

# D\_NA-4.3: Fact sheets on specific JRA results - Part 1 - JRA 3: Real-time simulation environment and parameter identification for power systems



## Objectives of JRA3

Gain a common view on:

- Requirements and use cases on simulation and real-time simulation
- Definition of common reference model for Distributed Energy Resources (DER)
- Definition of common parameters & interfaces to describe the DER behavior
- Definition of simulation models and hardware interfaces for real-time applications (especially for Power-Hardware-in-the-Loop experiments)
- Define possible application scenarios for real-time simulation

Topics to be treated:

- Categorization of DER components and simulation types
- Definition of requirements and use cases
- Discussion and common understanding towards a common reference model

The major objectives in JRA3 is to define a set of common parameters and interfaces to describe the behavior of DER components when they are connected to the grid.

As a consequence, a Common Reference Model (CRM) or DER components may be a very promising solution as a first step.

The definition of the CRM is based on existing solutions and standards (e.g. CIM, CIM for Dynamics, IEC 61850, etc.). Available solutions and standards might be extended and modified for this task.

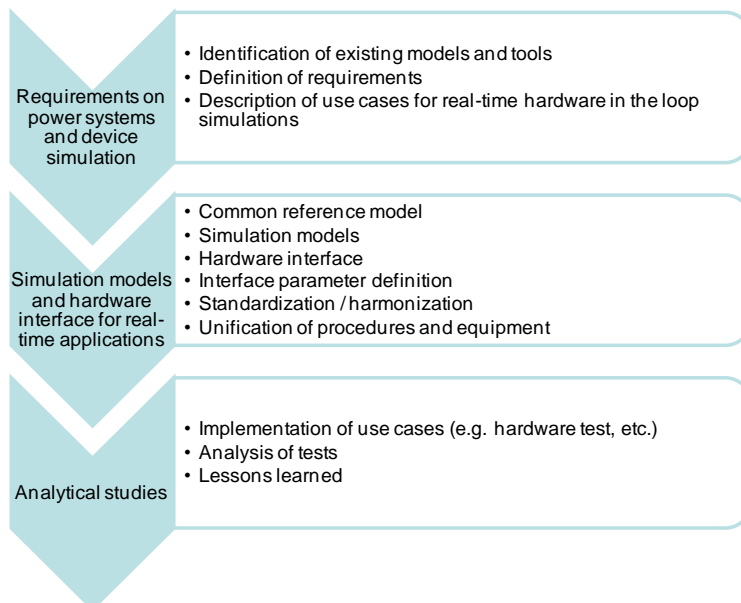
It is planned to provide reference implementations for selected DER components based on the CRM.

Verification and validation of the reference implementations of DER models (via laboratory experiments, i.e. based on real measurements) are planned in this JRA3.

Moreover unified procedures and equipment for real-time simulation (especially for Power-Hardware-in-the-Loop experiments) are specified and implemented in the laboratories of the JRA3 partners.

## Results of JRA 3:

- Overview of existing models and tools to define requirements on power systems and device simulation
- Identification of tools and methodologies to perform steady-state, dynamic and real-time simulation of DER and power systems
- Test run of actual DER devices in a hardware-in-the-loop structure with real time simulation software
- Definition of unified procedures and equipment used in simulation testing and research investigations



**Steps towards a Common Reference Model for DER devices**

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