Controlling entity ICT reference architecture: distributed control architecture for distributed systems - DTU Orbit (14/12/2018)

Controlling entity ICT reference architecture: distributed control architecture for distributed systems

Automatic control by controlling entities (aggregators and local controllers) enables Distributed Energy Resources (DERs) to participate in the operation of the power grid. This helps to solve the problems of reliability and efficiency caused by the intermittent production of weather dependent energy sources, and the lack of control by system operators, caused by the increasing share of distributed energy sources. A DER ICT architecture and controlling entity ICT architecture are required to enable automatic control. The paper aims to describe the software components required for a generic scalable controlling entity ICT architecture, which does not require additional work for additional DERs and DER types. The paper presents concepts and ideas for the ICT architecture, and a case study illustrating the use of the ICT architecture, and the capabilities of the architecture. The plug ‘n’ play section describes self-healing and topology filtering for automatic setup and robust operation of control algorithms as part of the controlling entity ICT architecture.

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