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Is CIM suitable to support TSO-DSO information exchange requirements ?
(return of experience of H2020 TDX-ASSIST project)

As the European electricity infrastructure undergoes a significant transformation, its major stakeholders and their related activities are also being impacted and challenged. The European willingness to move towards a more sustainable energy system, in which renewable energies, storage and active participation of electricity consumers play a central role, is fundamentally changing the way power systems are operated and planned.

In such a transformation, two important actors in facilitating the transition to clean and secure energy have been the European Transmission System Operators (TSOs) and Distribution System Operators (DSOs). Their contribution to achieving European Union (EU) energy targets is expected to continue to be crucial, although TSOs and DSOs face new challenges, such as the increasing penetration of distributed energy resources, that will make their responsibilities more demanding to fulfil. Besides, given the diverse unbundling contexts in which TSOs and DSOs operate at a national level, it is likely to expect TSOs and DSOs evolving in different ways throughout Europe in terms of roles and responsibilities they will have to play in the years to come.

In this new context with additional challenges and complexity, the need for a better cooperation between TSOs and DSOs is being recognized at the European level as of paramount importance. Several TSO-DSO cooperation studies have been carried out concerning different aspects of their interaction such as, amid others, control and automation functions, performance standards, cooperation tools and requirements, reactive power management, congestion management, ancillary services provision, and system restoration.

Despite the existing diversity of TSOs and DSOs throughout the Europe, they face a common set of central challenges. Among similar challenges posed to both TSOs and DSOs, three of the most relevant ones include:

- Increase grid observability and controllability;
- Integrate increased amounts of renewable energies;
- Facilitate the integration of flexibility services and consumer participation in electricity markets.

In order to meet their respective responsibilities and successfully overcome existing challenges, TSOs and DSOs will need to intensify interactions between themselves, doing so in a more structured and standardized manner in order to continue guaranteeing at least current levels of security of supply. A stronger TSO-DSO cooperation is necessary in several transversal areas, including long-term network planning, short-term network planning (e.g. day-ahead operational planning), system operation and emergency system operation. Overall system optimization should be a priority, rather than having TSOs and DSOs independently managing the performance of their own networks, as well as designing a standard.

The H2020 TDX-ASSIST project, funded by European Commission *(www.tdx-assist.eu)* aims to design and develop novel Information and Communication Technology (ICT) tools and techniques that facilitate scalable and secure information systems and data exchange between **Transmission System Operators (TSOs)** and **Distribution System Operators (DSOs)**. The three novel aspects of ICT tools and techniques to be developed in the project are: **scalability** – ability to deal with new users and increasingly larger volumes of information and data; **security** – protection against external threats and attacks; and **interoperability** –information exchange and communications based on existing and emerging international smart grid ICT standards.

This presentation will showcase the methodology retained by TDX-ASSIST in order to improve TSO-DSO interoperability. The methodology is based on IEC best practices, and IEC TC57 standards :

_ **European regulation adressing TSO-DSO information exchanges**
_ **TSO-DSO Business and System Use cases definition**
_ **Business Objects identification and CIM standard assessment**
_ **TDX-ASSIST CIM profiles reusing existing CIM Profiles or creating new CIM Profiles**
_ **Main CIM topics and related issues discussed so far with IEC TC57**
_ **Next steps : TDX-ASSIST Demonstrators and associated information exchange platforms**

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