

On scalability and replicability of smart grid projects - a case study

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Abstract-

This paper studies the scalability and replicability of smart grid projects. Currently, most smart grid projects are still in the R&D or demonstration phases. The full roll-out of the tested solutions requires a suitable degree of scalability and replicability to prevent project demonstrators from remaining local experimental exercises. Scalability and replicability are the preliminary requisites to perform scaling-up and replication successfully; therefore, scalability and replicability allow for or at least reduce barriers for the growth and reuse of the results of project demonstrators. The paper proposes factors that influence and condition a project's scalability and replicability. These factors involve technical, economic, regulatory and stakeholder acceptance related aspects, and they describe requirements for scalability and replicability. In order to assess and evaluate the identified scalability and replicability factors, data has been collected from European and national smart grid projects by means of a survey, reflecting the projects' view and results. The evaluation of the factors allows quantifying the status quo of on-going projects with respect to the scalability and replicability, i.e., they provide a feedback on to what extent projects take into account these factors and on whether the projects' results and solutions are actually scalable and replicable.

Index Terms- smart grid; scalability; replicability

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