

Call for papers for invited session on

## **Computational Intelligence in Control of Power Generating Systems, Transmission and Load Management**

at EAIS 2017 in Ljubljana, Slovenia, May 31—June 2, 2017 organized by Horst Schulte, HTW Berlin.

Abstract:

Power systems are the backbone of our modern societies and communities. Increasing requirements such as reliability, availability, maintainability and the use of renewable energy sources to achieve CO<sub>2</sub> reduction makes the application of advanced adaptive and intelligent control techniques more and more necessary. Specifically, a previously centrally organized electrical power system have to shifted to a decentralized system. That means that the power generation with few large conventional and nuclear power plants will be substituted by a large number of distributed power systems feed by renewable sources additionally supported by energy storage devices and load management systems. However, from the control engineering view this results i.a. in the following challenges:

- Massively distributed generators have jointly stabilize a network with time variable electrical loads
- The distributed generators in spite of fluctuating renewable energy sources and variable loads must fulfill the control requirements respect to frequency and voltage stability.
- Decision and Control in load management has to address the limited storage capacity and efficiency optimization of power transmission.

Computational intelligence methods in decision and control such as Fuzzy-model-based control for off-line analysis and synthesis and intelligent control such as higher level adaptation by evolving and learning from experience in real-time are powerful complementary techniques that may address the above challenges. Therefore, the aim of this invited track is to present state-of-art results for modeling, decision making and control design of power systems using Computational Intelligence techniques specifically the integration of model-based off-line design and higher level adaptation by learning and evolving in real-time.