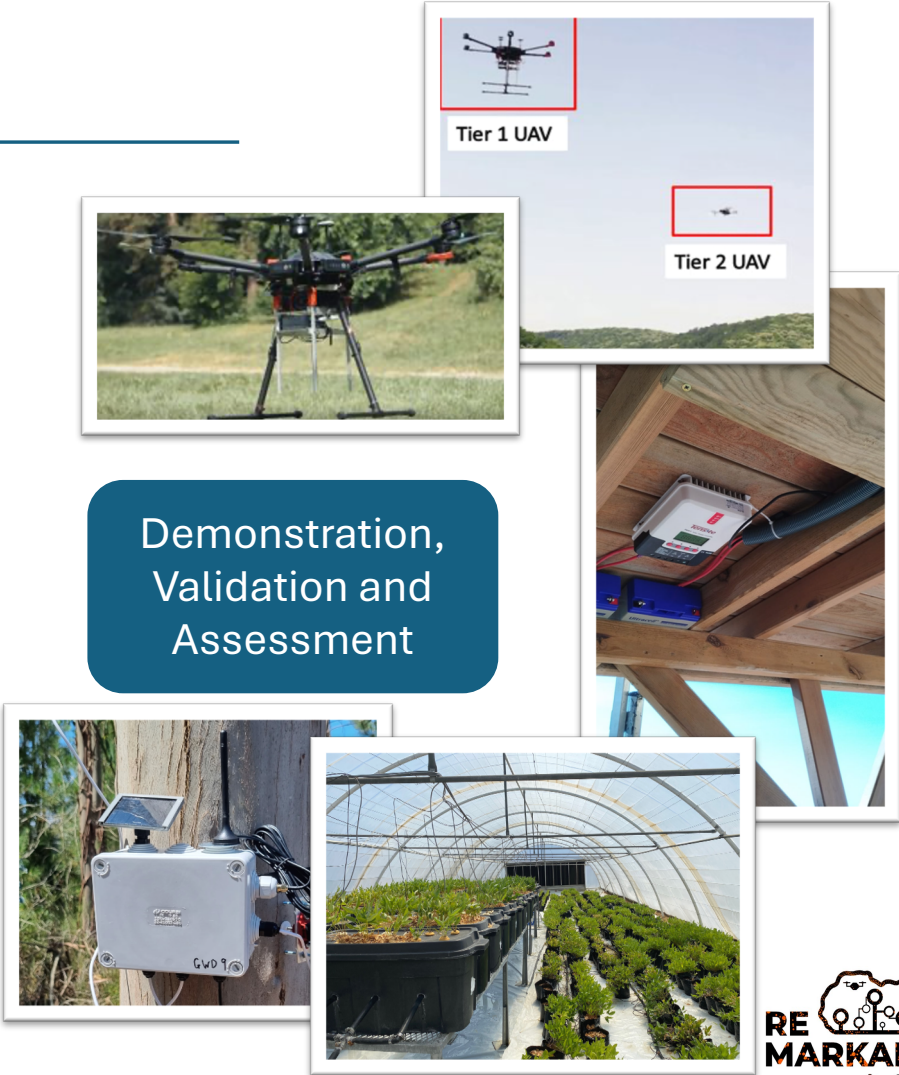
1. Secure and Dependable Sensing, Localisation and Digital Twins
 - Design robust, secure, trustworthy and traceable IoT platform suitable for deep rural applications
2. Connecting the Unconnected – Ultra Wide-Area IoT Networks
 - Design connectivity solutions for IoT devices deployed in deep rural areas beyond the reach of current cellular network infrastructure (e.g., remote forests, mountains, deserts, canyons, etc.)
3. Secure and Frugal Distributed Data Analytics for Rural IoT
 - Develop a novel data analytics platform based on privacy-preserving distributed ML methods. We will focus on feature design for data-frugal ML, and secure, scalable and efficient FL with low communication and computation requirements
4. Demonstration, Validation and Assessment
 - REMARKABLE solutions will be demonstrated, validated and assessed using five use cases in real-life conditions, in six demonstration sites across European and African countries.



Project vision



Demonstration, Validation and Assessment



Demonstration sites

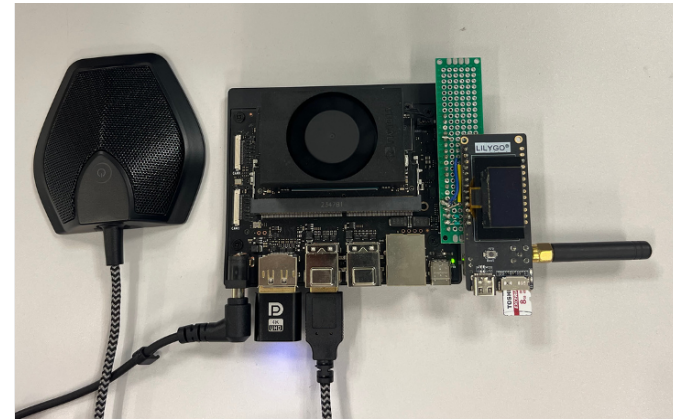
1. **National park digital twin** - Lagunas de la Mata y Torrevieja, Natural Park (Alicante, **Spain**)
2. **Environmental monitoring** - National Park Fruska Gora (Novi Sad, **Serbia**)
3. **Agricultural IoT deployment** - The School Farm (TSF), Federal University of Technology (FUT) (Minna, **Nigeria**)
4. **IoT sensor deployment for agriculture** - University of Rwanda (Kigali, **Rwanda**)
5. **IoT forestry** - Stellenbosch University (Stellenbosch, **South Africa**)



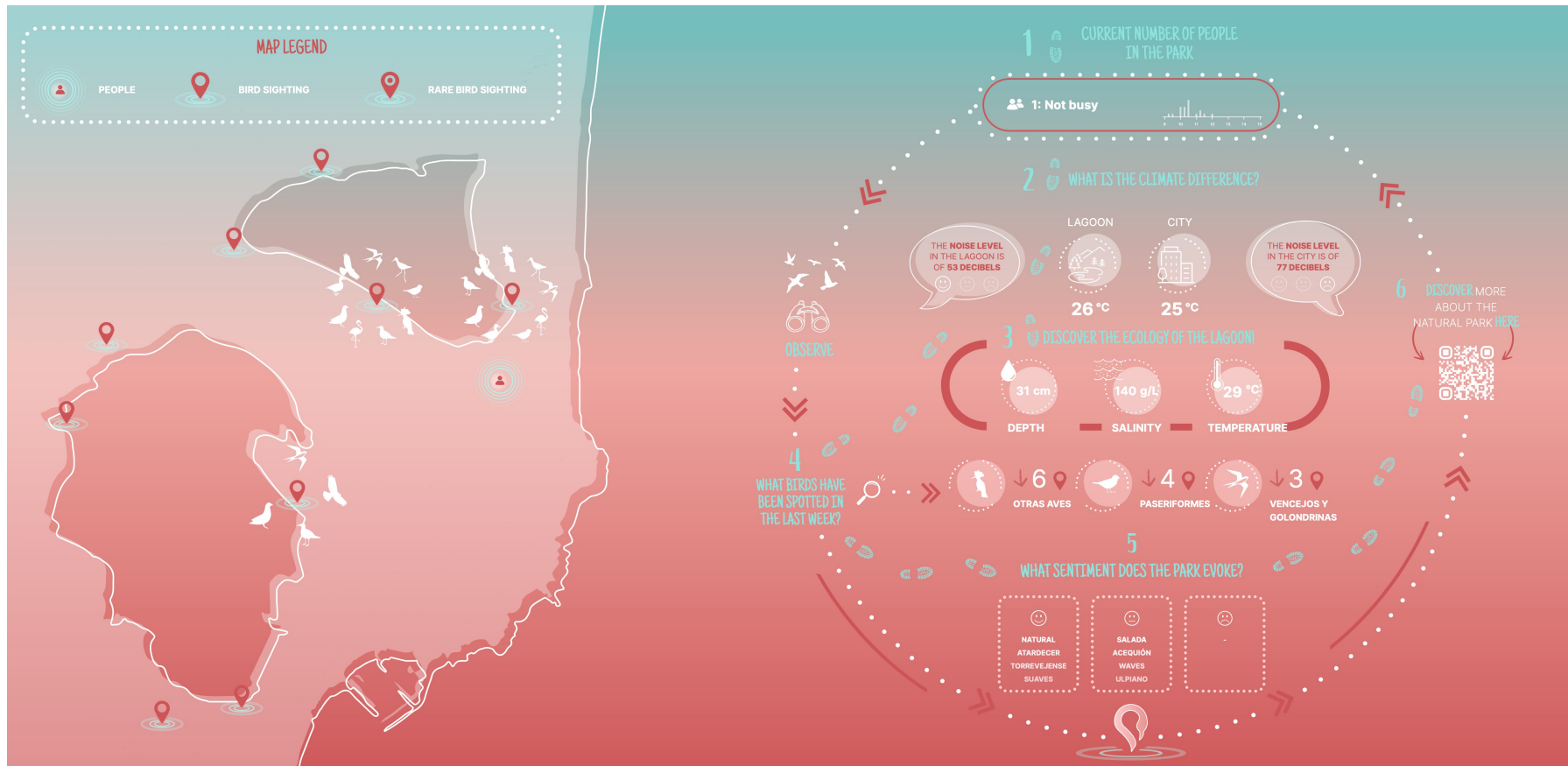
Lagunas de la Mata y Torrevieja, Natural Park (Alicante, Spain) Demonstration Site



Lagunas de la Mata y Torrevieja: deployments



Lagunas de la Mata y Torrevieja: Digital Twin



<https://chan-twin-ce8cf.web.app/?lang=en>



Thank you

