



Assessing RES forecasting value in business environment



Research challenges & Main outcomes

WP6 aims at validating the added-value of the tools and approaches developed in Smart4RES, with a set of use cases. The validation process includes:

- The assessment of the impact that enhanced forecasting may have in the control and management of distribution grids and isolated power systems with very-high RES penetration;
- The definition of CBA methodologies for assessing RES forecasting value in combination with storage technologies and for grid constraints management.

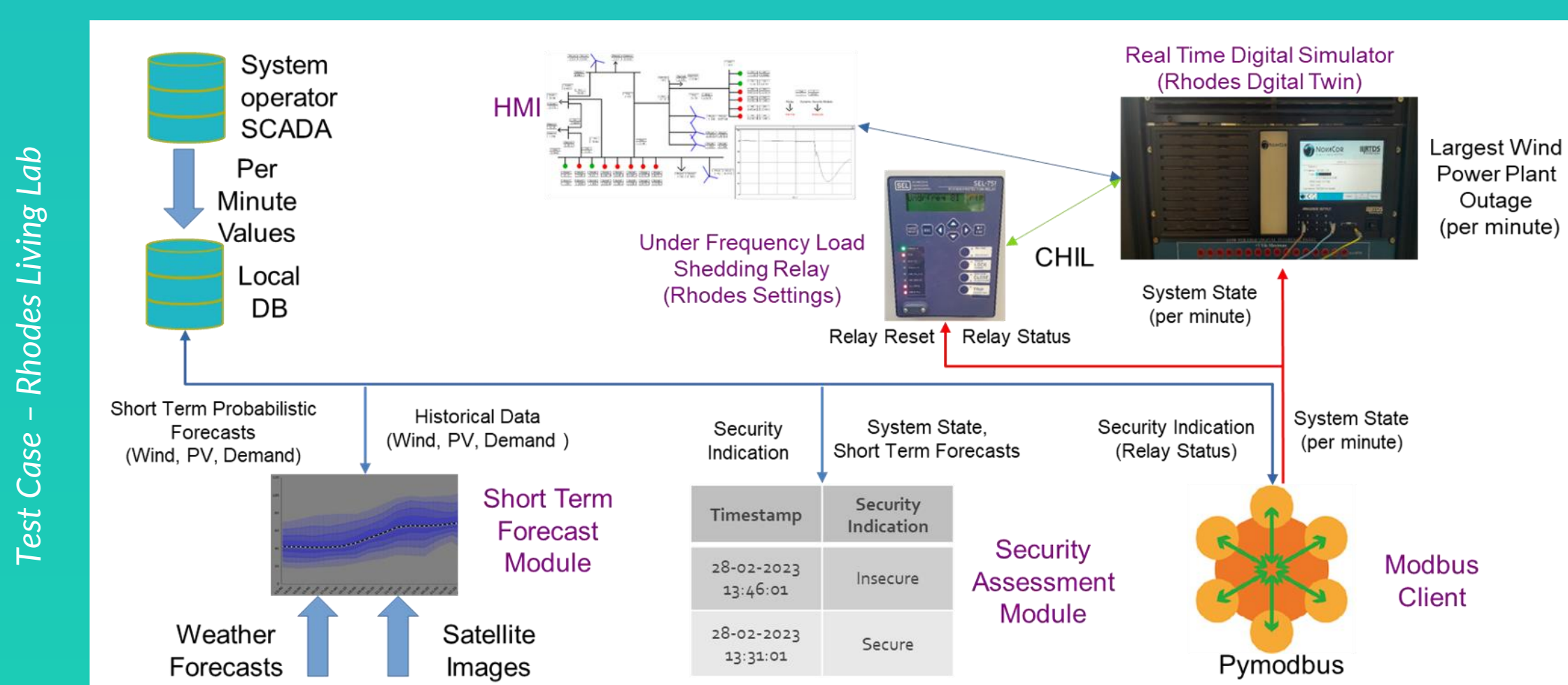
Laboratory test bed for power systems with near 100% RES



Security Assessment in isolated power systems

A model of the electric system of the isle of Rhodes has been converted into a real time environment, which is used to demonstrate the Security Assessment tools developed in the project. It shows:

- High Accuracy in Insecure State Detection.
- Preventive actions can lead to over 95% Load Shedding Events Reduction.



Cost-Benefit Analysis



RES Trading Strategies and Storage

The different combinations of trading strategies + storage are used in a Stochastic 2-Step Optimization considering the day-ahead and balancing market to determine the breakeven point for investment in storage.



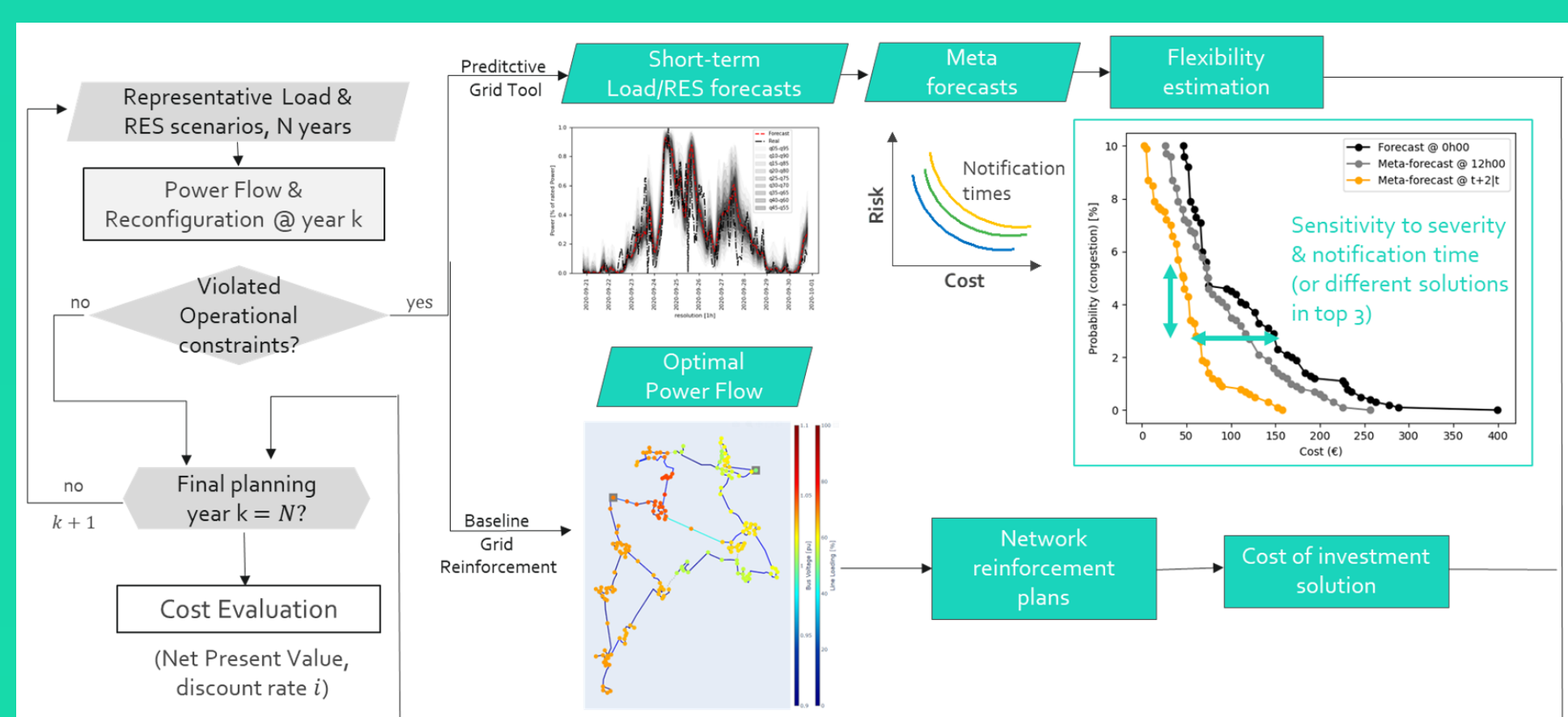
Forecasting Value

The different forecasting models are used as inputs to a Predict-Then-Optimize problem leading to the trading of energy produced by RES system in the day-ahead market to assess the benefits of investing in additional information in the forecasting process.



Predictive Grid Management

The predictive tool is compared against traditional grid reinforcement by using both methodologies for network power planning of a MV Grid with congestion problems and the breakeven cost of flexibility activation is computed.



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Smart4RES Project