



# GUIDED SURGERY PREOPERATIVE PROTOCOLS



2025

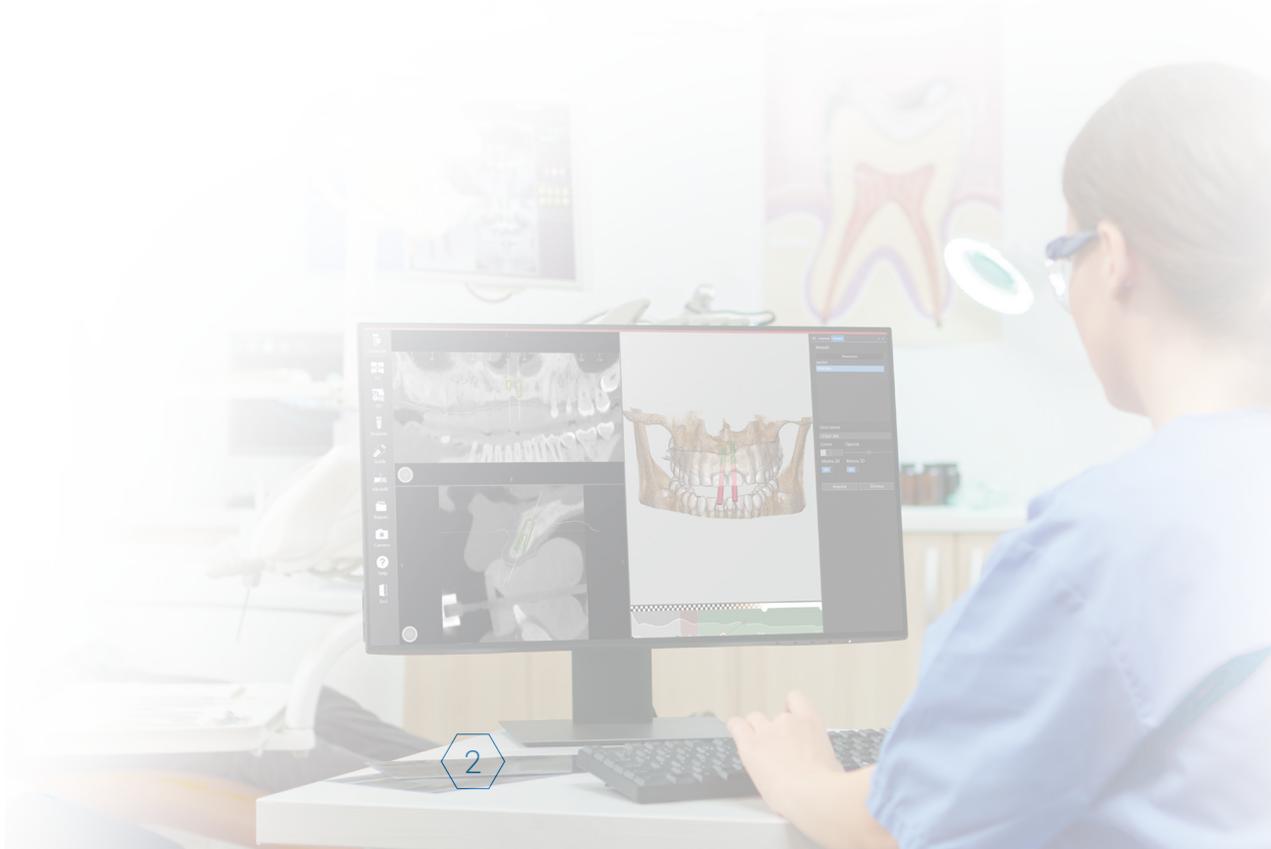
## GUIDED SURGERY

All guided surgery solutions include 3D reconstruction as part of the planning phase of:

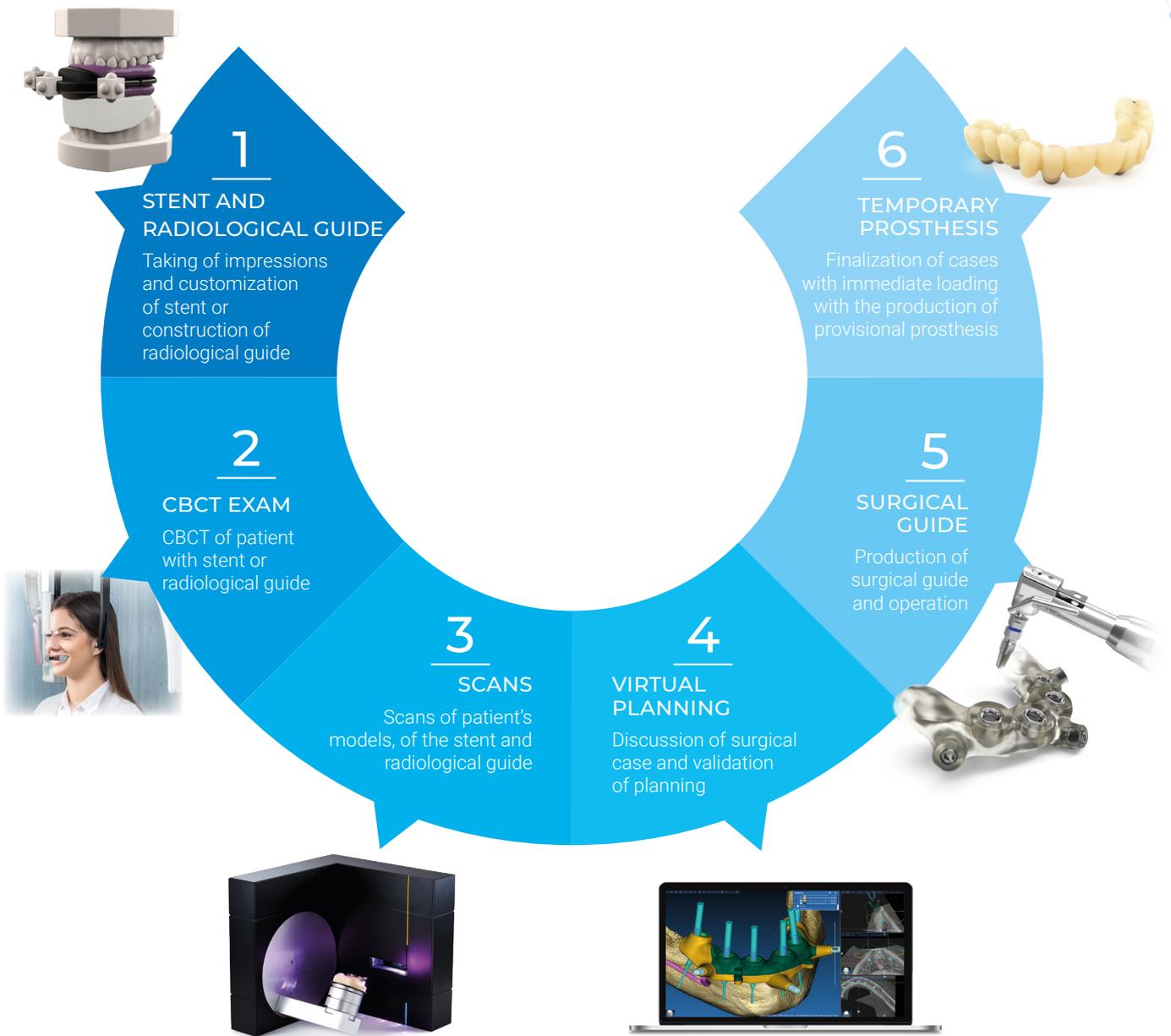
- **bone structures**, thanks to the re-elaboration of data from the radiological examination;
- **mucosal profiles** and **anatomy of teeth**, obtained from the optical scanning of models.

In this way a **virtual model of the patient** is obtained, containing all necessary information for programming implant positioning, developing the surgical guide and, in selected cases, rehabilitating the patient with a temporary prosthesis with immediate loading.

For the treatment result to correspond exactly and safely with the virtual project, IESS Group guided surgery includes **protocols already in the earliest phases, ensuring the optimization of all** odontological and dental laboratory technician **activities, reducing the risk of mistakes** and imprecision in each step.



# WORK FLOW IESS 3D



IESS Group organizes specific **training pathways** with focus on all operational steps, necessary materials and technical information; the **correct execution of activities** contained in the IESS protocol is **essential for the success** of guided surgery procedures

# 1. STENT AND RADIOLOGICAL GUIDE

The IESS guided surgery system includes the use of the universal stent as an element of alignment of osseous anatomy information (obtained from radiological examinations), and information on soft tissue and dental elements (obtained from model scans).

**There are two protocols, based on the type of procedure to be executed: EASY or COMPLETO.**

## EASY PROTOCOL ADAPTED UNIVERSAL STENT

The Easy protocol involves simple stent adaptation, which is executed at the surgery and is applicable to partially edentulous patients when the anatomical situation ensures stent stability on existing teeth.

### 1) IN SURGERY IMPRESSION

**a) Traditional impression** (the use of alginate material is advised)

- Master impression at dental-mucosal level, without any provisionals
- Master impression with provisional, if present and if it satisfies requested aesthetic and functional characteristics
- Antagonistic impression

**b) Impression from intraoral scan**

- Master impression at dental-mucosal level, without any provisionals
- Master impression with provisional, if present and if it satisfies requested aesthetic and functional characteristics
- Antagonistic impression
- Impression of arches in occlusion



### 2) IN SURGERY PREPARATION OF STENT

- Adapt the universal stent to the patient's mouth, perhaps removing rear flaps
- Spread polyether or radiotransparent silicone on both sides of the stent (master and antagonistic)
- Ask the patient to occlude and wait for material to harden
- Prescribe radiological CBCT examination in accordance with acquisition protocol (see page 8) and instruct the patient on correct stent positioning



### 3) SENDING OF MATERIALS TO TECHNICIAN

- DICOM file
- Master and antagonistic impressions in case of traditional impression; complete files in case of impression with intraoral scanner
- Adapted stent

### 4) IN LABORATORY DEVELOPMENT OF MODELS

#### a) Traditional impression

- Development of plaster models; the use of a class IV plaster is advised
- Monitoring in articulator
- Any diagnostic wax up, tooth mounting or digital wax up in the edentulous area

#### b) Impression from intraoral scan

- Printing of 3D model from file
- Any diagnostic digital wax up



### 5) IN LABORATORY SCANS

- Master and antagonistic model with stent in position: reference scan for later alignments
- Master model without stent
- Diagnostic wax up (if produced)
- Antagonistic model

*For details on scanning methods and exporting STL files go to page 9*

## COMPLETE PROTOCOL RADIOLOGICAL GUIDE + STENT

The complete protocol involves fixing the stent to a radiological guide previously made in cooperation with the dental laboratory technician; this is necessary in case of total edentulism, or in all situations of insufficient stent stability on existing teeth.

Activities to be carried out in the surgery follow the main phases for the production of a total prosthesis.

If the patient is already wearing a mobile prosthesis that satisfies all aesthetic-functional requirements, the radiological guide can be obtained through its precise duplication. Lowering the prosthesis before duplication is advised, to ensure excellent adherence to tissue.

In the case of complete protocol, intraoral scan use is strongly advised against for the taking of impressions, as the risk of imprecision between various steps is too high.

### 1) IN SURGERY IMPRESSION

- Master impression at dental-mucosal level in case of total edentulism; otherwise, at dental-mucosal level, without any provisionals
- Master impression at mobile or provisional prosthesis level, if present and if it satisfies requested aesthetic and functional characteristics
- Antagonistic impression
- Centric wax

For the taking of impressions the use of alginate material is advised



### 2) IN LABORATORY CONSTRUCTION OF RADIOLOGICAL GUIDE

- Development of plaster models; the use of a class IV plaster is advised
- Monitoring in articulator
- Duplication of prosthesis in acrylic resin.

### SENDING OF RADIOLOGICAL GUIDE TO DOCTOR

### 3) IN SURGERY

#### FIXING OF THE STENT ONTO RADIOLOGICAL GUIDE

- Position the radiological guide in the patient's mouth
- Adapt the universal stent to the patient's mouth, perhaps removing rear flaps
- Spread polyether or radiotransparent silicone on both sides of the stent (master and antagonistic)
- Request the patient to bite and wait for material to harden, so that the stent solidifies with the radiological guide
- Prescribe radiological CBCT examination in accordance with acquisition protocol (page 8) and instruct the patient on correct positioning of radiological guide complete with stent

### 4) SENDING OF MATERIAL TO TECHNICIAN

- DICOM File
- Radiological guide with adapted stent.

**! CAUTION: NEVER DETACH THE STENT FROM THE RADIOLOGICAL GUIDE**

### 5) IN LABORATORY

#### SCANS

- Master model with radiological guide and stent: reference scan for later alignments
- Master model at mucosal level
- Master model with radiological guide in position (without stent)
- Antagonistic model



*For details on scanning methods and exporting STL files go to page 9*

## 2. CT/CBCT

Verify **correct positioning** of radiological guide and universal stent, checking to ensure the radiological guide is **perfectly in contact** with the dental surface and/ or the mucosa. Ensure all radiopaque landmarks of the universal stent are visible in the scan.

The use of Cone Beam with **FOV less than 5x8 cm is not advised**, as these are generally considered minimum values for a full arch scan, including stent.

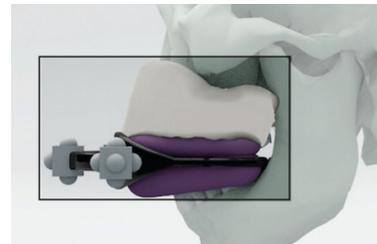
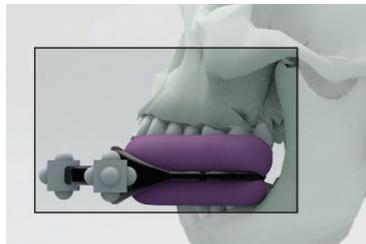
Given the variability of anatomical situations in patients, in some cases a compromise may be necessary, with the exclusion of certain anatomical parts.

### EASY PROTOCOL

### COMPLETE PROTOCOL

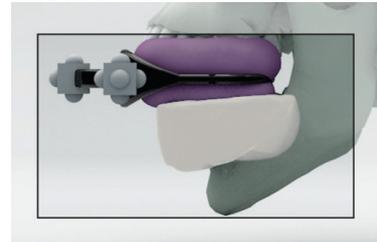
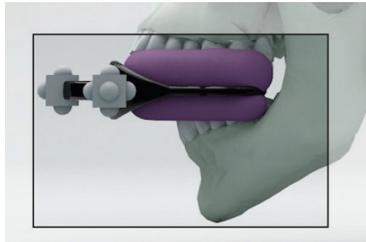
#### MAXILLA

Acquire the entire maxillary arch and region of the sinuses.



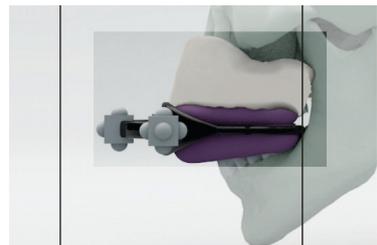
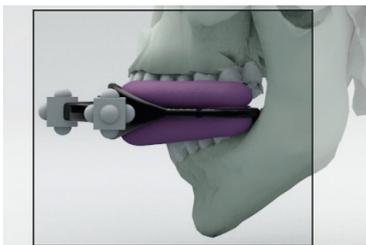
#### MANDIBLE

Acquire the entire mandibular arch and region of the sinuses.



#### MAXILLA AND MANDIBLE

A single scan is possible in case of intervention on both arches. Acquire the entire maxillary and mandibular arch, including the regions of the maxillary sinuses and mandibular canals.



After CT/CBCT acquisition, return the radiological guide, universal stent and CD-ROM or any other file exclusively containing the axial images in DICOM 3.0 format, to the patient.

Axial images in DICOM 3.0 format must be saved in multifile mode. In the case of acquisition of both arches, save the sequence of axials in two separate files.

## 3. SCANS

### GENERAL INSTRUCTIONS

Use a benchtop scanner only for model scans; other solutions (such as .stl file generator from CBCT or intraoral scanner) do not ensure satisfactory quality of generated files.

- Do not cut radiopaque landmarks in stent
- Reduce the weight of STL files
- Always provide scans of open models (with visible edges)
- Eliminate the part of the base from the master model and, in the case of the lower one, the lingual portion



- If present, the digital wax up must be exported separately from the model and still be aligned with the reference scan (master model with stent)
- All files must be correctly aligned with each other and exported in stl format.



- Stent: be sure to scan all stent markers, both on the upper and lower side. In this scan, there must be no areas without information. If this is not the case, missing information will have to be added with additional scans.



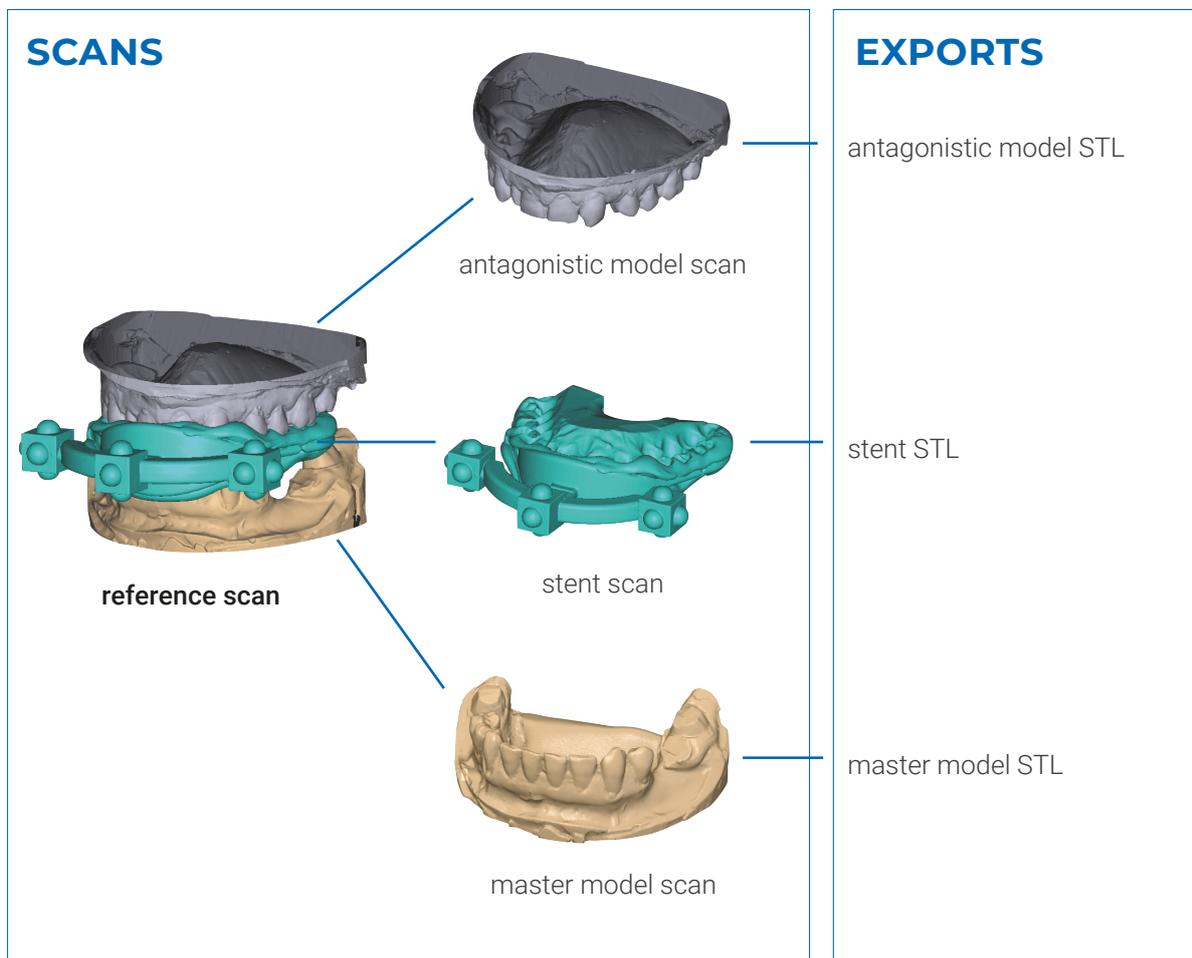
## EASY PROTOCOL ADAPTED UNIVERSAL STENT

### 1) SCANS OF MODEL

- Master and antagonistic model with stent in position: this will be the reference scan for later alignments
- Master model without stent
- Master model with wax up (if present)
- Antagonistic model

### 2) EXPORTING AND SAVING FILES

- Master model
- Stent
- Master model with wax up or prosthetic modeling
- Antagonistic model



# COMPLETE PROTOCOL

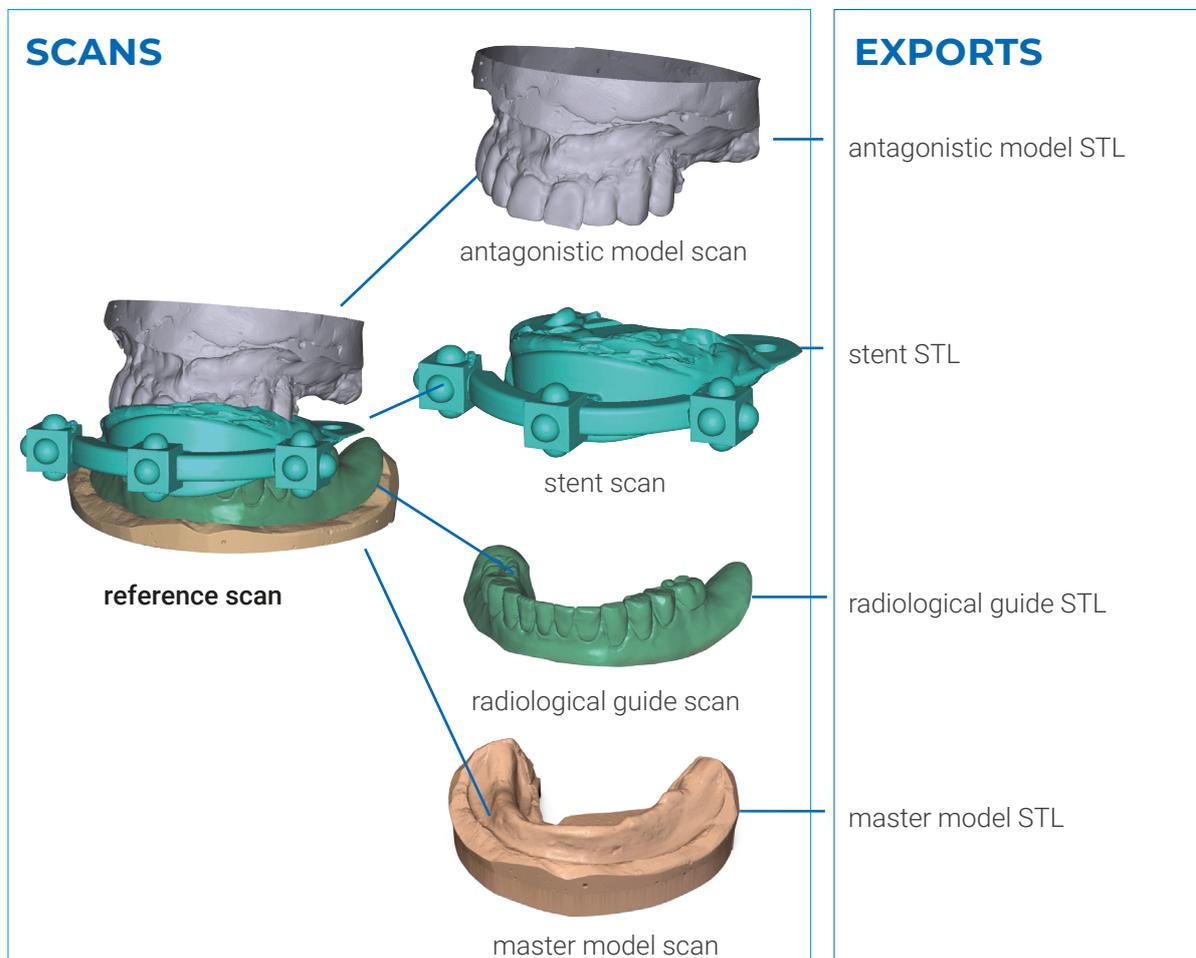
## RADIOLOGICAL GUIDE + STENT

### 1) SCANS OF MODEL

- Master and antagonistic model with radiological guide and stent in position: this will be the reference scan for later alignments
- Master model without radiological guide and without stent
- Master model with radiological guide

### 2) EXPORTING AND SAVING FILES

- Master model
- Radiological guide
- Stent
- Antagonistic model





**IESS Group** is the new international company established in 2021 from the merging of **Geass** and **iRES Group** and which expanded further in 2022 with the entry of **Multysystem**.

In addition to one of **the sector's most extensive product portfolios**, IESS Group also provides a **wide range of services** designed to support the dentist in all professional aspects.

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