

## **RenewIT: Advanced concepts and tools for renewable energy supply of IT Data Centres**

### **Description**

Energy efficiency is a generic term which refers to the ratio between the useful energy output of a process and the energy input to this process. The interest on building more energy-efficient DC has increased along with the outburst of Cloud computing, the use of Internet and of Data Centres (DC) to enable this paradigm. Whereas energy efficiency is necessary to reduce ecological impact of DC, it is not enough. In addition, the carbon emissions of DC are greatly influenced by the energy sources used.

The project aimed to develop a dynamic tool to assess the feasibility of energy efficiency and renewable technologies applied on DC in order to reduce their overall carbon footprint in the horizon of 2030. A special focus will be devoted to develop a tool able to evaluate novel and challenging energy concepts, such as solar cooling, integration in district heating and cooling networks, hot and cold thermal storage, and integration in smart grids. Dynamic and advanced components for the management of IT load following “green” objectives were studied and implemented in the tool and in specialized monitoring systems.

The main objective of the RenewIT was to develop an advanced energy simulation tool for Data Centres capable of modelling a wide range of novel energy efficiency and renewable energy strategies integrated in urban systems to improve their energy and environmental performance. This abled the creation of new market opportunities for integration of renewables in IT sector. Among others, the following outcomes were developed in the framework of the Project: green management algorithms, monitoring systems and metrics, renewable cooling supply concepts, integration of systems in energy infrastructures, and the design of the dynamic tool. Some use cases were shown, and the application were validated. Dissemination through the most important stakeholders was one of the final important steps of the Project.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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