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MAGPIE
SMART GREEN PORTS

DEMO 2 SMART ENERGY SYSTEMS SIMULATOR

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Introduction

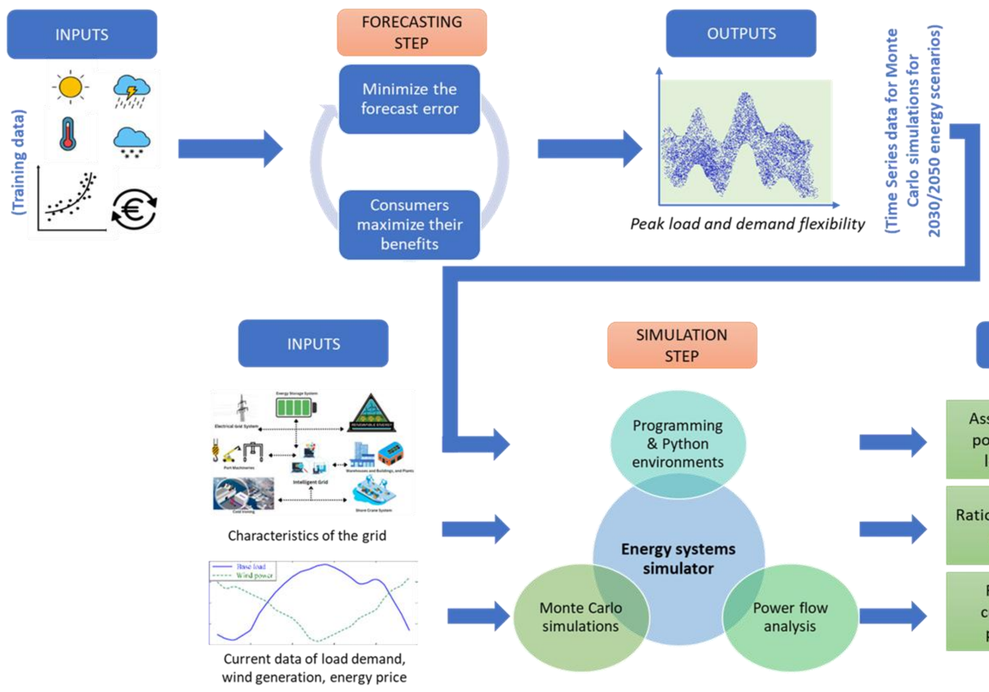
- **Aim of demo –** Demo 2 develops a simulator of a smart energy systems, both in their current state and under future scenarios. This simulator showcases the current state of the electricity grid, identifies congestion points and flexibility needs, and anticipates its evolution under future energy transition scenarios.
- **Value proposition -** Future plausible scenarios of peak and flexible load demand, analyzing flexibility needs of the port, providing a decision support tool for port congestion, and efficient and economical operation.
- **Current status -** The transition plans and provided data have been analyzed; the energy scenarios have been developed; and the base case study (Port of Sines) simulation has been completed.

KPIs

- (Number) Assets operating under Power Congestion [-]
- Level of Power Congestion (per asset) [High, Medium, Low]
- Power Losses [kW]
- Self-Consumption [kW]
- Ratio Peak Power and Self-Consumption [%]
- Renewable Energy Curtailment [%, kW]
- Cost of Congestion [k€]

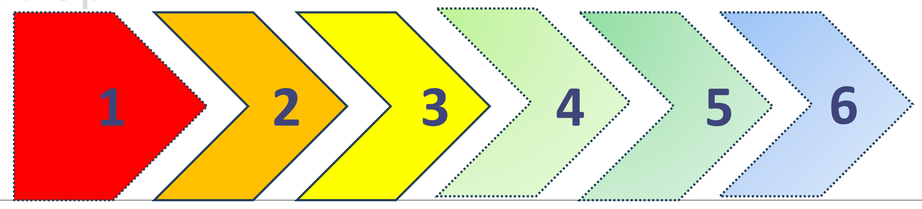
Lessons Learned

- **Barriers –** Data sensitivity, data unavailability and data ownership, changing the case study (from Port of Rotterdam to Port of Sine) due to the lack of data, the dependency between tasks, the different energy transition plans of the new case study.
- **Scalability –** Demo 2 as being a software demo can be scale up easily, depending on data availability for other case study.



Current Progress Status

1. Launch of demonstrator; 2. Elaboration of KPIs, Operation characterization and modelling, and ongoing studies; 3. Testing phase in lab and data collection; 4. simulations and testing phase in pilot area; 5. results and commercially available; 6. ready to scale up



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