Test case descriptions for SmartNet laboratory validation

The following tables show descriptions of the three Test Cases in the deliverables according to the ERIGrid Holistic Testing Description (HTD) approach .

Table 1: ERIGrid Test Case Description of Test Case 1

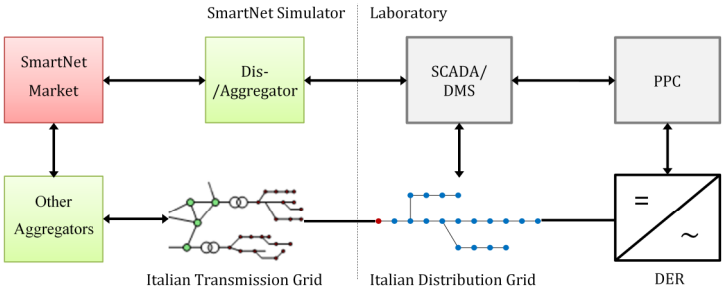
Name of the Test Case	*Validation of DMS and PPC used in the Italian Pilot*
Narrative	This test case is related to the Italian pilot. It shows how low-level components and DERs can be integrated with the SmartNet coordination schemes based on the Italian scenario used in the pilot. The main components under study are the SCADA/DMS and PPC from SELTA.
System under Test (*SuT*): Systems, subsystems, components included in the test case or test setup.	
Object under Investigation (*OuI*) "the component(s) (1..n) that are to be qualified by the test"	• SCADA/DMS • PPC
Functions under Investigation (*FuI*) "the referenced specification of a function realized (operationalized) by the object under investigation"	• DMS functionality • Gateway functionality between Modbus and IEC 61850 in PPC
Domain under Investigation (*DuI*): "the relevant domains or sub-domains of test parameters and connectivity."	• Power system • Control/ICT
Purpose of Investigation *(PoI)* The test purpose in terms of Characterization, Verification, or Validation	The purpose for this test case will focus on the following points: • Connection setup between SCADA/DMS, PPC, and DER • Integration of the SCADA/DMS with SmartNet coordination schemes • Effectiveness of different PPC control schemes for flexibility provision

Table 2: ERIGrid Test Case Description of Test Case 2

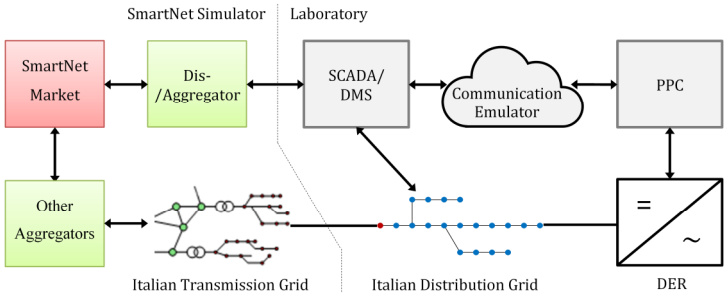
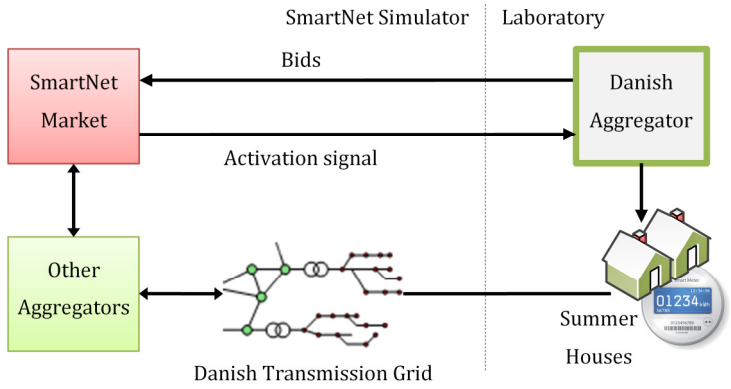
Name of the Test Case	*Validating the Impact of ICT on the Italian Scenario*
Narrative	This is test case can also be seen an extension of Test Case 1 (see Table 1). It includes some of the knowledge acquired during the ICT requirements analysis of the SmartNet project. By adding a communication emulator between the SCADA/DMS and the PPC real communication problems can be tested. It can be validated if this affects the coordination schemes and how the components react to changing communication situations.
System under Test (*SuT*): Systems, subsystems, components included in the test case or test setup.	
Object under Investigation (*OuI*) "the component(s) (1..n) that are to be qualified by the test"	• Communication system between SCADA/DMS and PPC • SCADA/DMS
Functions under Investigation (*FuI*) "the referenced specification of a function realized (operationalized) by the object under investigation"	• Data transmission between SCADA/DMS and PPC • SCADA/DMS: DMS functionality
Domain under Investigation (*DuI*): "the relevant domains or sub-domains of test parameters and connectivity."	• Control/ICT
Purpose of Investigation *(PoI)* The test purpose in terms of Characterization, Verification, or Validation	The purpose for this test case will focus on the following points: • Communication effects on the performance of the DMS.

Table 3: ERIGrid Test Case Description of Test Case 3

Name of the Test Case	*Price-Based Control in Combination with SmartNet Coordination Schemes*
Narrative	This test case analyses the integration of price-based control with the SmartNet coordination schemes. It uses the summer houses on-site in Denmark and connects them to the SmartNet simulation through an interface over internet.
System under Test (*SuT*): Systems, subsystems, components included in the test case or test setup.	
Object under Investigation (*OuI*) "the component(s) (1..n) that are to be qualified by the test"	• Danish Aggregator • Summer Houses • SmartNet Market
Functions under Investigation (*FuI*) "the referenced specification of a function realized (operationalized) by the object under investigation"	• Aggregation • Heating of swimming pools in the summer houses • Integration of summer houses into the market
Domain under Investigation (*DuI*): "the relevant domains or sub-domains of test parameters and connectivity."	• Power system • Control/ICT
Purpose of Investigation *(PoI)* The test purpose in terms of Characterization, Verification, or Validation	The purpose for this test case will focus on the following points: • Connection setup between the Danish aggregator and the market operator • Integration of price-based control with the SmartNet coordination schemes • Effectiveness of different price-based control schemes for flexibility provision