
Organizacija in digitalizacija informacij v gradbeništvu - Upravljanje informacij z BIM - 4. del: Izmenjava informacij (ISO/DIS 19650-4:2021)

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 4: Information exchange (ISO/DIS 19650-4:2021)

Organisation und Digitalisierung von Informationen zu Bauwerken und Ingenieurleistungen, einschließlich Bauwerksinformationsmodellierung (BIM) - Informationsmanagement mit BIM - Teil 4: Informationsaustausch (ISO/DIS 19650-4:2021)

<https://standards.itec.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e31a5b7/osist-pr-en-iso-19650-4-2021>

Organisation et numérisation des informations relatives aux bâtiments et ouvrages de génie civil, y compris modélisation des informations de la construction (BIM) - Gestion de l'information par la modélisation des informations de la construction - Partie 4: Échange d'informations (ISO/DIS 19650-4:2021)

Ta slovenski standard je istoveten z: prEN ISO 19650-4

ICS:

35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
91.010.01	Gradbeništvo na splošno	Construction industry in general

oSIST prEN ISO 19650-4:2021

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN ISO 19650-4:2021](https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021)

<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021>

DRAFT INTERNATIONAL STANDARD

ISO/DIS 19650-4

ISO/TC 59/SC 13

Secretariat: SN

Voting begins on:
2021-08-11Voting terminates on:
2021-11-03

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling —

Part 4: Information exchange

iTeh STANDARD PREVIEW

ICS: 35.240.67; 93.010; 91.010.01 (standards.iteh.ai)[oSIST prEN ISO 19650-4:2021](https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021)<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021>

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING



Reference number
ISO/DIS 19650-4:2021(E)

iTeh STANDARD PREVIEW (standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 Terms relating to phases.....	2
3.2 Terms relating to activities.....	2
4 Process overview	3
5 Process steps	3
5.1 Mobilization and information production.....	3
5.1.1 Mobilization and testing prior to information exchange.....	3
5.1.2 Implementation.....	4
5.2 Shared state.....	4
5.3 Published state.....	4
5.4 Change actions.....	5
5.4.1 Identify issues and risks.....	5
5.4.2 Allocate issues and risks.....	5
5.4.3 Implement corrections.....	5
6 Decisions on change of state	6
6.1 Decision A: Approve for SHARING.....	6
6.2 Decision B: Authorize and accept for PUBLICATION.....	6
6.3 Decision criteria.....	6
6.4 Exceptions.....	7
7 Criteria for reviewing an information exchange	7
7.1 Common Data Environment (CDE).....	7
7.2 Conformance.....	8
7.3 Continuity.....	8
7.4 Communication.....	8
7.5 Consistency.....	9
7.6 Completeness.....	9
7.7 Other criteria.....	10
Annex A (informative) Open schema and data format standards	11
Bibliography	13

ISO/DIS 19650-4:2021(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 59, *Organization of information about construction works*, Subcommittee SC 13, *Information management using building information modelling*.

A list of all parts in the ISO 19650 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 19650 parts 1-3 require the sharing of project and asset information as part of collaborative and convergent processes. These provide the governance and strategy around the execution of both the delivery phase and operational phase of information management. ISO 19650-4 complements parts 1-3 & 5 by providing the explicit process and criteria for an individual information exchange. The intention is to secure the benefits arising from collaborative and interoperable Building Information Modelling (BIM) and choosing 'open' schemas and data formats and conventions whilst defining when alternatives may be appropriate..

Information exchanges occur within the information production and consumption process at every level of project teams and asset/facility management and operation teams (see ISO 19650-2 Figure 2 and ISO 19650-3 Figure 3). It is critical that appropriate criteria are applied to ensure the reliability of the information and the repeatability of the processes. The requirements around information exchange (identified in this Standard) are distinct from any specific "exchange information requirements (EIR)" as used in 19650-1, -2 and -3.

The information exchange process is based on the choice of how information containers (see ISO 19650-1 3.3.12) are defined to ensure that information can be managed.

In this context, an information container

- is given a persistent identifier and other metadata;
- can be retrieved, using a CDE and appropriate status metadata; and
- is made persistent, using revisioning with systematic archiving.

Applicability

This document is applicable to assets of all sizes and all levels of complexity. This includes portfolios of buildings, campuses, infrastructure networks, individual buildings and pieces of infrastructure. The requirements in this document should be applied in a way that is proportionate and appropriate to the scale and complexity of the asset. This document makes use of the phrase "shall consider". This phrase is used to introduce a list of items that the person in question must think about carefully in connection with the primary requirement described in the sub-clause. The amount of thought involved, the time taken to complete it, and the need for supporting evidence will depend on the complexity of the asset, the experience of the person(s) involved, and the requirements of any national policy on introducing building information modelling. On a relatively small or straightforward asset, it can be possible to complete, or dismiss as not relevant, some of these "shall consider" items very quickly. One way to help identify which of the "shall consider" statements are relevant can be to review each statement and create templates for assets of different sizes and complexity.

Relationship with other standards

The concepts and principles relating to the application of the requirements within this document are provided in ISO 19650-1, and in the information exchanges defined in ISO 19650-2 and ISO 19650-3. EN 17412-1 (see bibliography^[1]) describes a methodology for qualifying an exchange with criteria relating to completeness.

NOTE Asset delivery and operation have a role in achieving the UN Sustainable Development Goals (bibliography^[3]).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN ISO 19650-4:2021](https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021)

<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pren-iso-19650-4-2021>

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling —

Part 4: Information exchange

1 Scope

ISO 19650-4 provides the detailed process and criteria for the decision points when executing an information exchange as defined by ISO 19650 so as to ensure the quality of the resulting project or asset information model. It promotes a proportional and sustainable approach to information exchange where the immediate delivery of information does not limit its future use. It details the implementation of the concepts in ISO 19650-1 and is applicable to any information exchange within the delivery stages covered by ISO 19650-2 and operational events covered by ISO 19650-3. The use of appropriate quality assurance and quality control measures supports the fulfilment of a specific Exchange Information Requirement related to an individual information exchange by enumerating criteria relating to completeness, compliance to formal exchange schemas, the continuity of concepts between exchanges and the elimination of spatial and specification conflicts.

2 Normative references

oSIST prEN ISO 19650-4:2021

<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pr-en-iso-19650-4-2021>

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 12911, *Framework for building information modelling (BIM) guidance*

ISO/TS 8000-1:2011, *Data quality — Part 1: Overview*

ISO 19650-1, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 1: Concepts and principles*

ISO 19650-2, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 2: Delivery phase of the assets*

ISO 19650-3, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 3: Operational phase of the assets*

ISO 19650-5, *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling — Part 5: Security-minded approach to information management*

ISO 29481-1:2016, *Building information models — Information delivery manual — Part 1: Methodology and format*

ISO/DIS 19650-4:2021(E)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6707-1, ISO 19650-1 and the following apply

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Terms relating to phases

3.1.1

stage

distinct period in a project used as a management tool

Note 1 to entry: A stage generally terminates at a key decision point (ISO19650-1 3.2.14) .

Note 2 to entry: Handover may be viewed as a delivery stage and as an operational trigger event.

Note 3 to entry: Trigger event is defined in ISO 19650-1 3.2.13.

[SOURCE: ISO 6707-2:2017, 3.3.4, modified. Note 1 to entry removed. The admitted term "phase" has been removed.]

3.2 Terms relating to activities

3.2.1

information provider

Note 1 to entry: Information providers include both the authors of requirements and the providers delivering information according to the requirements.

EXAMPLE 1 A structural engineer will prepare a detailed proposal during a detailed design stage.

EXAMPLE 2 A maintenance team will prepare an inspection report on an asset during an operational event.

3.2.2

information receiver

actor who receives information in an information container

Note 1 to entry: One information receiver may be the appointing party or a lead appointed party with responsibility for the authorization and acceptance of information into the PUBLISHED state. See ISO 19650-1 Figure 6.

Note 2 to entry: For appointing party, lead appointed party and appointed party see ISO 19650-1 3.2.3 and 3.2.4.

3.2.3

information reviewer

actor who reviews information and its information container

Note 1 to entry: The task team leader acts as reviewer before approval out of Work-in-Progress (WIP) state..

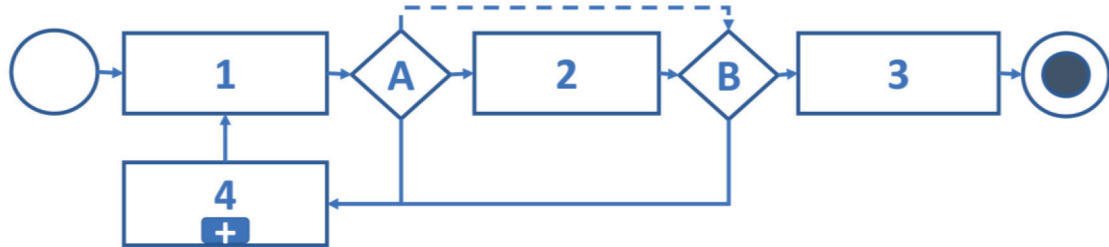
Note 2 to entry: The delivery or operational team including the lead appointed party, act as reviewers before the authorization into the PUBLISHED state and its possible acceptance by the appointing party.

Note 3 to entry: An information reviewer may be an artificial intelligence agent or an automated rules-based process.

EXAMPLE An information provider such as a structural engineer or maintenance team, acts as a reviewer before approval from the Work-in-Progress (WIP) state. Reviews should not only be conducted by the author(s).

4 Process overview

Each information exchange, whether executed during or at the end of a stage or event, shall be executed as specified in ISO 19650-2 5.6 and 5.7 or ISO 19650-3 5.6 and the associated governance arrangements, as summarized in [figure 1](#). Each process is detailed in [section 5](#) and each decision in [section 6](#).



Key

- 1 Generate Work-in-Progress (see [5.1](#))
- 2 Use Shared state (see [5.2](#))
- 3 Use Published state (see [5.3](#))
- 4 Develop Corrective actions (see [5.4](#))
- Decision A: Approve for sharing (see [6.1](#))
- Decision B: Authorize and accept for publication (see [6.2](#))

ITeH STANDARD PREVIEW
(standards.iteh.ai)

Figure 1 – Information exchange process

<https://standards.iteh.ai/catalog/standards/sist/032e5d12-1a9b-4793-b5bd-3e347e30a5b7/osist-pre-iso-19650-4-2021>

NOTE [Section 6.4](#) provides the criteria and examples of information exchanges that can omit the SHARED state given other controls, shown dotted.

5 Process steps

5.1 Mobilization and information production

During delivery stages and operational events Information providers shall produce information and develop information containers as Work In Progress. (see [figure 1](#) process 1)..

NOTE Implementation ([5.1.2](#)) may be dependent on steps taken during mobilization ([5.1.1](#)).

5.1.1 Mobilization and testing prior to information exchange

The methods and procedures of undertaking an information exchange shall be tested to ensure flow of information, prior to finalizing requirements and exchanging deliverables.

The information provider shall review and confirm the choices of authoring software to use during mobilization (ISO 19650-2 5.4 and ISO 19650-3 5.4).

To facilitate the information development process, the information provider shall select authoring software that supports:

- Import of the schemas and data formats of relevant reference information
- Export of the requested schemas and data formats
- Interaction with any agreed issue and risk registering and agreed management tools.