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Towards an AI assistant for short-term grid operation

Rémy CLEMENT

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The growing share of renewable energy sources in the European power mix combined with new market mechanisms is significantly transforming the power system for the TSOs (transmission system operators). The power grid becomes less and less predictable and subject to the volatility of the power flows, prompting the TSOs to rely more and more on distributed control systems to operate the system in real time. The trend is expected to continue for the coming years, which will add complexity to a system which is already difficult to operate. In this context, RTE wishes to renew its historical tools for reliability assessment using novel methods, including machine-learning techniques.

In this talk, we present an overview of some of our work regarding:

- How to anticipate the upcoming operational conditions of the power system, including both the external factors as well as the expected future behavior of the TSO operators,
- How to overcome the tractability barrier in order to enable reliability assessment under uncertainties, and an application to the France-Spain border,
- The practical concerns regarding data management, keeping up to date with the evolution of the power system, and decision making for the operators.