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Dentistry — Vocabulary of process chain for CAD/CAM systems

Médecine bucco-dentaire — Vocabulaire de la chaîne de procédé applicable aux systèmes de CFAO

Please see the administrative notes on page iii

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ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.

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Foreword

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The committee responsible for this document is ISO/TC 106, *Dentistry*, Subcommittee SC 9, *CAD/CAM-Systems*.

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/CAD systems differ from each other, thus creating confusion among dentists and dental technicians. In order to overcome these ambiguities, it was decided to prepare an International Standard for terminology used in the process chain for CAD/CAM systems.

For the purposes of illustrating the logic sequence of the process chain for CAD/CAM systems, a flow chart of this process chain is shown in Annex A.

Dentistry — Vocabulary of process chain for CAD/CAM systems

1　Scope

This International Standard specifies terms, synonyms for terms and definitions used in the process chain for CAD/CAM systems in dentistry.

2　Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 5725-1, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions*

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

ISO 17296-1, *Additive manufacturing — General principle — Part 1: Terminology*

3　Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1942, ISO 5725-1, ISO 16443, ISO 17296-1 and the following apply.

NOTE　　In the following, first the preferred term and then the synonyms which have been in use so far are given. For the future it is recommended to use the preferred terms instead of the synonyms.

3.1　Process step terms

3.1.1
3D data acquisition
three dimensional data acquisition
3D digitization and generation of a digital data set

3.1.2
3D data acquisition system
three dimensional data acquisition system
hardware and software used for 3D data acquisition

3.1.3
3D scanning
3D digitizing
raw data acquisition
method of acquiring the shape and size of an object as a 3-dimensional representation by recording x,y,z coordinates on the objects surface and through software the collection of points is converted into digital data

Note 1 to entry: This collection of data via the scanning process creates a raw data set.

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Note 2 to entry: Typical scanning methods use some amount of automation, coupled with a touch probe or an optical sensor, or other device.

[SOURCE: ISO 17296-1:2015, definition 2.4.1]

3.1.4
additive manufacturing
process of joining materials to make parts from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing and formative manufacturing methodologies

[SOURCE: ISO 17296-1:2015, definition 2.1.2]

3.1.5
artifact
any undesired alteration of data introduced in a digital process by an involved technique and/or technology

3.1.6
CAD
computer-aided design
hardware and software supporting the designing process

Note 1 to entry: The acronym CAD is commonly used as preferred term.

3.1.7
CAD data
design data set
result of the *CAD process* (3.1.8) gained by manipulating the model data set for the purposes of transfer to the CAM system

3.1.8
CAD process
design process (DEPRECATED)
process of generating design data sets

3.1.9
CAD software
design system
system for the generation of a design data set

3.1.10
CAM
computer-aided manufacturing
hardware and software supporting the manufacturing process

Note 1 to entry: The acronym CAM is commonly used as preferred term.

3.1.11
CAM system
manufacturing system
digitally controlled system for the manufacture of CAD/CAM dental restorations

EXAMPLE   Milling machine, CAM software.

3.1.12
CAM software
software used for manipulating design data for manufacturing

EXAMPLE   Software for the calculation of milling paths.

3.1.13
data record
one or more data items treated as a unit within a data set

3.1.14
data set
complete numerical description

EXAMPLE   Raw data set (dot model), digitization data set (manipulated raw data set), surface model, facet model or volume model.

Note 1 to entry: Raw data set is obtained by processing scanning data.

3.1.15
data structure
defined format interrelating the data (records) in the data set

3.1.16
dental CAD/CAM system
a set of hardware, software, materials, and devices, used to fabricate dental restorations

Note 1 to entry: Hardware and software are used for data acquisition, design and manufacturing.

3.1.17
dental CAD/CAM restoration
dental restoration (3.1.18) produced by a dental CAD/CAM system

3.1.18
dental restoration
any kind of restoration which replaces intra-oral hard and/or soft tissues

3.1.19
design data manipulation process
CAD data manipulation process
process of generating the manufacturing data set

EXAMPLE   Tooth path generation process.

3.1.20
digital impression
acquisition of a data set with the numerical 3D-representation of the surfaces from the patient directly

3.1.21
digitizing device
hardware for computer-aided design and manufacturing of custom-made indirect dental restorations used to record the topographical characteristics (e.g. surface) of teeth and surrounding tissues, implant connecting components, dental impressions, dental moulds or stone models by analogue or digital methods

Note 1 to entry: These systems consist of a scanning device, hardware and software.

Note 2 to entry: A surface digitization procedure starts with the generation of actually measured surface points (or their conversion, for example, in STL format), which are the measured digitization data. In most digitizing systems, the measured points are mathematically processed by operations such as:

— matching

— filtering

— weighing

— selective removal

— smoothing, etc.