
**Dentistry — Vocabulary of process
chain from dental CT to CAD/CAM
for implant prosthetic restorations
— Backward planning in the digital
process chain**

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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).

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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 106, *Dentistry*, Subcommittee SC 9, *Dental CAD/CAM systems*.

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

Terms and designations for individual system parts and process steps used in product descriptions and instructions for use provided by the manufacturers of dental CAD/CAM systems, dental CT systems and prosthetic implant systems differ from each other, thus creating confusion among dentists and dental technicians. In order to overcome these ambiguities, it was decided to produce this document for terminology used in the digital process chain for backward planning.

For the purposes of illustrating the logic sequence of the process chain for backward planning, a flow chart of this process chain is shown in [Annex A](#).

In [Clause 3](#), there are some entries with more than one term. The first term is the preferred term, followed by admitted term(s). In the future, it is recommended to use the first term.

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Dentistry — Vocabulary of process chain from dental CT to CAD/CAM for implant prosthetic restorations — Backward planning in the digital process chain

1 Scope

This document specifies terms, synonyms of terms and definitions used in the process chain from initial implant treatment imaging until the placement of the finished prosthesis. This process chain includes different steps from dental CT to CAD/CAM for implant prosthetic restorations.

Some aspects of this process chain are also called backward planning.

2 Normative references

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 1942, *Dentistry — Vocabulary*

ISO 16443, *Dentistry — Vocabulary for dental implants systems and related procedure*

ISO 18739, *Dentistry — Vocabulary of process chain for CAD/CAM systems*

ISO/TR 22710:2019

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942, ISO 16443, ISO 18739 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 <http://www.electropedia.org/>

3.1

dental CT

cone beam CT

dental computed tomography

X-ray 3D-computed tomography for dental applications

3.2

voxel

volume element in a virtual three-dimensional space

Note 1 to entry: This term is the combination of "volumetric" and "pixel".

Note 2 to entry: This corresponds to a pixel in a 2D image.

3.3

sectional plane

plane cutting through region of interest in which a view of the corresponding image data is generated

Note 1 to entry: For *dental CT* (3.1) the three main projection planes are referred to as sagittal, axial and coronal sections.

3.3.1

axial section

normal transverse section through a longitudinally aligned object or patient

EXAMPLE View into the patient's head, as seen from above or below.

3.3.2

coronal section

frontal section

section containing the anterior-posterior axis and a normal to the mirror plane

EXAMPLE View into the patient's head, as seen from the front.

3.3.3

sagittal section

sectional plane from anterior to posterior in a bilaterally-symmetric organism

EXAMPLE View into the patient's head, as seen from the side.

3.4

facial scan

extraoral optical scan of the dental anatomy and/or dental situation and the surrounding morphology

3.5

matching process

process whereby digital data from two or more data sources are brought into correspondence through any combination of translation, rotation and scaling, according to a best-fit model, and on the basis of goodness-of-fit criteria to be specified

EXAMPLE 1 Intraoral scan with *dental CT* (3.1) imaging.

EXAMPLE 2 Model scan with *dental CT* (3.1) imaging.

EXAMPLE 3 Extraoral facial scan with *dental CT* (3.1) imaging (for facial prostheses).

3.6

registration

position of a virtual drill template in the *dental CT* (3.1) image of a clinical situation

3.7

planning template

CT template

scan template

template positioned in the patient's mouth during *dental CT* (3.1) imaging for the capture of data needed for treatment planning

EXAMPLE The desired position for the implant and/or prosthesis can be indicated using planning sleeves and planning pins.

3.8

surgical template

drill template

template for guiding surgical instruments and/or implants into the planned position including correct axial orientation and depth

EXAMPLE Plastic template with drill guide sleeves embedded.

[SOURCE: ISO 16443 2014, 3.3.15.3, modified]

3.9

sleeve

tubing segment of more robust material for insertion into a surgical template, the axis of which corresponds to that of the drilling path

3.9.1**outer sleeve**

master sleeve

external (first) sleeve of a multi-sleeve system to receive inner sleeves with various internal diameters

Note 1 to entry: The external diameter of the inner sleeve shall be matched to the internal diameter of the external sleeve.

3.9.2**inner sleeve**

reduction sleeve

internal sleeve for reducing the diameter to the nominal size of the drill

Note 1 to entry: The *inner sleeves* (3.9.2) are generally guide sleeves.

3.9.3**guide sleeve**

tube to receive a drill for axial angulation or to receive a depth-stop drill for surgical treatment and planning

Note 1 to entry: The guide sleeve may also be used for inserting implants.

3.10**backward planning**concept and process of determining number, size, type, location and orientation of implants from anatomical/physiological information obtained from digital imaging systems, including data from *dental CTs* (3.1), optical scans, and / or functional diagnostic systems**3.11****open system**

system which accepts digital data from different systems and which allows for manufacturing by several suppliers including planning the prosthesis design and all components matched to complete the procedure

EXAMPLE STL.

3.12**closed system**

system which accepts digital data which is bound to a certain system or to a special user group

3.13**navigated oral surgery**

surgical procedure simultaneously tracking of suitable instruments by a 3D tracking system in relation to the patient's anatomical structures

3.14**computer-assisted surgery**

surgical procedure conducted with the help of computer technology

3.15**template-guided surgery**surgical procedure for inserting implants using *surgical templates* (3.8) following *backward planning* (3.10)**3.16****robotic-assisted surgery**

surgical procedure with correlated action of a surgeon and a computer controlled mechanical device

3.17**virtual articulator**

software based calculation of the relationship of the articulating surfaces of opposing jaw based on data obtained by a data set