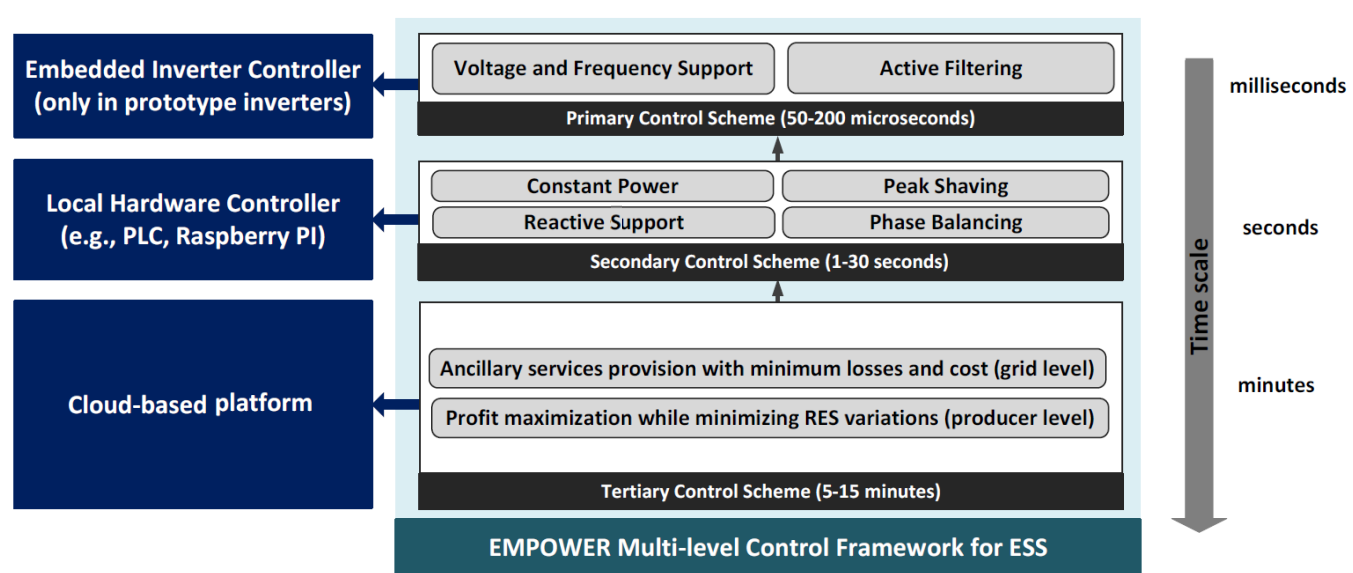
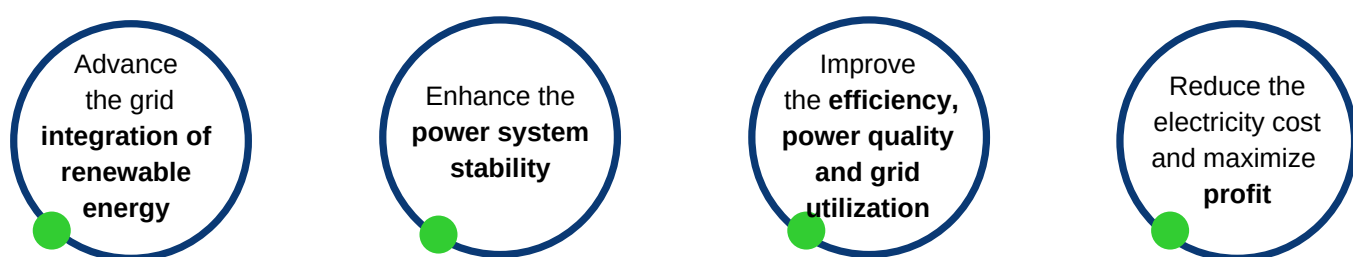


# - ENERGY STORAGE PILOT SYSTEMS -

Intelligent Energy Storage Systems [ESS] can increase the competitiveness of green technologies and maximize the renewable energy penetration level

Through the EMPOWER project, an intelligent **3-level control framework** for ESS has been developed, to:



The intelligent control and management solutions have been validated and demonstrated in two operational pilots considering: (1) energy storage at the renewable **energy producer level**, and (2) community storage for **grid level** applications.

## 1. Battery storage system at Aeolian Dynamics' wind and photovoltaic power plant



Pilot I: Battery storage system at Aeolian Dynamics

### KEY IMPACTS

- 8-10% average improvement on voltage stability
- 20% improvement on frequency stability
- Stochastic optimization (compared to deterministic approach):  
**Profit:** 7.5% increase  
**Power violations:** 31% decrease
- Robust optimization (compared to deterministic approach):  
**Profit:** 6.5% increase  
**Power violations:** 59% decrease

## 2. Battery and flywheel storage system within the University of Cyprus [UCY] campus



Pilot II: Battery & Flywheel storage system at KIOS CoE (UCY)

### KEY IMPACTS

- Maximization of existing grid capacity utilization
- Minimization of the prosumer's electricity cost
- Minimization of losses at peak shaving
- Improvement of grid efficiency
- Enhancement of power quality