INTERNATIONAL STANDARD

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# Buildings and constructed assets — Service-life planning —

## Part 8:
## Reference service life and service-life estimation

*Bâtiments et biens immobiliers construits — Prévision de la durée de vie —*

*Partie 8: Durée de vie documentée et estimation de la durée de vie*

Reference number
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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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## Contents

# 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 15686-8 was prepared by Technical Committee ISO/TC 59, *Building construction*, Subcommittee SC 14, *Design life*.

ISO 15686 consists of the following parts, under the general title *Buildings and constructed assets — Service-life planning*:

- *Part 1: General principles*
- *Part 2: Service life prediction procedures*
- *Part 3: Performance audits and reviews*
- *Part 5: Life-cycle costing*
- *Part 6: Procedures for considering environmental impacts*
- *Part 7: Performance evaluation for feedback of service-life data from practice*
- *Part 8: Reference service life and service-life estimation*

The following parts are in preparation:

- *Part 9: Guidance on assessment of service-life data*
- *Part 10: Levels of functional requirements and levels of serviceability — Principles, measurement and use*

# Introduction

Typically, a person working with service-life planning of a design object is faced with the problem of estimating the service life of its components. Even if there are certain reference service life (RSL) data of a component available from various actual sources, such RSL data, as found, can rarely be used satisfactorily. This is because the in-use conditions specific to the design object usually are different from the reference in-use conditions, i.e. the in-use conditions under which the RSL data are valid.

Accordingly, in order to determine an appropriate estimated service life (ESL), it is necessary to modify the RSL by taking into account the differences between the object-specific in-use conditions and the reference in-use conditions. The factor method described in this part of ISO 15686 provides one systematic way of carrying out such a modification. It is necessary that any possible alternative method of determining the ESL from the RSL also be based on similar information on in-use conditions.

When applying the factor method, basically an ESL is estimated by multiplying an RSL value by a modifying number representing a combination of factor categories, each of which reflects a particular difference between the object-specific and reference in-use conditions. Several strategies at various levels of sophistication to determine this modifying number are described herein.

Beyond the knowledge of the RSL itself, it is necessary to have available detailed information of the reference in-use conditions as well as the object-specific in-use conditions in order to apply the factor method and allow an estimation of the modification. It is necessary that the reference in-use conditions be provided together with the RSL, while the object-specific in-use conditions are determined from the knowledge of the design object and the location of the site.

An RSL and the appurtenant reference in-use conditions, together with additional required or useful information concerning the RSL, form a set of RSL data. It is necessary that a set of RSL data be formatted into an RSL data record.

This part of ISO 15686 provides guidance on RSL issues and a means of determining the ESL through application of the factor method. The guidance for reference service life is structured into discussions regarding

- provision of RSL data utilizing existing general data (see 5.2);
- selection of RSL data or general data (see 5.3);
- formatting of general data into RSL data records (see 5.4).

Manufacturers of building and construction products are usually in possession of considerable knowledge concerning the service life and durability of their products. However, such information is only occasionally made public, typically in product declarations, other documents, company websites and/or databases. Use of this part of ISO 15686 is expected to motivate manufacturers to compile their knowledge and provide service-life data following the guidelines and requirements stated.

# Buildings and constructed assets — Service-life planning —

## Part 8:
## Reference service life and service-life estimation

## 1 Scope

This part of ISO 15686 provides guidance on the provision, selection and formatting of reference service-life data and on the application of these data for the purposes of calculating estimated service life using the factor method.

This part of ISO 15686 does not give guidance on how to estimate the modification part or the values of factors A to G, using given reference in-use conditions and the object-specific in-use conditions.

## 2 Normative references

The following referenced documents are indispensable for the application 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 6707-1, *Building and civil engineering — Vocabulary — Part 1: General terms*

ISO 15686-1:2000, *Buildings and constructed assets — Service life planning — Part 1: General principles*

ISO 15686-2:2001, *Buildings and constructed assets — Service life planning — Part 2: Service-life prediction procedures*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6707-1, ISO 15686-1 and ISO 15686-2 and the following apply.

### 3.1
### data record

set of **reference service-life data** (3.8) compiled into a prescribed format

### 3.2
### factor category

category of **in-use conditions** (3.5) that are considered in the determination of an ESL from an RSL

EXAMPLE 1 Inherent performance level, design level, work execution level, indoor environment, outdoor environment, usage conditions and maintenance level

EXAMPLE 2 In-use conditions, such as temperature and moisture level, can be considered under the factor category, outdoor environment, in determining factor E.

NOTE Factor categories are used in the factor method to determine the factors A to G, and can be applicable in a similar way in any feasible alternative method.