SUSTAINABLE PLACES 2022

IANOS SUSTAINABLE SOLUTIONS

insulae

REACT Renewable Energy for Self-Sustainable Island Communities

Robinson

New Energy Solutions Optimised for Islands NESOI EUROPEAN ISLANDS FACILITY

islander ACCELERATING THE DECARBONIZATION OF ISLANDS' ENERGY SYSTEMS

GIFT

MAESHA

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ISLANDS CLEAN ENERGY TRANSITION

" European Actions towards Geographical Islands Decarbonisation "

SEP. 6TH – SEP 9TH, 2022 NICE, FRANCE

VILLE DE NICE

MÉTROPOLE NICE CÔTE D'AZUR

These projects have received funding from the European Union's Horizon 2020 research and innovation programme (IANOS GA n° 957810, NESOI GA n° 864266, INSULAE GA n° 824433, ISLANDER GA n° 957669, GIFT GA n° 824410, MAESHA GA n° 957843, REACT GA n° 824395, ROBINSON GA n° 957752)

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IANOS
SUSTAINABLE SOLUTIONS
for islands' decarbonisation

RINA

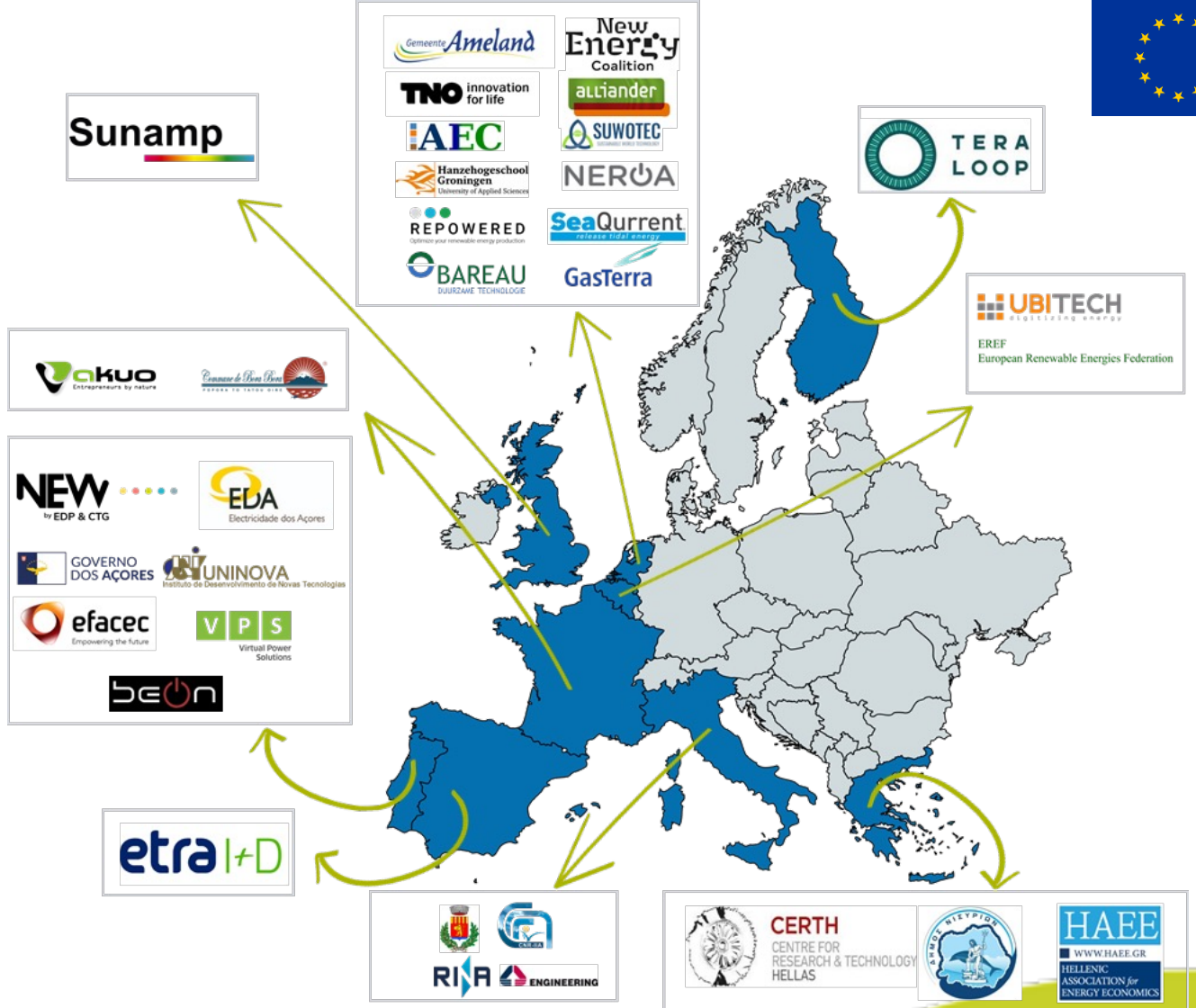
«European Actions Towards Geographical Islands' Decarbonisation»

Giorgio Bonvicini – RINA Consulting

Sustainable Places 2022
09-09-2022

Enter IANOS

- 4-year long, 8.8M EUR EU-funded project
- 34 EU partners
- Tests innovative energy technologies on 2 Lighthouse islands: **Ameland** (NL) and **Terceira** (PT).
- Integrates all technologies through IANOS' intelligent Virtual Power Plant.



EVALUATES PROJECT RESULTS' REPLICATION THROUGH 3 FELLOW ISLANDS:
LAMPEDUSA, BORA-BORA, NISYROS

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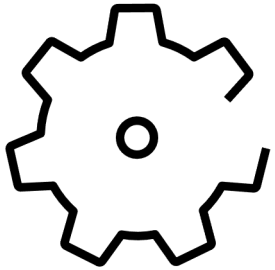
Key Objectives

Facilitate seamless adoption of extremely high RES penetration, by encompassing synergetic operation of energy resources and carriers through a VPP framework, for pro and re-active orchestration of energy flows;

Demonstrate specific technology-driven interventions envisioned through 3 Transition Tracks and 9 Use Cases, towards energy system de-carbonization in 2 LH Islands, validating IANOS solutions up to TRL 8;



Successfully guide EU Islands decision makers in the design of cost-effective and feasible Action Plans for decarbonizing their energy systems;

Fully engage EU islanders in the transition towards a low carbon economy, considering them as an active player in the energy system;

Ensure high replication potential for IANOS results while reaching on a critical mass of EU Islands and RE stakeholders;

Exchange knowledge within the BRIDGE Initiative working groups, while contributing to the Clean EU Islands Initiative and contribute to homogenize the fragmented island regulation.

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Challenges

- **Technology-related:** combining disparate technologies and data -> **integration**
- **Business-related:** some innovative technologies depend on funding external to IANOS. There is thus a risk to IANOS should innovative technologies face external financing problems.
- **Community-related:** it is often difficult to gain acceptance of local communities.
- **Engagement** of DNOs
- **Enhance the microgrid-by-design concept** to strengthen Citizen Energy Communities for increased grid stability and reduced energy poverty.
- **Real-time optimization of Distributed Energy Resources**
- **Market-related.** Changes in macroeconomic environment can affect technologies' viability

THE CONCEPT, AND FORMATION OF LOCAL ENERGY COMMUNITIES (LECS) IS TANTAMOUNT FOR SUCCESSFUL ENERGY TRANSITIONS

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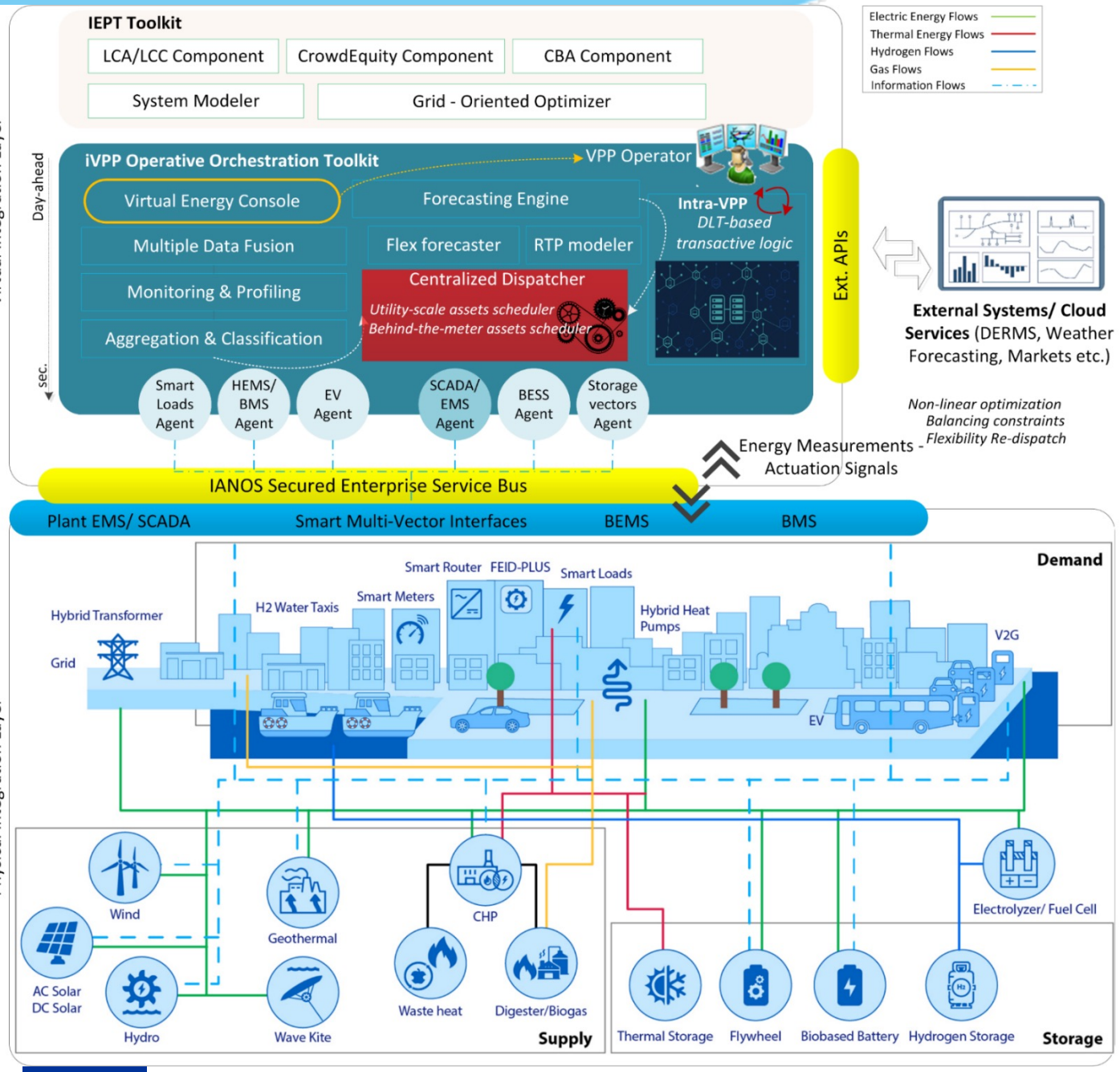
iVPP Architecture



- Physical integration Layer featuring rich variety of assets
- Communication interfaces
- Virtual integration Layer
- Operative orchestration toolkit: the brains behind the system

ENERGY PLANNING & TRANSITION TOOLKIT: assisting ES planners with crafting effective RE portfolios

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Technologies

- Tidal Kite
- PCM Thermal Batteries
- Flywheel
- Hybrid Transformer
- Biobased Saline Batteries

*Credits: seaqurrent.com

Plus more conventional ones (fuel cells, Hybrid Heat Pumps, electrolyzers, PVs

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Impacts on Islands

Lighthouse Islands

- **Increase % of RES utilization**
  - Terceira: 33,5% to 70%
  - Ameland: 5,1% to 20,1%
- **Reduce fossil fuels consumption**
  - Terceira: 66,5% to 30%
  - Ameland: 94,9% to 80,2%
- **Reduce total GHG emissions**:
  - Terceira: 91,930 to 41,325 tCO_{2eq}/y
  - Ameland: 95,919 tCO_{2eq}/y to 58,152 tCO_{2eq}/y

Fellow Islands

- Lampedusa aims to **cut CO_2 emissions by 63%** until 2030;
- Bora-Bora envisions to **produce 75%**

  of electricity from RES by 2030;
- Nisyros aims to implement several measures to achieve a total of **more than 800 tCO_{2eq} savings.**

03/2021 — System Dimensioning

10/2021 — Deployment Plan and Risk Management

12/2021 — System implementation, Integration and Commissioning

07/2022 — Use Case Operation Performance and stakeholder engagement and monitoring

09/2024 — End of the project

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Conclusions

- IANOS is an EU-funded project, aiming at designing and testing replicable, advanced smart grid systems orchestrated by an iVPP.
- IANOS implements both conventional and highly innovative technologies.
- IANOS results, outcomes and impacts relevant to EU islands planned energy transition.
- IANOS Use Cases and the Investment Energy Transition Toolkit directly relevant.

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Thanks for Your Attention

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