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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

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Foreword

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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.

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*

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 "**vo**lumetric" and "pi**xel**".

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.

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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