Proposal for a session at UES 2018

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Titre : Methods and tools for risk management of complex socio-technical systems

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Summary The aim of this session is to discuss methods and tools to contribute to risk management in complex socio-technical energy systems. One of the major challenges of the 21st century is to cope with the depletion of energy resources in face of an ever-increasing demand. Energy management and its associated risks fall within the domain of complex systems, indeed, from production to consumption, many subsystems are interdependent and exhibit possible failures such as power outage. Beyond physical and technical factors, human factors will also be now at the heart of such problems if small area autonomous eco-districts are promoted. The difficulty of risk management of theses complex socio-technical systems stems from the complexity of modelling and are linked to the prediction of energy usages.

Agent-based modelling and simulation is a recent modelling paradigm. Many developments have been achieved by using it in various fields including social sciences, medical sciences, humanities or economics and artificial intelligence,. The particularity of agent-based modelling is that it relies on the theoretical foundations of each domain and its conceptual vision of the world. This property offers flexibility to each domain to represent in a reliable and realistic way the specificities of the studied system. This session will focus on studies and feedback on multi-agent modelling, artificial population design and the use of machine learning for risk management in energy systems.

Duration and speakers : 2.5 to 3 hours, 4 to 5 presentations (30mns each) followed by a roundtable discussion.

Logistics : a room with a video-projector, five seats for the round table.