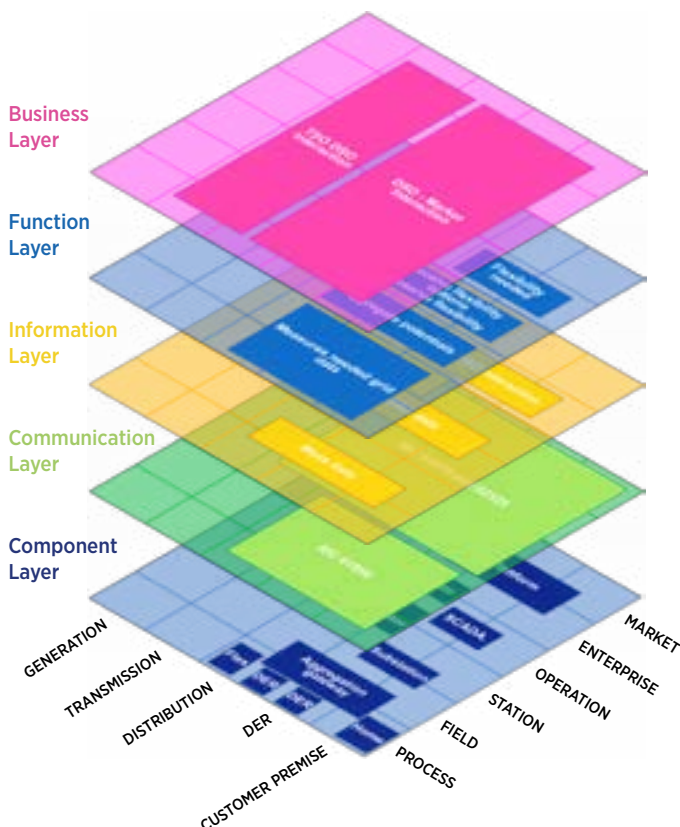# TDX-ASSIST

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:
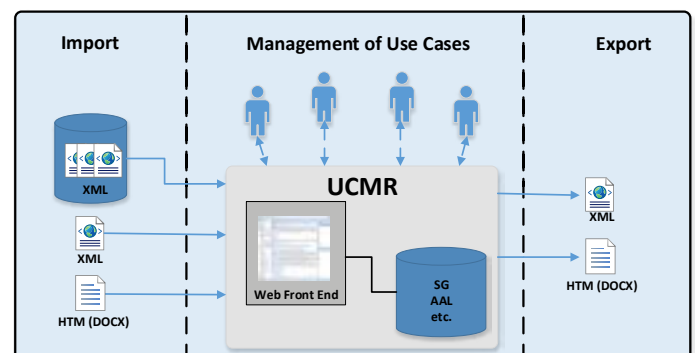
TDX-ASSIST

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)

WORK PACKAGE 1

ICT tools and applications to enable Greater TSO-DSO Interoperability

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

Key Outputs: A model driven methodology to define and support TSO-DSO Business and System Use Cases was developed. All interoperability layers of the Smart Grid Architecture Model were addressed, using IEC standards and associated tools. A repository including Use Cases, Common Information Model (CIM) and associated profiles was developed. Synergies with other Work Packages were achieved.

Ongoing: Updates and extensions of TDX-ASSIST IEC CIM related profiles (Common Grid Model Exchange Standard, European Style Market Profiles, CIM Distribution and utility related profiles). Dissemination towards IEC (SyC Smart Energy, TC57, TC8) and other European instances (CEN/CLC/ETSI CG-SEG, CLC 57, H2020 BRIDGE, CIGRE, CIRED, IEEE PES) including Data Exchange Platforms related standards, cyber-security and scalability concerns.

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)**

Key Outputs: The design and development of TSO-DSO information and data access portals based on scalable, secure ICT infrastructure that can also give access to a wider range of stakeholders as appropriate to enhanced TSO-DSO interaction.

Ongoing: Design and specification of information and data access portals using secure cloud-based approaches. A full web portal architecture is being designed, with selected portions targeted for implementation and demonstration in related work packages.

WORK PACKAGE 2

Data Management and Exchange for Market Participant Interoperability

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

Key Outputs: Within work package 2, use cases relating to DSO to markets secondary ICT systems are the main topic. In addition to documenting the State-of-the-Art, needed services are defined and catalogued with their corresponding payloads. Furthermore, the overall TDX-ASSIST architecture is defined and documented.

Ongoing: The current work focuses on appropriate documentation in order to provide blueprints for future project outputs and standardisation.

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)**

Key outputs: Use cases, processes, methods and techniques from work packages 1-3 were transformed into a series of actual TSO-DSO demonstrations, trials and field tests, which are under evaluation.

Ongoing: A stakeholder analysis considering work package 3 will be performed, in order to demonstrate the data-access portal for a range of use cases. Feedback to standardisation bodies will be established, on the future needs regarding ICT infrastructure and internal processes for TSO-DSO information exchange.

Project Acronym: **TDX-ASSIST**

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

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

Co-ordinator: **Professor Gareth Taylor**

Consortium Partners: