



**Access, Terminals, Transmission and Multiplexing (ATTM);
Meta-model entities/relationships opendthX
data/applications interoperability**

Document Preview

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Foreword

This final draft ETSI Standard (ES) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM), and is now submitted for the ETSI Membership Approval Procedure.

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Executive summary

The opendthX open meta-model is designed to ensure interoperability between digital content and construction industry software, enabling all parties involved in a construction project to contribute to the BIM process (see Figure B.1), in particular for:

- access to all types of content via all types of applications, regardless of the tools used;
- enriching objects for advanced collaborative construction;
- standardize input data in construction software avoid the GIGO effect (i.e. Garbage In → Garbage Out) (see Figure B.3);

- with the aim of creating a "CIQO-ready" collaborative environment: "Collaboration In → Quality Out" (see Figure B.2):
 - optimize data transfers using the concept of data on demand, thus meeting the need for digital sobriety;
 - establish digital continuity throughout the lifecycle of the project: design-construction-operations, including the use of connected objects.

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1 Scope

The present document presents the opendthX entity/relationship meta-model for interoperability between data and applications.

The purpose of the present document is to establish a framework to ensure interoperability between digital content and software applications in the construction industry. It aims to facilitate access to various types of content through different applications, regardless of the tools used, thereby promoting advanced collaborative construction practices. The standard aims to standardize input data to construction software in order to avoid the "Garbage In Garbage Out" (GIGO) effect, by ensuring that quality input data and applications result in quality output data.

The main objectives are to optimize data transfers through the concept of data on demand, which promotes digital sobriety, and to establish digital continuity throughout the lifecycle of construction projects, from design and construction to operation, including the use of connected objects. The standard introduces the opendthX open meta-model, designed to enable seamless interoperability and collaboration between all stakeholders in a construction project.

In addition, the standard addresses the integration of semantic, organizational and technical interoperability, providing methodologies and frameworks such as the use Cases-use Objects-Properties-modelled Objects (COPO) method for semantic interoperability and the Collaboration In Quality Out (CIQO) process for organizational interoperability. It also covers technical aspects such as the context for using IFC files, JSON-LD and APIs for efficient data exchange.

Overall, the standard aims to improve the efficiency, sustainability and adaptability of the construction sector by harnessing the full potential of the digital transformation from appli-centrism to open data-centrism through data-application interoperability.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the [ETSI docbox](#).

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are necessary for the application of the present document.

- [1] [ETSI TS 103 673](#): "SmartM2M; SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions".
- [2] [ISO 16739-1:2024](#): "Industry Foundation Classes (IFC) for data sharing in the construction and facilities management industries — Part 1: Data schema".
- [3] [ISO 23386:2020](#): "Building information modelling and other digital processes used in construction — Methodology to describe, author and maintain properties in interconnected data dictionaries".
- [4] [ISO 19650 \(all parts\)](#): "Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling".
- [5] [ETSI TS 103 548](#): "SmartM2M; SAREF reference ontology patterns".
- [6] buildingSMART: "[Industry Foundation Classes \(IFC\) - Version 4 - Addendum 1](#)".
- [7] [ETSI TS 103 410-3 \(V1.1.1\)](#): "SmartM2M; Smart Appliances Extension to SAREF; Part 3: Building Domain".