

TRANSNATIONAL ACCESS USER PROJECT FACT SHEET

USER PROJECT	
Acronym	DEF-HIL
Title	Definition of Hardware-in-the-Loop related performances and components
ERIGrid Reference	04.007
TA Call No.	4 th Call

HOST RESEARCH INFRASTRUCTURE						
Name	Fraunhofer Systec / AIT SmartEST					
Country	Germany / Austria					
Start date	21.10	05.11	26.11	N° of Access days	9 (IEE)	10 (AIT)
End date	26.10	09.11	7.11	N° of Stay days	11 (IEE)	12 (AIT)

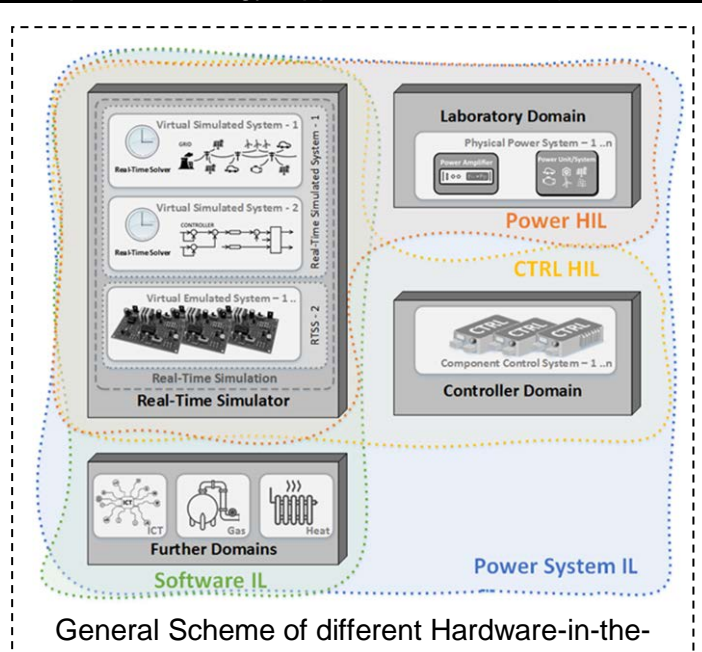
USER GROUP		
	AIT USER GROUP	IEE USER GROUP
Name (Leader)	Georg Lauss	Ron Brand
Organization (Leader)	Austrian Institute of Technology	Fraunhofer IEE
Country (Leader)	Austria	Germany

1. USER PROJECT SUMMARY (objectives, set-up, methodology, approach, motivation)

The work is summed up to a documents which contained relevant lists of definitions, acronyms, and abbreviations and is structured in the following way.

An overview related to hardware-in-the-loop (HIL) simulation is given, which is presenting a generalized scheme of HIL applications. The hierarchical relations in HIL-simulation-based systems are defined and preliminary formulations are elaborated. Definitions are enumerated and categorized.

A generalized draft structure for a possible abbreviations, nomenclature and terminology is proposed. This includes items such as variables and constants, functions, operators, sets, matrix pattern indicators, subscript indicators, superscript indicators, and accents.



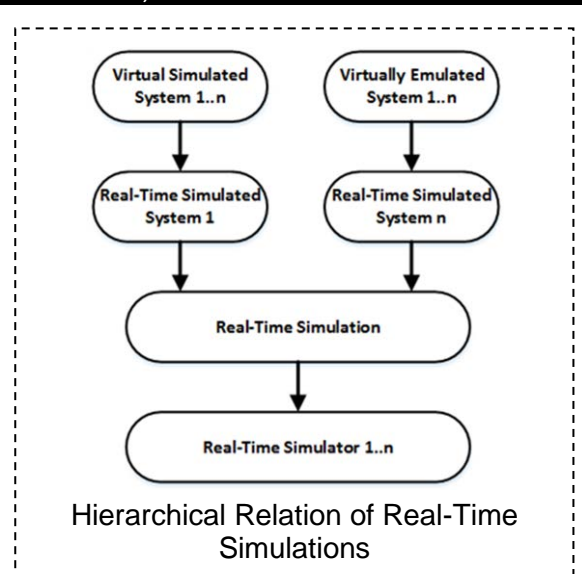
2. MAIN ACHIEVEMENTS (results, conclusions, lessons learned)

Within the period of time of this project, the following main achievements have been accomplished, as follows:

- *) literature research on basic definitions, terminology, acronyms, variables, and symbols has been done;
- *) important key components for real-time simulation have been investigated, pre-defined and propositions have been elaborated
- *) online tools such as <http://www.electropedia.org>, IEC standard (IEC 62559, IEC 19501, IEC 6005, IEC 2382-1, IEC-IEEE 24765, and many others) have been studied, referenced and cited.
- *) A general scheme of applications for HIL simulation with respect to different application-orientated setups has been set up as a novelty.
- *) Hierarchical relations related to HIL applications could be found and a generic description could be found and proposed.

*) Re-definition of the key components, functional units, and subsystems of a HIL simulation based on literature and new findings in real-time simulation.

*) A list of similarities of words and misused words has been established



3. PLANNED DISSEMINATION OF RESULTS (journals, conferences, others)

In the project a paper was published at the IEEE Compeng 2018 conference, Florence, and a poster at the IRED 2018 conference, Vienna.

Furthermore, the outcome of the refined description and definition of HIL was distributed and published for acceptance in different working groups and association like:

- IEEE PES TF on “Real-time Simulation of Power and Energy Systems”
- IEEE WG P2004
- ISGAN – Sirfn
- DERlab

Especially, a major part of the obtained results are already published in the IEEE WG P2004: “Recommended Practice for HIL Simulation Based Testing of Electric Power Apparatus and Controls”. This WG is working on a document finding guidelines on HIL simulation on an international level. The document intends to publish the first draft version in 3-5 years.

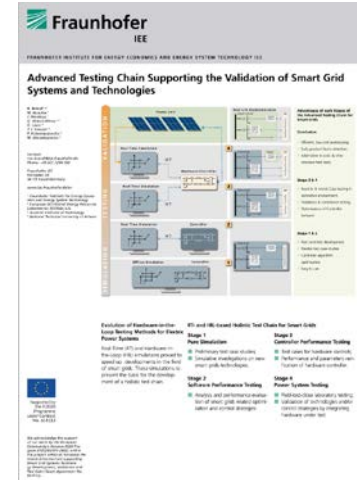


Figure 1 Compeng Poster

4. PLANNED DISSEMINATION OF RESULTS THROUGH ERIGRID CHANNELS

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Both, users and hosts are willing in publishing results via the ERIGrid channels.