

## StabilizE – Stable Energy System

Today, energy production and distribution undergoes a change of paradigm comparable to the change from line-based to package-based communication in information and communication technology (ICT). There is an immense need to move from traditional, centralized, static energy grid towards a decentralized and dynamic grid, which gives more freedom to producers, distributors and consumers. While the European continent faces the challenges of improving stability and reliability of excessive green energy in the network, Indian infrastructure deals with inadequate or lack of electricity. Given the diverse nature of power grids in EU and the Indian sub-continent, renewable integration and enhancing the availability of the network is the most pressing issue for both sides.

Modern power systems are being operated closer to their limits due to economic, technical or environmental reasons. Stability and reliability of the power network are of utmost importance. One critical aspect of future smart grids will be stabilization in terms of “Availability” and “Quality of Service” which is considered as stable Energy. ICT empowers power grids with capability of real-time information and two-way energy flow.

The main goals of StabilizE project include:

1. Design and implement low cost real-time monitoring and control devices to be deployed in remote and cost dependent regions
2. Devise and deploy over the low cost infrastructure, automatic methodologies to analyze, decide and reconfigure in near real time the network

The key focus of StabilizE is that it targets small or micro smart networks, which facilitate integration of local energy resources. Therefore the project will address:

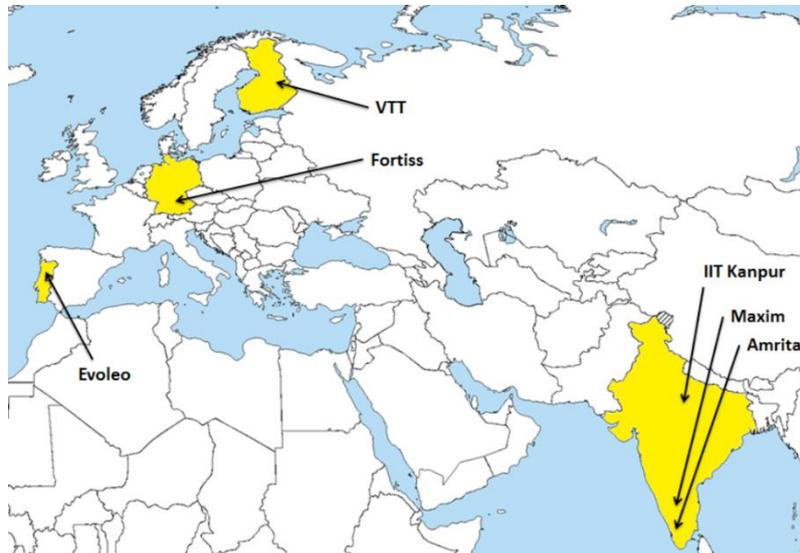
- Identify real case scenarios where renewal energies combined with availability and QoS is pursuit, defining the requirements and guidelines to implement in the project
- Development of real-time data monitoring and control platform for distributed low or medium power network, focusing on the communication, use of sensors and need of data exchange between grid components.
- Data processing algorithms and mechanisms to provide prognosis to faults in the system and real decision and actions capability in the network.

Ultimately, StabilizE is intended to provide local regions and populations a cost-effective infrastructure and functional solution to combine local renewable energy sources with a high level of energy availability and sufficient quality of Service for everyday use. This flexibility can be used to merge several local solutions, recurrently and much less costly, in wider smart grids able to be nationally level operated by large power operators.

Project duration: 11/2014-10/2017

Project Partners:

- Amrita Center for Wireless Networks and Applications, India
- Evoleo Technologies, Portugal
- Fortiss, Germany
- Indian Institute of Technology Kanpur, India
- Maxim Integrated, India
- VTT, Finland



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Finnish funding: Finnish Academy

VTT budget: 353 k€

At VTT, the project is conducted with a project team of 5 members, led by Kari Mäki. The team consists of specialists from different fields and covers the competences needed in the project very well. The project team also has variety in terms of age, experience level etc.

- Kari Mäki, Dr.Tech., Senior Scientist. Specialist on smart grid technologies.
- Atte Löf, M.Sc., Research Scientist. Specialist on smart grid technologies.
- Robert Weiss, Lic.Tech., Senior Scientist. Specialist on energy data and smart grids.
- Timo Kyntäjä, M.Sc., Senior Scientist. Specialist on communication technologies.
- Joonas Elo, Research Trainee. Specialist on communication technologies.

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