



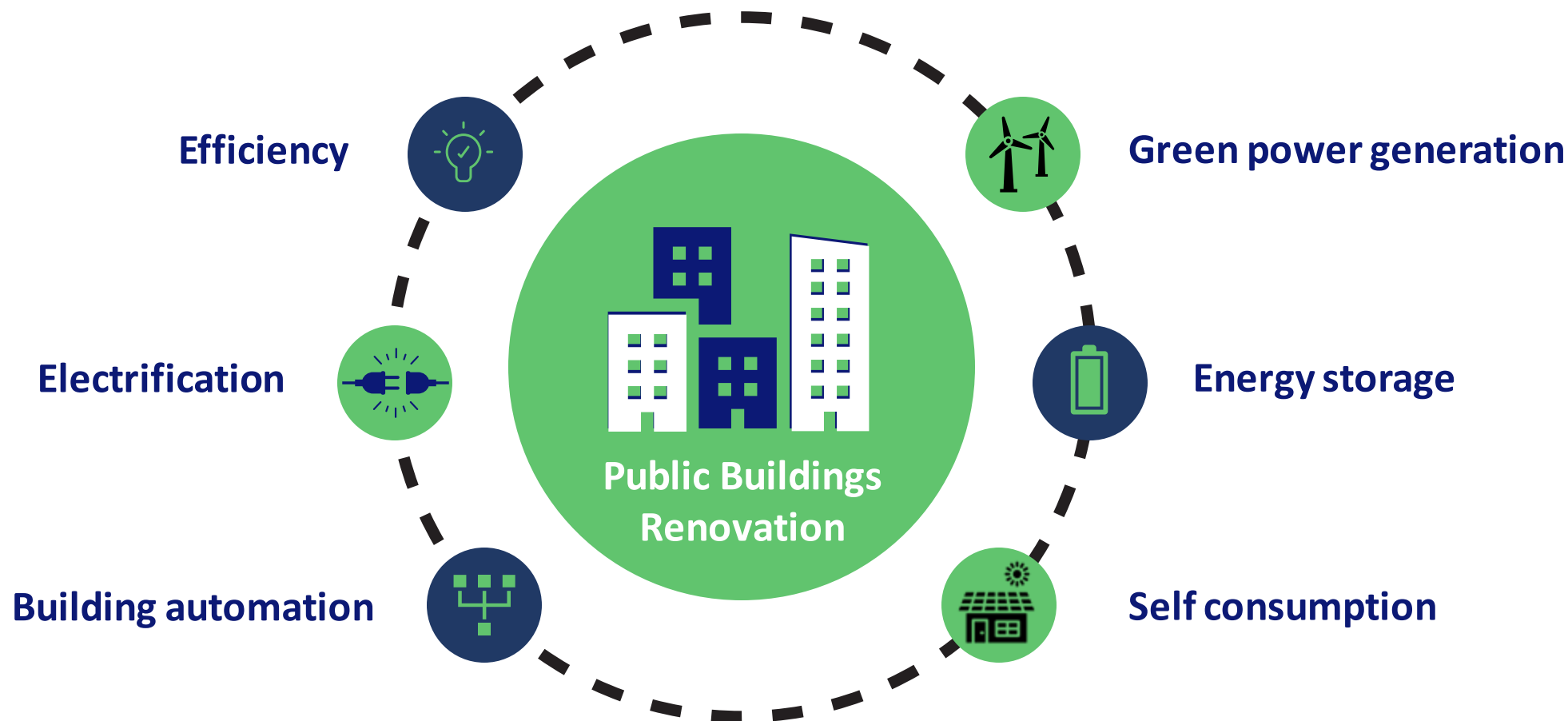
The BERLIN project

PV/ESS/DSM practiced solution

[Fabrizio PILO, University di Cagliari]

9 December 2023

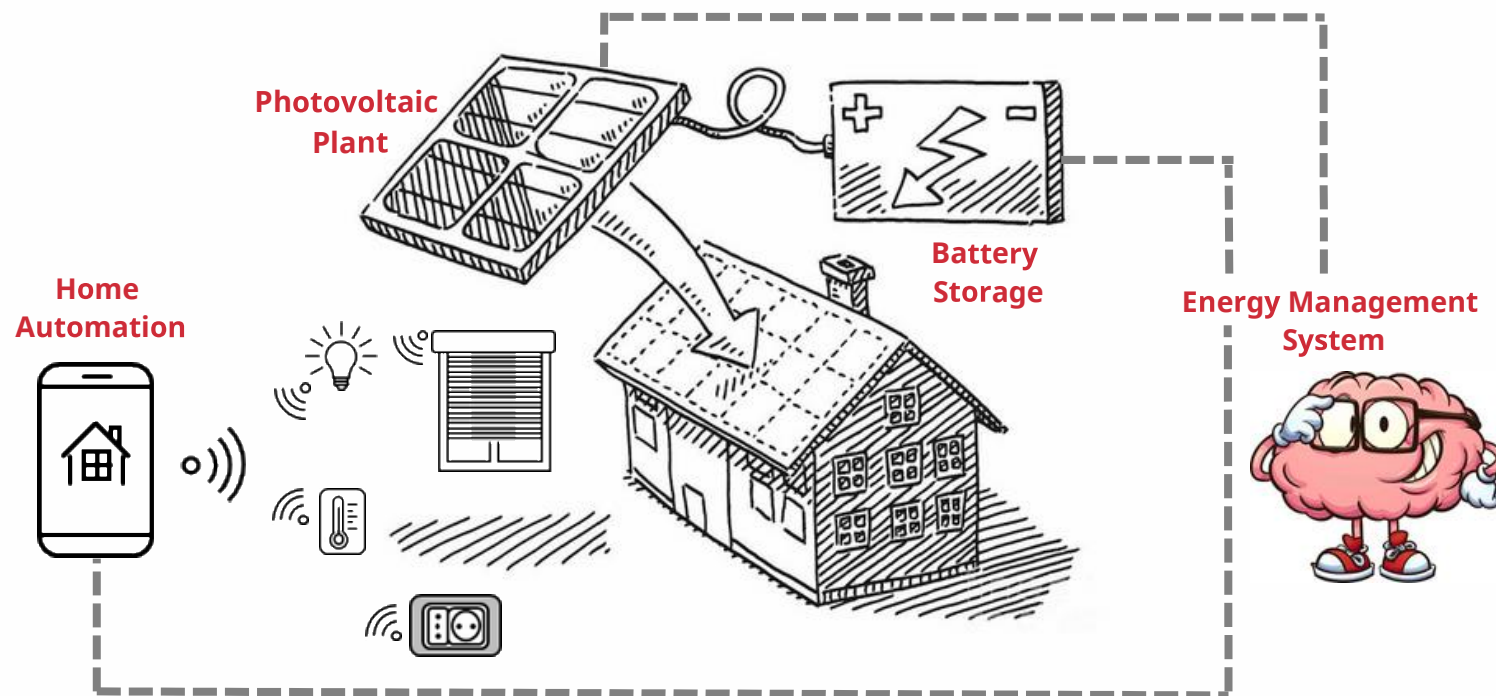
BERLIN - Cost-effective Rehabilitation of Public Buildings into Smart and Resilient Nano-grids using Storage Rationale



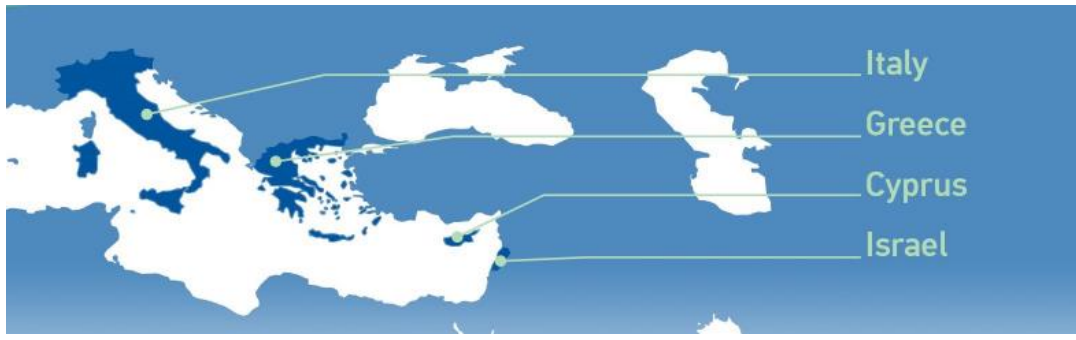
BERLIN - Cost-effective Rehabilitation of Public Buildings into Smart and Resilient Nano-grids using Storage Where?



Electrification
Green Power
Automation
Flexibility
Storage



BERLIN - Cost-effective Rehabilitation of Public Buildings into Smart and Resilient Nano-grids using Storage Where?



CYPRUS
University of Cyprus
(FOSS Research centre)

GREECE - Kozani Municipality

- University dormitories
- Town Hall

ISRAEL

- School in Eilat
- School in Eilat

Where? The Smart Campus/Living Lab@UniCA



ENI CBCMED
Cooperating across borders in the Mediterranean

Project funded by the EUROPEAN UNION

REGIONE AUTONOMA DE SARDEGNA
REGIONE AUTONOMA DELLA SARDEGNA

UNIVERSITÀ DEGLI STUDI DI CAGLIARI

BERLIN

Cost-effective rehabilitation of public buildings into smart and resilient nano-grids using storage

THE ITALIAN PILOT SITE



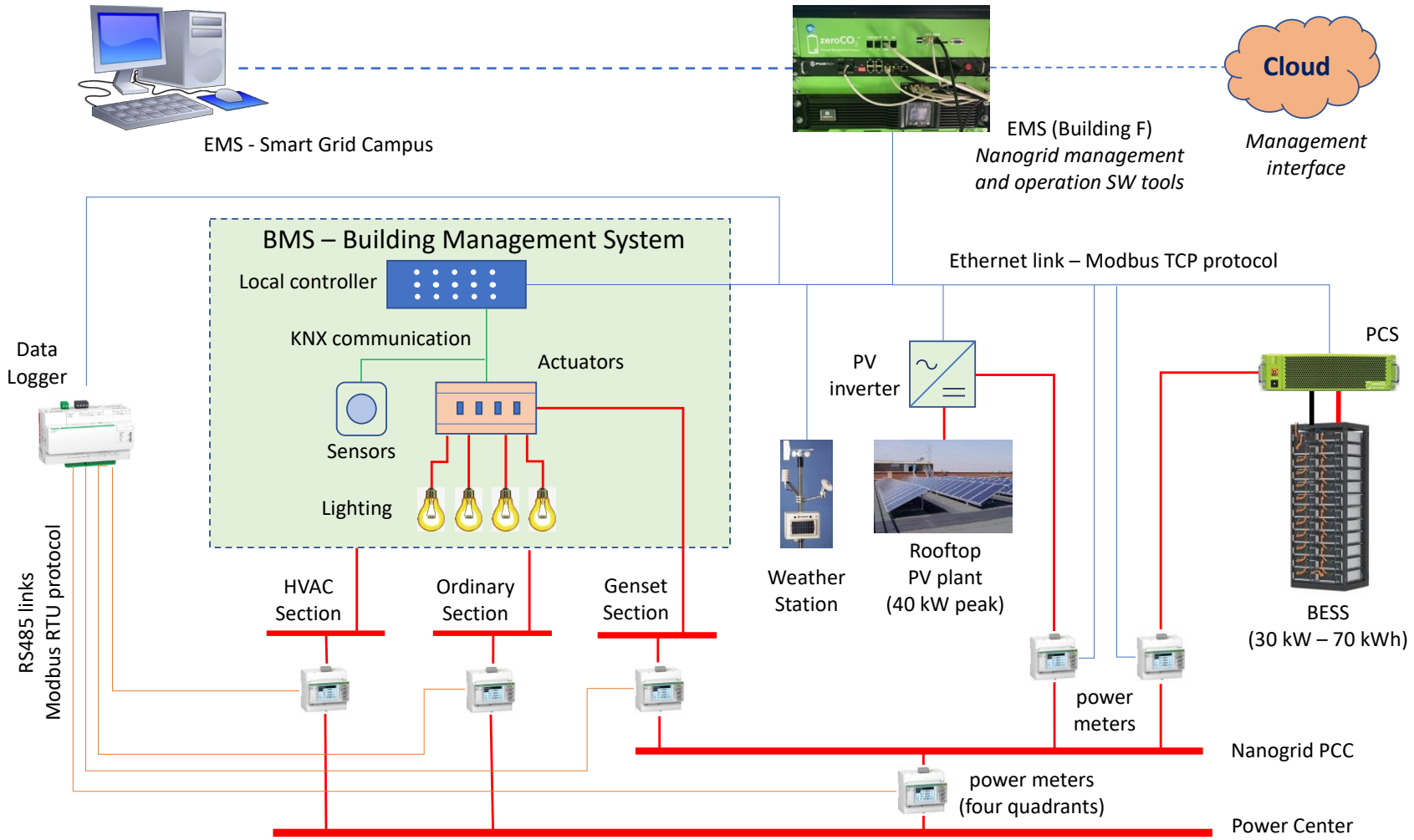
UNICA CAMPUS, Building F, Monserrato

Project budget: 3M€

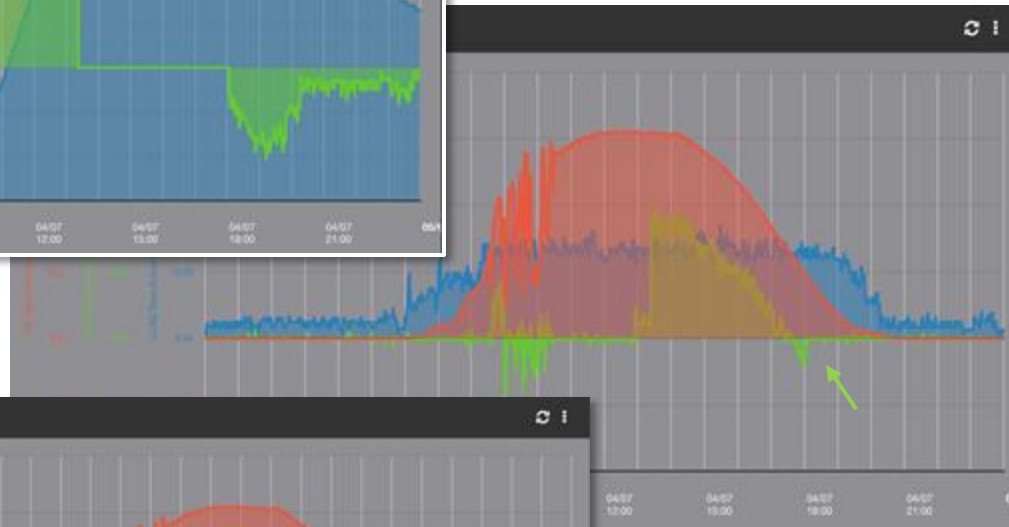
UNICA budget: 300,000€

15 M€ Investments	1.6MW PV and Wind
1 MW CHP (H2 ready)	1MW/250 Storage kWh
V2G SMARTGRID Thermal storage EMS	10.000 Students @ living lab
30 % Savings	- 50 % CO2

What? UniCA Library nano grid



Why? Facts and results for the Library



+ 68 %
Self-sufficiency rate

+ 75%
Self-consumption

+ 42 %
Avoided cost

- 12 %
CO₂ emissions

Lessons learnt (technical)



Monitoring and Sensoring

Wireless IoT is a valid option

01

Flexibility

Pre-assessment of the energy
and service demand patterns

02

Optimal management

Holistic approach for system
optimisation

03

Energy Storage

Do not forget long-term
storage in any form

04



05

Interoperability

Fix interoperability issues. Renovation
cost can be completely changed

06

Operation&Maintenance

Hire post-commissioning services for
batteries, inverters and BEM

07

Communication

Do not forget communication and LAN.
Every device must be interconnected

08

Scalability

From nanogrid → migrogrids → smartgrids

Lessons learnt (non-technical)

Awareness
Acceptance
Engagement



- Talk with people from the beginning
- Explain what are the goals and the benefits
- Ask for suggestions to improve the efficiency
- Test the system with people
- Accept complaints even if caused by ideological scepticism
- Any small technical inconvenient destroys the project acceptance
- Educate people to use new technologies
- Convince people that losing control might be better



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Thank You!

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