The Smart-Energy Operating-System (SE-OS) framework has been developed within the CITIES research project (www.smart-cities-centre.org). This framework enables a systematic approach for implementing flexible electric energy systems in smart cities. The SE-OS methodologies are based on methods for data analytics, cyber physical modelling, forecasting, control, optimization, IoT, IoS, and cloud computing. The SE-OS concept has been used for enabling flexibility and demand response in smart cities in a large number of demo projects. Finally, it is shown that SE-OS in combination with methods for energy systems (gas, thermal, power, biomass, fuel) integration can provide virtual energy storage solutions on all relevant time scales, i.e., from minutes to seasonal storage.

The Smart-Energy Operating-System (SE-OS) is used to develop, implement, and test solutions (layers: data, models, optimization, control, communication) for operating flexible electrical energy systems at all scales.