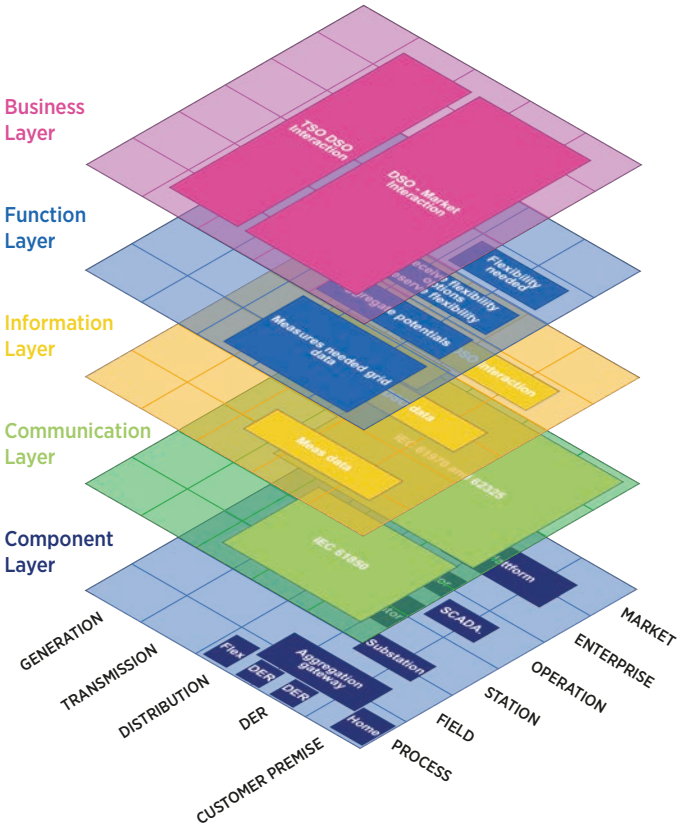
TDX-ASSIST

Coordination of Transmission and Distribution data eXchanges for renewables integration in the European marketplace through Advanced, Scalable and Secure ICT Systems and Tools (TDX-ASSIST)

This three year project started on the 1st October 2017 and 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 TDX-ASSIST 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. The Figure below depicts the scope of the project from the perspective of the **Smart Grid Architecture Model (SGAM)**.



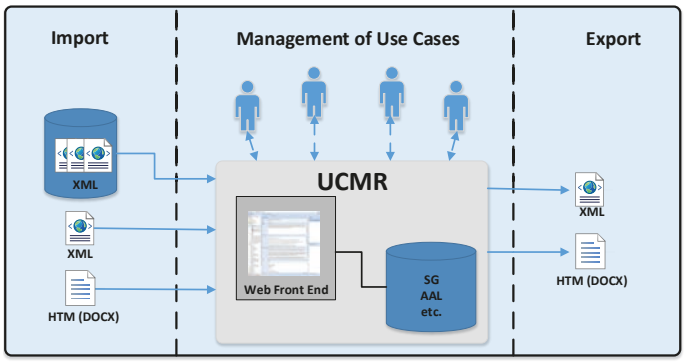
The project focuses on enhanced TSO-DSO interoperability. In this context, TDX-ASSIST will also consider DSO interaction with other market-participants (DSOs, Aggregators, Distributed Energy Resource Operators, Micro-grid Operators) and information or data access portals that enable business processes involving relevant actors in the electrical power sector.

Beyond state-of-the-art progress will be achieved as follows:

- Fully defined interface specifications for TSO-DSO information exchange interfaces based on Use Case analysis and IEC 61970/61968/62325 standards to support highly automated information exchange and network analysis.
- Fully defined interface specifications for information exchange between DSOs and market participants based on Use Case analysis and IEC 61850 and IEC 62325 standards to support highly automated information exchanges.
- Role-based access control that securely accommodates new data requirements and unbundling processes.
- A specified suite of ICT protocols and integration with the defined interfaces.
- Proof of Concept using field tests and demonstration with industry specification at both TSO and DSO levels.

This project addresses the further research and development needed to ensure that greater levels of TSO-DSO interoperability can be realized, and to also harmonise a wider range of standardisation activities that are presently underway or complete. Assessment of the final project activity will be used to quantify how scalability, security and interoperability combine to improve real power sector ICT processes. Targeted TRLs as specified in the project proposal will be linked to quantitative improvements in the sector's performance.

The planned Use Case Management Repository that will be used across project work packages is presented in the following figure:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 774500.

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WORK PACKAGE 1

ICT tools and applications to enable Greater TSO-DSO Interoperability

Leader: Eric Lambert
(EDF R&D, eric.lambert@edf.fr)

Aim: Define information management requirements for secure and efficient information exchange. Augment existing operational, system and business use cases with new cases. Specify processes for exchanging and validating reduced grid models in a standardised manner. Recommend standardised approaches for TSO-DSO information exchange and data communications.

WORK PACKAGE 2

Data Management and Exchange for Market Participant Interoperability

Leader : Mathias Uslar
(OFFIS, mathias.uslar@offis.de)

Aim: Documentation of the technical interfaces and services in the project, their corresponding standardised data models, non-functional requirements such as security, reliability and interoperability and the assessment of the improvement achieved by the technologies used in the project. A maturity model will be introduced and this will lead to the definition of KPIs to assess the project outcomes.

WORK PACKAGE 3

Multi-Actor information and Data Access Portal to enable Business-to-Business Processes

Leader: Gareth Taylor
(Brunel University London, gareth.taylor@brunel.ac.uk)

Aim: Develop interfaces into a scalable and secure ICT infrastructure that gives access to a wider range of stakeholders as appropriate to power sector data. Specify a data-access portal using a cloud-based approach. Create a comprehensive set of use-cases for the data-access portal and specify time and space scales of data in order to ensure fitness for purpose.

WORK PACKAGE 4

Deployment, Testing and Evaluation of DSO-TSO Interaction using Scalable and Secure ICT Tools

Leader: Frank Marten
(Fraunhofer IEE, frank.marten@iee.fraunhofer.de)

Aim: Use cases, processes, methods and techniques from WP1-3 are transformed into a series of actual TSO-DSO demonstrations, trials and field tests, which are subsequently evaluated. Evaluate the project impact in terms of TRLs and KPIs as defined WP1 and WP2. Perform a stakeholder analysis considering WP3 in order to demonstrate the data-access portal for a range of use cases involving selected stakeholders.

Project Acronym: **TDX-ASSIST**

Duration: **1st October 2017 – 30th September 2020**

Project Website: **www.tdx-assist.eu**

Co-ordinator: **Professor Gareth Taylor**

Consortium Partners:

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