IES Integrating the Energy System

Integration Profile

<Title>

Vol. 2

Version 01.00

Document Information	
Title	
Editor	
Authors	
Description	
Last Changes	
sClassification	☐ **RED** – Sensible Information, Access only for: ☐ **YELLOW** – Restricted, Access only for: ☐ **GREEN** – for project-internal usage ☒ WHITE – public

Version History			
Version	**Date**	**Changes from**	**Comment**

Acknowledgements
This paper is a result of the IES project funded by the Austrian Climate and Energy Fund, administrated by the Austrian Research Promotion Agency (FFG) under contract number 853693. It has been prepared in the course of work-packages two, three and four to outline the big picture and to identify the different interoperability issues of smart energy systems. The editors would like to thank all the contributing team members of the IES project for their invaluable contribution of knowledge, experience and support toward a better joint understanding of the complexities involved in safe and smart energy systems.

Disclaimer
The content of this document is merely informative and does not represent any formal statement from individuals and/or the Austrian Research Promotion Agency (FFG), the Austrian Climate and Energy Fund, or any official bodies involved. Instead, it is a public document from contributing editors with visionary perspective based on years of experience with interoperability testing and energy system safety. The opinions, if any, expressed in this document do not necessarily represent those of the entire IES project team and/or its funding bodies. Any views expressed are those of the contributing person at the time being and do not commit a common position.

Table of Content

1 About the Document

A **Technical Framework** represents a technical specification, which is integrated into a predefined document structure. Please note that a Technical Framework does not equal a new standard. It rather describes the normalised use and application of existing standards and practices to avoid interoperability issues. Integration Profiles state constraints/recommendations that define how to apply standards and good practice to realise a specific feature of a Business Function in an important interoperability fashion. The Technical Framework is embedded in a business domain overview, which is accessible from the project homepage at http://www.iesaustria.at. The concept is based on the IHE Technical Framework that subdivides a Technical Framework into two part: volume 1 for an informative and volume 2 for a normative description. This document describes volume 2.

The document structure of the technical framework is as follows:

Volume 1:

- Business Case Overview (informative)
  - Typical use cases
  - Relevant meta-actors
  - Related standards
- Business Functions (informative)
  - Describe the interoperability issues with the IEC 62559 Use Case Methodology
  - Use Case diagrams

Volume 2:

- Integration Profiles (informative and normative)
  - Technical solution for a specific interoperability issue from the Business Function
  - Definition of transactions that are needed
  - Definition of actors that are involved
- Transactions (normative)
  - Specification of actors that shall be implemented
  - Specification of the IT standards and how options/variants shall be used

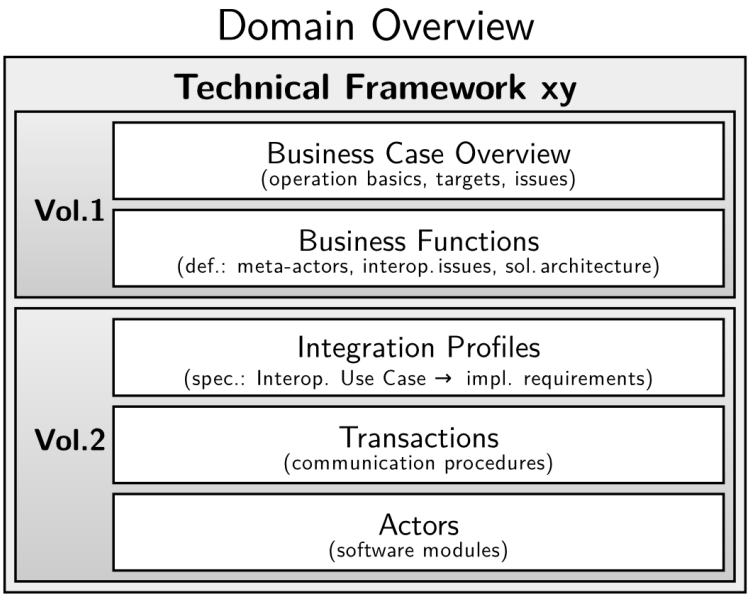

Figure 1: Structure of the Document (IES Technical Framework Template)

2 Definitions

Actor
is a functional software component of a system that executes transactions with other actors as defined in an Integration Profile.

Business Case
is the economic viable application of an idea or technology.

Business Function
is a feature required to be realised for a Business Case to work.

Conformance Testing
is a standalone process to ensure that the implementation conforms to specified standards and profiles, i.e. the implementations outputs and response are checked against rules and patterns.

Integration Profile
is the specification required to realise a part of a Business Function (or combination thereof) in an interoperable fashion (normalised).

Interoperability Testing
is a process to check whether the system interacts effectively with foreign systems, i.e. when different vendors meet to test their interfaces against each other (e.g. Connectathon).

Interoperability Use Case
is a part of a Business Function that relies on data exchange between different actors according to an Integration Profile (i.e. where interoperability is required).

Meta-Actor
joins functional components (actors) in order to fulfil all the functionalities required for a Business Function (IHE grouping). For the Use Case description, it could be a human operator, but typically it is a software component embedded in some device that provides an interface to some communication infrastructure.

Transaction
is the specification of a set of messages (1..n) exchanged between a pair of actors that realise the Use Case specific information exchange (in one or both directions, in a strict or loose order) as specified by an Integration Profile.

Operational Use Case
is a part of a Business Function that describes an activity not involving any data exchange between actors. This kind of use cases are mentioned in the IES Technical Framework, but not considered in Integration Profiles because per se they do not raise interoperability problems.

3 Abbreviations

Each abbreviation used in the technical framework are explained in this section.

IEC	International Electrotechnical Commission
IES	Integrating the Energy System
IHE	Integrating the Healthcare Enterprise
IT	Information Technology
OMG	Open Management Group
UML	Unified Modelling Language

4 Integration Profiles

In Volume 2, Integration Profiles are defined and exemplary implementation options are provided by Transactions (aka Solution Building Blocks). Integration Profiles are normative descriptions of the features and specifics (Architecture Building Block Specification) that need to be implemented in order to realise the respective Use Cases (Architecture Building Block) in an interoperable manner. Commonly, where convenient, the name of the Integration Profile shall somehow reflect the name of the Use Case for ease of association. At this point, all operational Integration Profiles for the VPP are listed and linked to separate documents for the concrete specification. The basics for the implementation of the standards series IEC 61850 are shown in Section ***Fehler! Verweisquelle konnte nicht gefunden werden.***.

4.1 <title of an Integration Profile>

Each Integration Profile that is categorized to the Technical Framework is mentioned with a descriptive sentence and a link to the document, which includes the profile description.

5 Implementation Strategy: <title>

The strategy of mentioned implementation options in the Integration Profiles shall be explained at this section. It is the basic for the implementation of the transactions in the profiles.

5.1 General

Firstly, an overview of technologies for the implementation strategy is given.

5.2 Access Management

Functional constraints, actor authentication, logging and other access control topics are described here.

5.3 Security Considerations

In this section, further mostly technical or legal requirements for the transaction are mentioned.

5.4 Further information

Additional information are given e.g. references to project websites or implementation examples. Furthermore, any kind of information shall be added here when it is relevant for the Integration Profiles.

6 References

All references used in the Technical Framework are mentioned here.