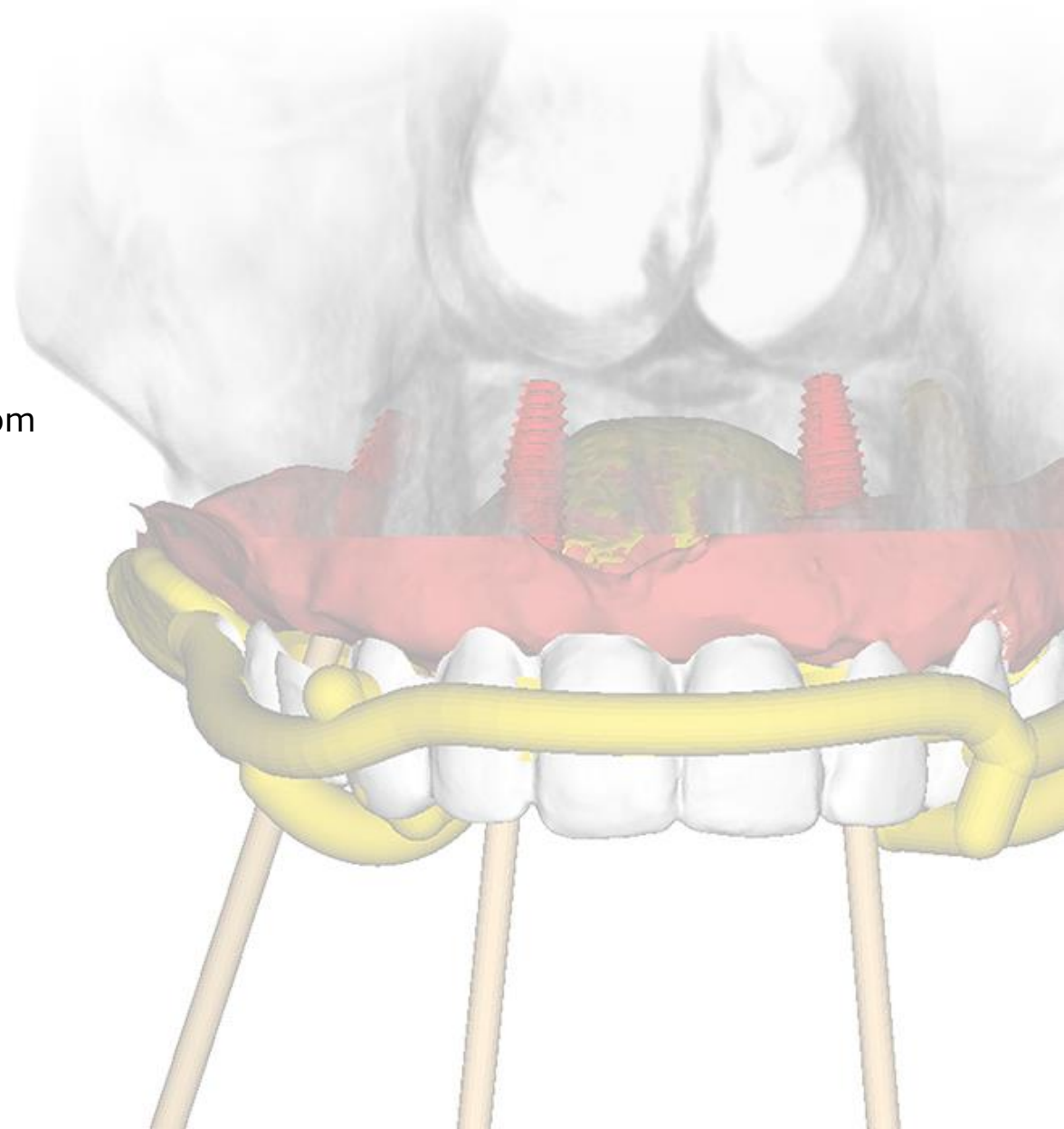


PRODUCT **DOCUMENTATION** FOR **SMOP**

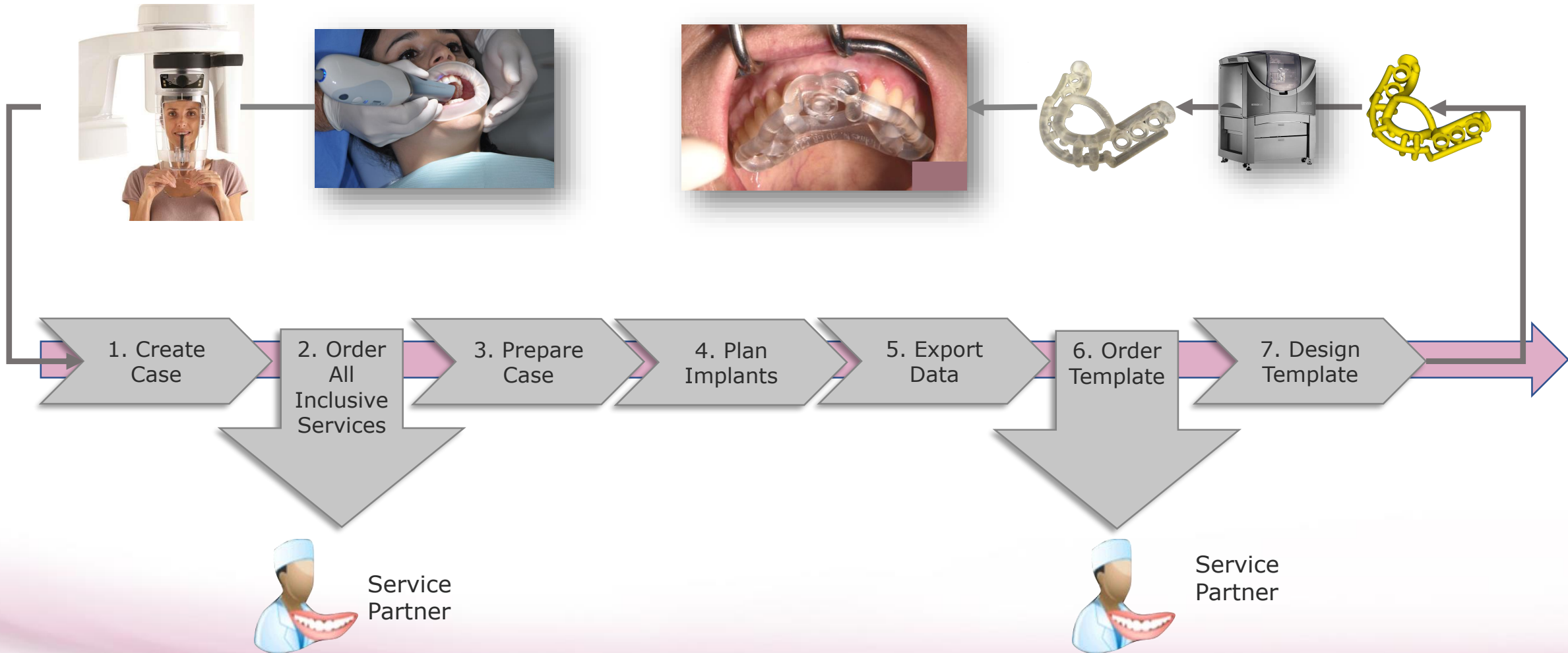
smop is a product and brand of Swissmeda AG, www.mysmop.com



CONTENT

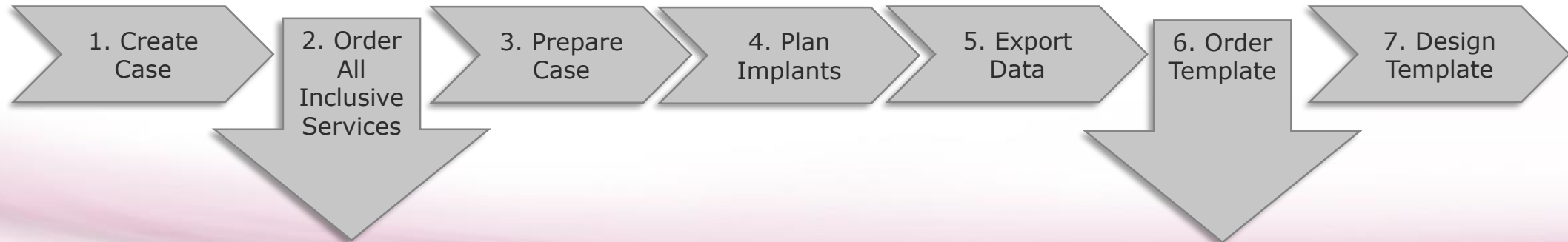
1. The SMOP process
Dentists full workflow / SMOP process steps
2. Benefits of SMOP
Clinical evaluation / List of benefits / Key feature and benefits «SMOP Template»
3. Supported indications
4. The SMOP product
Configurations / Workflow
5. How to register SMOP
6. System Requirements
7. Special interface to Carestream CS 3D Imaging software

1. DENTISTS WORKFLOW WITH SMOP



1. SMOP PROCESS STEPS

1. Create Case
 - a) How to do optimal CBCT scan, b) Create a case with SMOP
2. Order All Inclusive Services
3. Prepare Case
4. Plan implants
5. Export data
6. Order template
7. Design template



1a. HOW TO DO **OPTIMAL CBCT SCAN**



- **All CBCT/CT scanners** exporting standard DICOM-data can be used

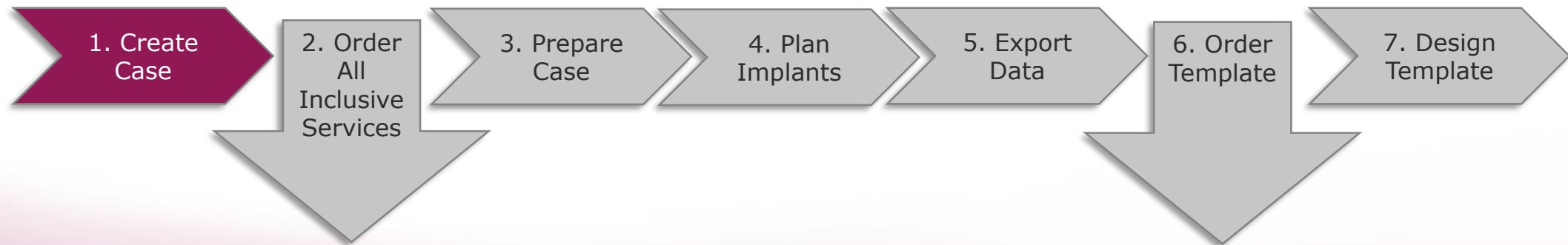
1a. HOW TO DO **OPTIMAL CBCT SCAN**

- Patient upright, head attached, inform patient not to move during exposure time (8-25 seconds)
- For later alignment of model data:
 - Put cotton rolls between teeth and cheek
 - Put cotton rolls between tongue and gingiva
 - Keep the patient's jaws open
- Remove metal from the mouth during the scan (crown or bridges that also will be later removed)
- If the patient wears dentures during scan, make sure they are radio-opaque

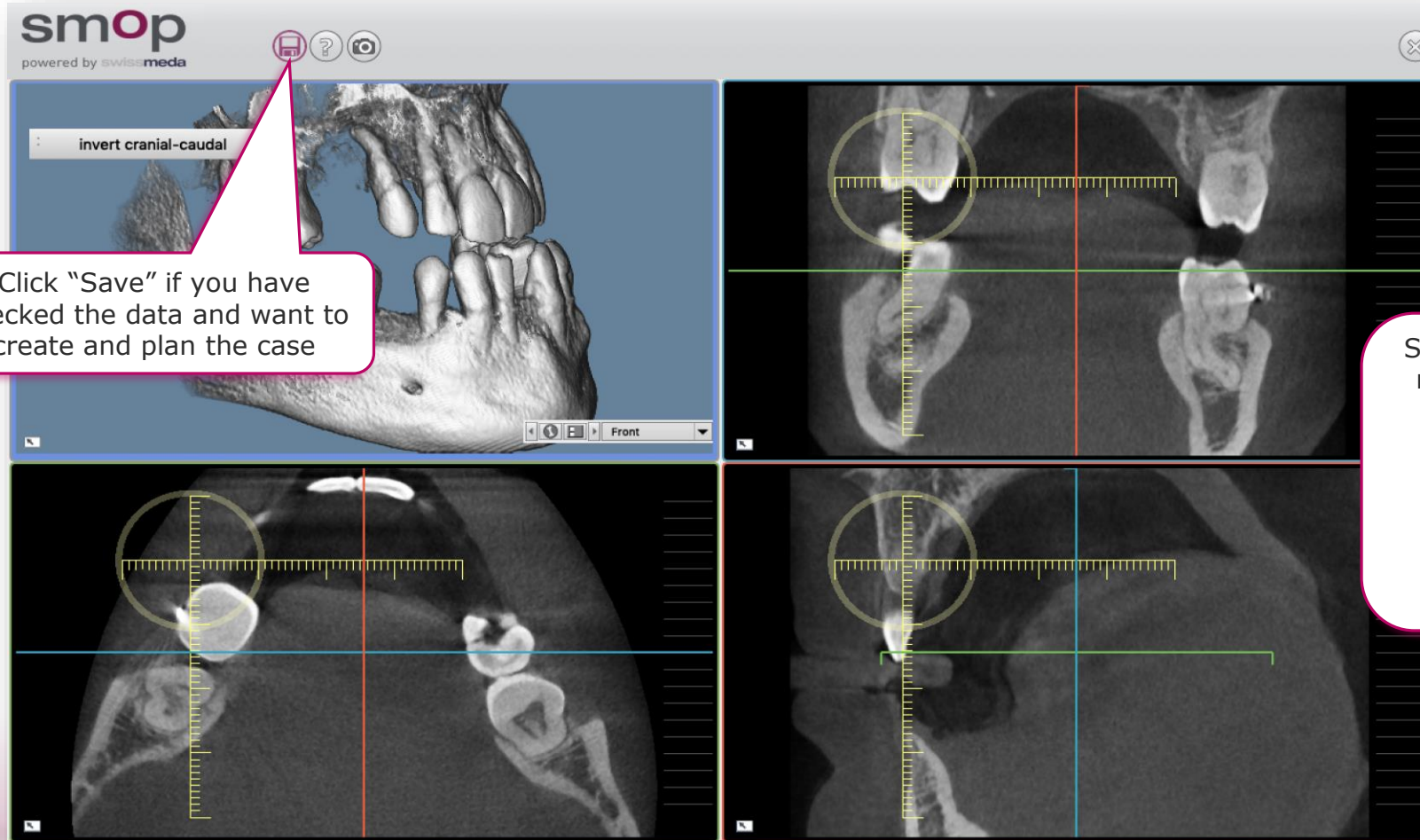


1b. CREATE CASE

- a. Import DICOM Data, preview
- b. Finish case creation
- c. Acquire Model Data
- d. Import Model Data



1b. IMPORT DICOM DATA, PREVIEW



Click "Save" if you have checked the data and want to create and plan the case

Surf through the slices and make sure that the CBCT scan is suitable for your plan.

Check for movement artifacts, metal artifacts, contrast, voxel size (resolution),...

1b. FINISH CASE CREATION

smop
powered by **swissmeda**

invert cranial-caudal

1. What do you want to do?

- ☒ Implant Planning - Prepare data for 3D printed template
- ☐ Implant Planning - Prepare data for manufacturing the template using the X1 drilling device
- ☐ Surface Extraction - Extract surface data for further CAD/CAM processes

2. Select Jaw Type

- ☐ Upper jaw
- ☒ Lower jaw

3. Identify the Case

Patient Name	First Name
Muster	Max
Date of Birth	System ID
24. March 1988	MMU-20181107-2133
Patient ID	Date of Surgery
XXX1234XXX	06.11.2018 00:00
Name - Displayed in the Shell of Shared People	
From: Hugo Patrao, ID: MMU-20181107-2133, LJ	

4. Transfer Case to Server?

Order case preparation / template from service center

- ☐ Auto share case with your service center
- ☒ Auto upload case to server

OK Cancel

Create the case by entering additional case information

1b. ACQUIRE **MODEL DATA**

The Model Data represent the intraoral situation at the surgery.



+



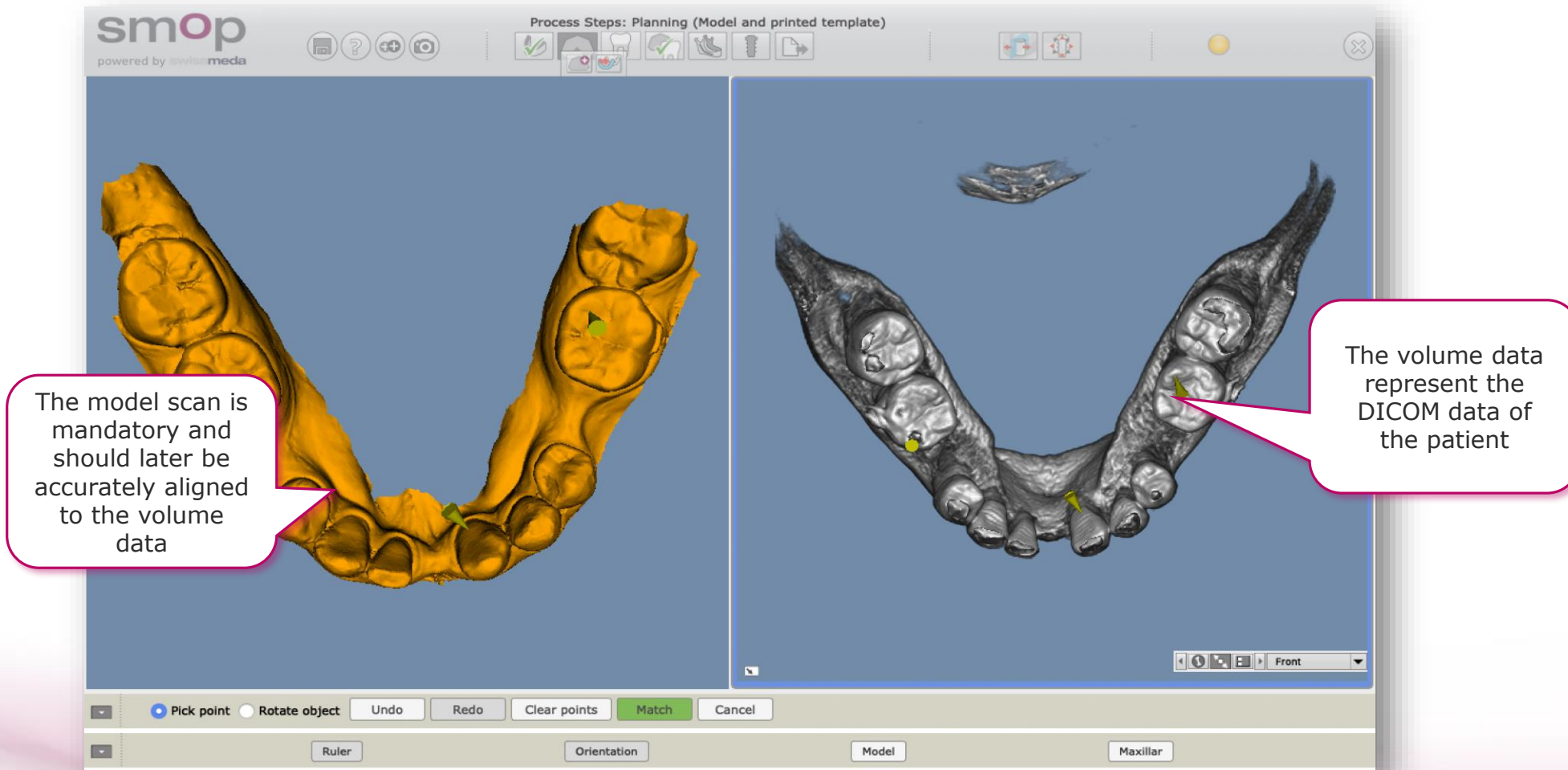
or



Take an impression, create a stone model and scan the stone model surface by any desktop scanner

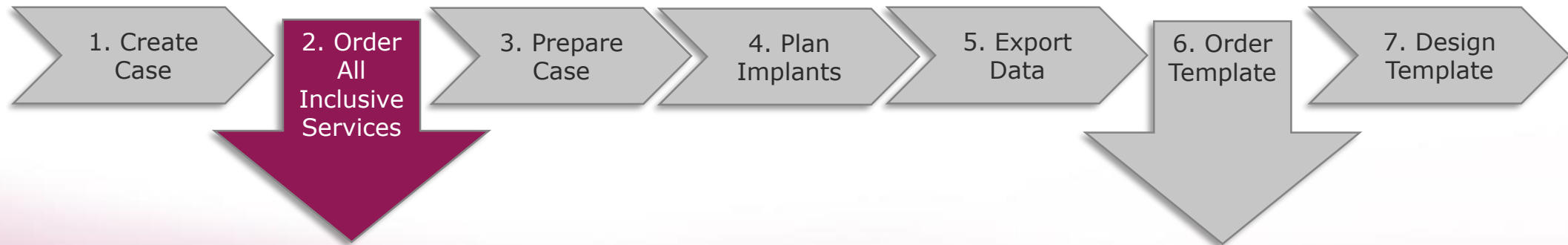
Scan the situation by using an intraoral scanner directly in the patient mouth

1b. IMPORT MODEL DATA (Rough Alignment)



2. Option: ORDER **ALL INCLUSIVE SERVICE PACKAGE**

- a. Create Case and Order All Inclusive Service Package
- b. Order All Inclusive Service Package
- c. Approve delivered services
- d. Request modification of order
- e. List of orders



2a. CREATE CASE AND ORDER **ALL INCLUSIVE SERVICE PACKAGE**

1. Click "Save" to create and register the new case

2. Click "Order case preparation" to order the full-service package

2b. ORDER ALL INCLUSIVE SERVICE PACKAGE

The screenshot shows the 'Create Purchase Order' window in the smop application. The interface is divided into four tabs: 1) Service, 2) Address & Shipping, 3) Additional Options, and 4) Confirmation. The '1) Service' tab is active, showing a list of services and templates. Four callouts provide instructions on how to configure the order:

- 1. Select all planning services, if you want your Service Partner to fully prepare the planning** (points to the 'Services' list).
- 2. Select "Manufacture the template by 3d printing"** (points to the 'Manufacture the template by 3d printing' checkbox).
- 3. Select the metal sleeves to be glued into the template** (points to the 'Print-outs of the template' list).
- 4. Click "Next" and select the shipping and address options for your order** (points to the 'Next' button).

Order Details:

- Order Name:** Hugo Patrao FBU 124058-1
- Services:**
 - ☒ Optical scan of model surface 15.00 €
 - ☒ Optical scan of the wax up surface 15.00 €
 - ☒ Optimization of the alignment of the model 15.00 €
 - ☒ Optimization of the alignment of the wax up 15.00 €
 - ☒ Preparation implant planning 50.00 €
 - ☐ Express for the services: 2 days faster
- Template Name:** Hugo Patrao FBU 124058-1
- Print-outs of the template:**
 - ☒ 1 3d printout, printer: 'Objet', material: 'MED 610' 79.00 € 2 days
 - ☐ Sleeve, Steco inner, D3.5, d2.35, L6 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.2, L6 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.0, L10 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.35, L10 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.5, L6 10.60 € 0 days
 - ☐ Sleeve, Thommen inner 10.60 € 0 days
 - ☐ Sleeve, Thommen outer 13.75 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.8, L6 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d2.0, L6 10.60 € 0 days
 - ☐ Sleeve, Steco inner, D3.5, d1.6, L6 10.60 € 0 days
 - ☐ Sleeve, MGUIDE MORE, D: 6.5mm 12.36 € 0 days

Summary:

- Estimated Delivery Date:** 14-11-2018
- Estimated total price (excl. VAT):** 189.00 €

Buttons: Next, Ruler, Orientation

2c: **APPROVE** DELIVERED SERVICES

The Service Center informs and asks the user to approve the design. To approve the design or planning...

Version was locked by data export.



1. After checking the template within the smop case, the customer clicks on the shopping card for approval...

2. ...and clicks on "Approve for printing". An email will be sent to your Service Partner to start the printing process

Create Purchase Order

We already have a valid template order for this case:

Order Details:	
No.:	
Order Name:	
Estimated Delivery Date:	18.10.2018
Service Center:	Smop Center Swissmeda EUR
Services:	Design of the drilling template (STL-file)
Price (excl. VAT):	120.00 EUR
Additional information:	
Additional information:	Please prepare for Neoss fully guided.
Delivery and Invoicing Address Details:	
Company:	Swissmeda AG
Name:	Max Muster
Street:	Obermühle 8
Postal Code, City:	6340 Baar
Country:	Switzerland

The current status of the order is "Ready for Approval".

template w... approve the ordered template and release it for printing or do you really want to order the same

Cancel Approved for printing Place additional order

2d: **MODIFICATION** REQUEST

The Service Center informs the customer by email to open the case and check the template design. If the user wants to request a modification he should...



1. ...click to create and send a message to his service partner,

A screenshot of the "Send Message" dialog box. It contains the following sections:

- Case Identification:** Owner: Jörg Danzberg, Patient: 3760, Democase, Date of Birth: ., Owner ID: 6... ID: 037-20400520-1554
- 1. Enter your Message:** A text area containing "Please remove the muccosa support, I would like to create a flap."
- 2. Select Recipient(s):** A list box with three options: "001 Smop Center Swissmeda CHF", "002 Jörg Danzberg", and "003 Your Assigned Service Center: Smop Center Swi". The first option is selected.
- 3. Update Case Status:** A dropdown menu showing "In progress".
- Buttons: "Cancel" and "Send Message".

2. enter his modification request,

3. select his Service Center

4. and send the message

2e: USER LIST OF ORDERS

Go to <https://shell.swissmeda.com/orders>, log in, and have a look at your orders

The screenshot shows the 'List of Orders' page in the smop medical applications. The interface includes a header with the smop logo, a date/time display (18.10.2018, 22:30 GMT +2), and a user profile (Jörg Danzberg). A success message states 'List has been successfully loaded!'. Navigation links for 'Export to file (CSV-format)', 'PO List', and 'Admin' are present. A search bar and a dropdown for 'Showing 10 entries' are at the top of the table.

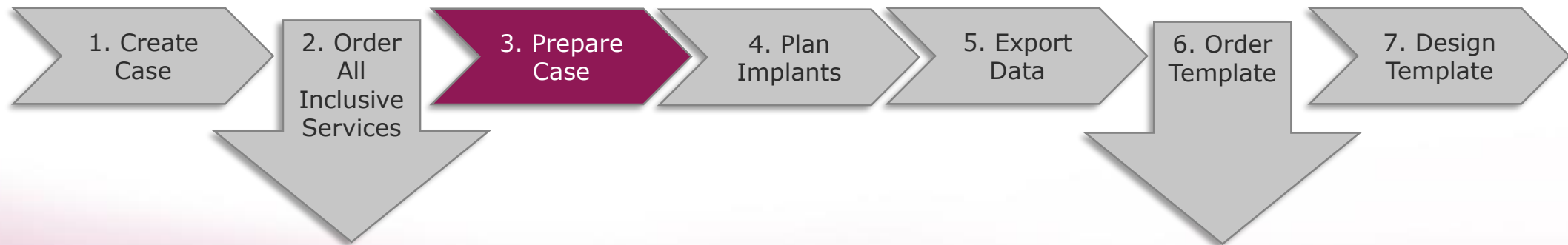
The table lists orders with the following columns: #, Order Name, Service Partner, Current Status, Design, Shipment, Delivery, Creator, Case ID, Invoice Number, Design, Documents, and Total Price excl. VAT. The table contains 10 entries, with the first 10 shown. Callouts provide additional information:

- Click here to get all order details:** Points to the 'Order Name' column, specifically to the link 'HRE 115459-1 [2018-10-18]'.
- This is the current status of the order:** Points to the 'Current Status' column, specifically to the status 'New'.
- When will the template be delivered?:** Points to the 'Shipment' column, specifically to the date '29.10.2018'.
- You will find additional documents here:** Points to the 'Documents' column, specifically to the link 'Stent STL'.
- Depending on the setup of your Service Partner, you may find prices and invoice here:** Points to the 'Total Price excl. VAT' column, specifically to the value '330.00 F'.

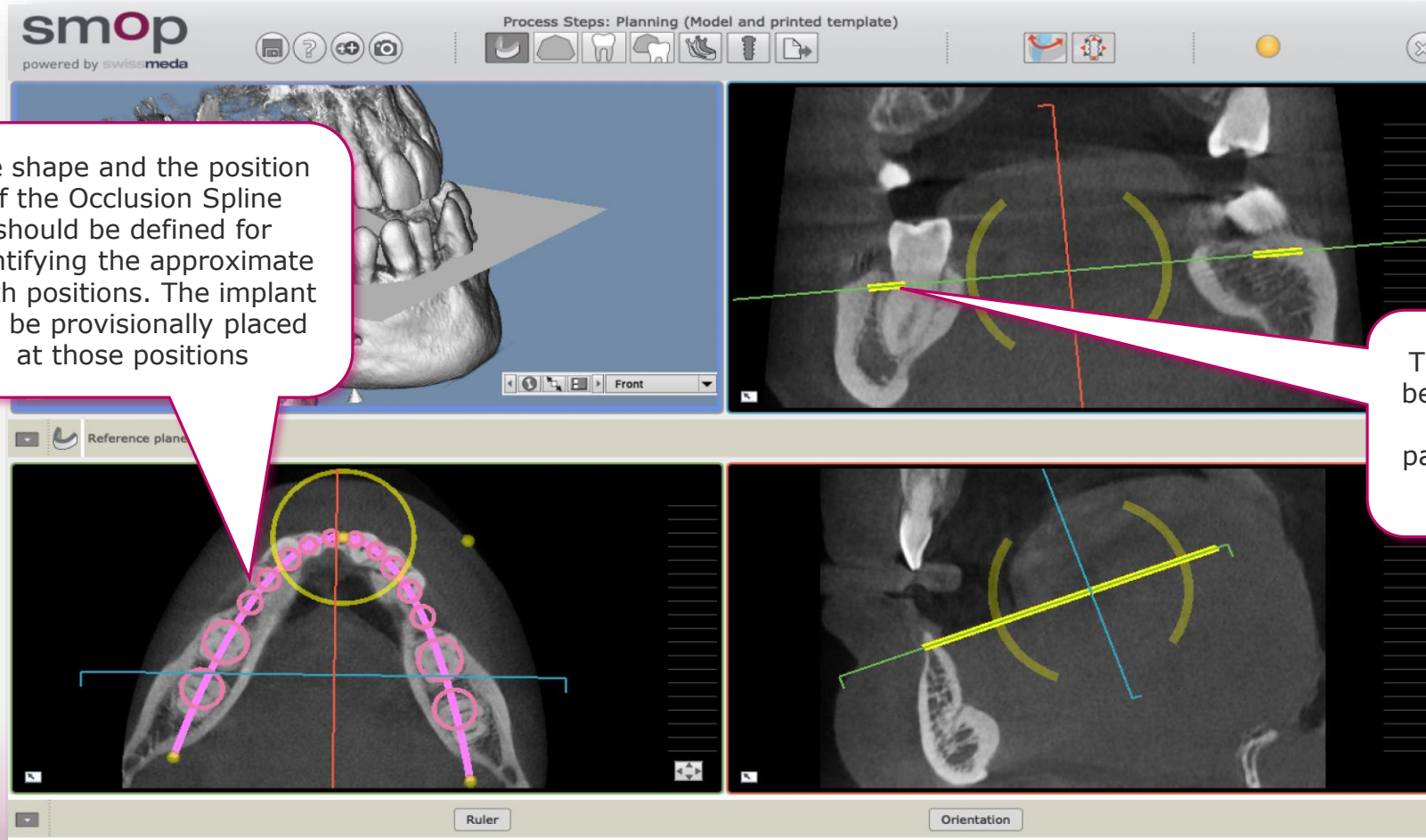
At the bottom of the table, it says 'Showing 1 to 10 of 7,606 entries'. Navigation buttons for 'First', 'Previous', '1', '2', '3', '4', '5', 'Next', and 'Last' are at the bottom right.

3. PREPARE CASE

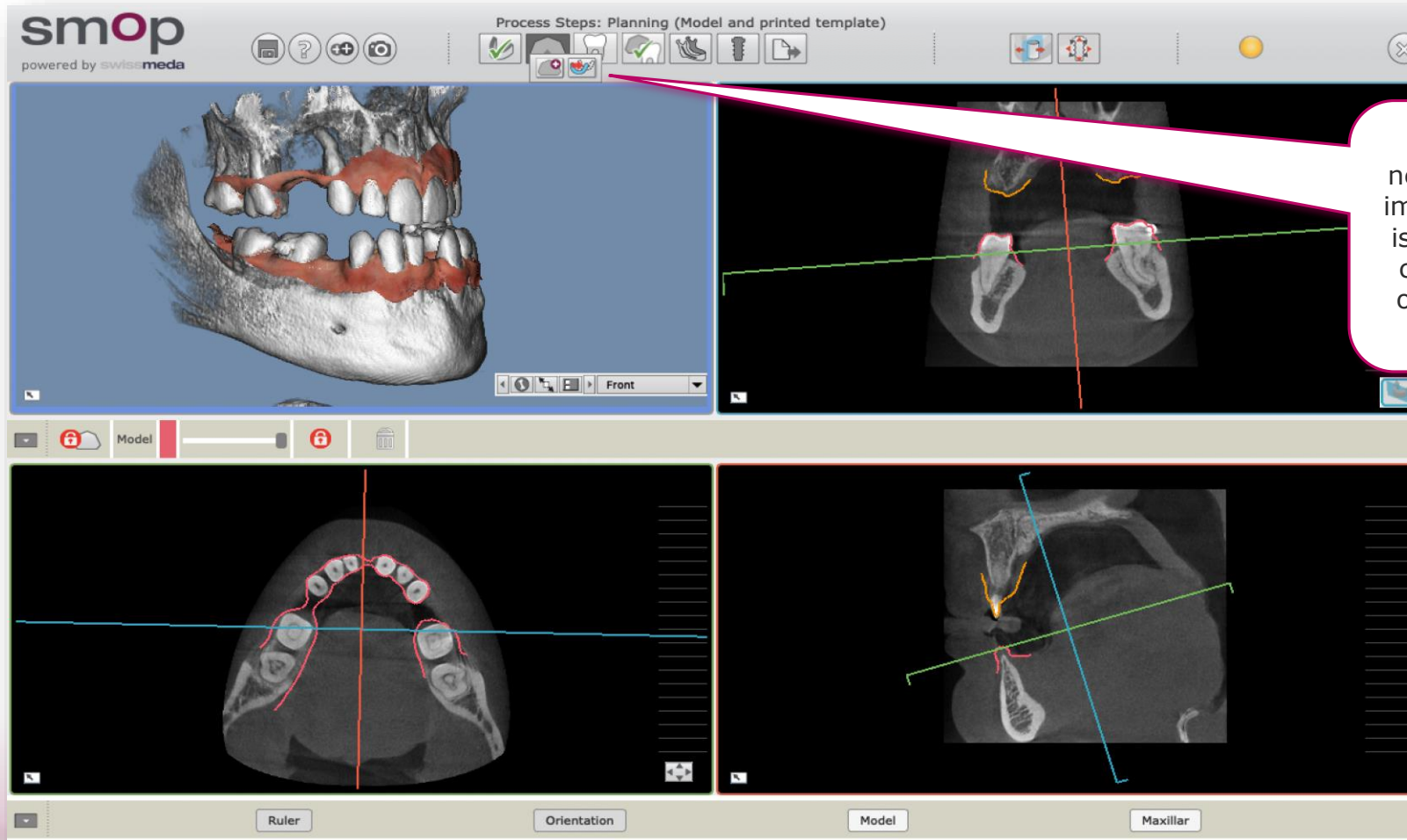
- a. Define Occlusion Plane and Spline
- b. Import Model Data (STL-data)
- c. Import Wax-up (Option)
- d. Add Virtual Teeth (Option)
- e. Mark Nerve (for lower cases only)
- f. Option: Share Case



3a. DEFINE OCCLUSION PLANE AND SPLINE

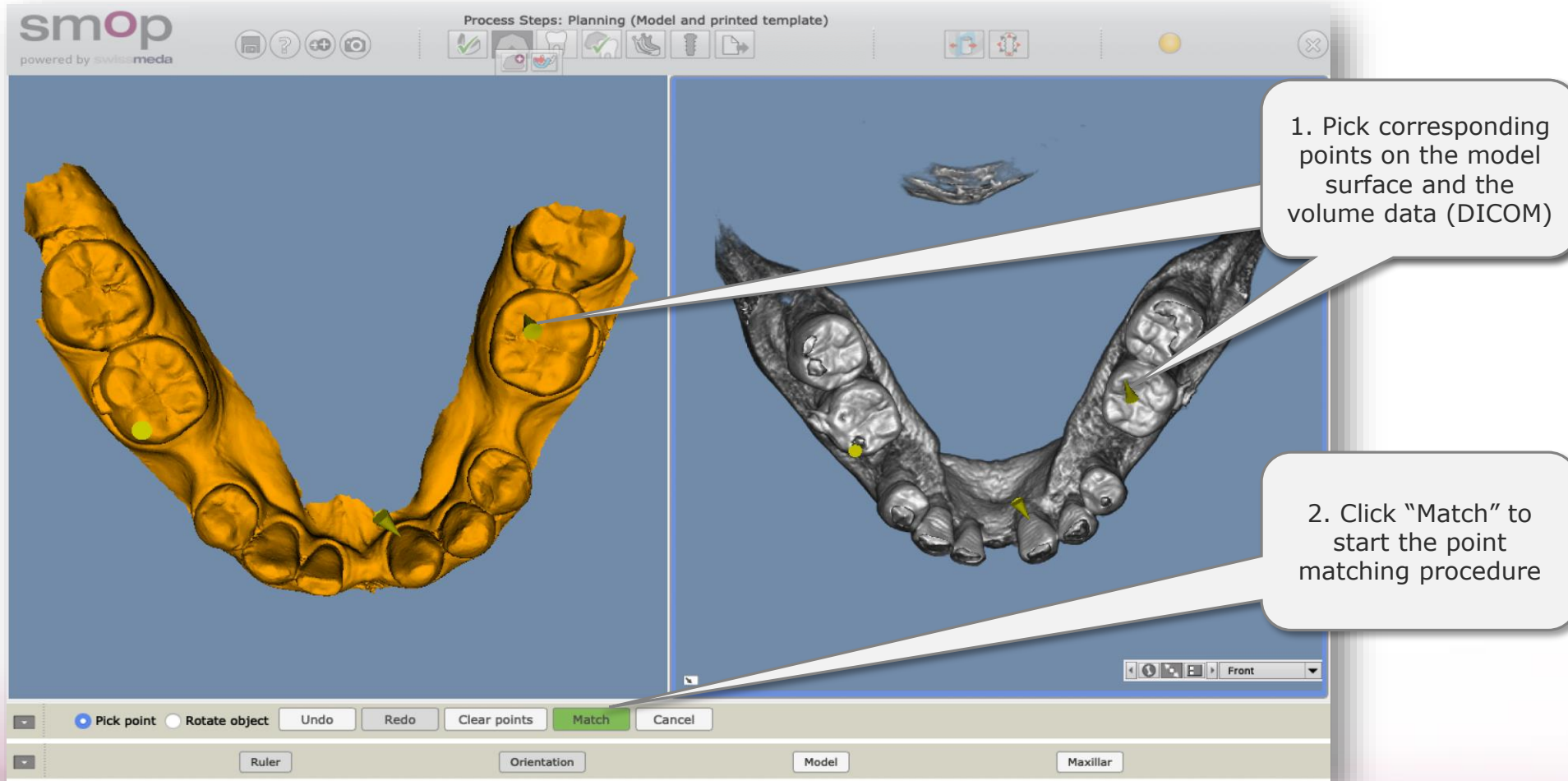


3b: ACCURATE **ALIGN MODEL DATA**

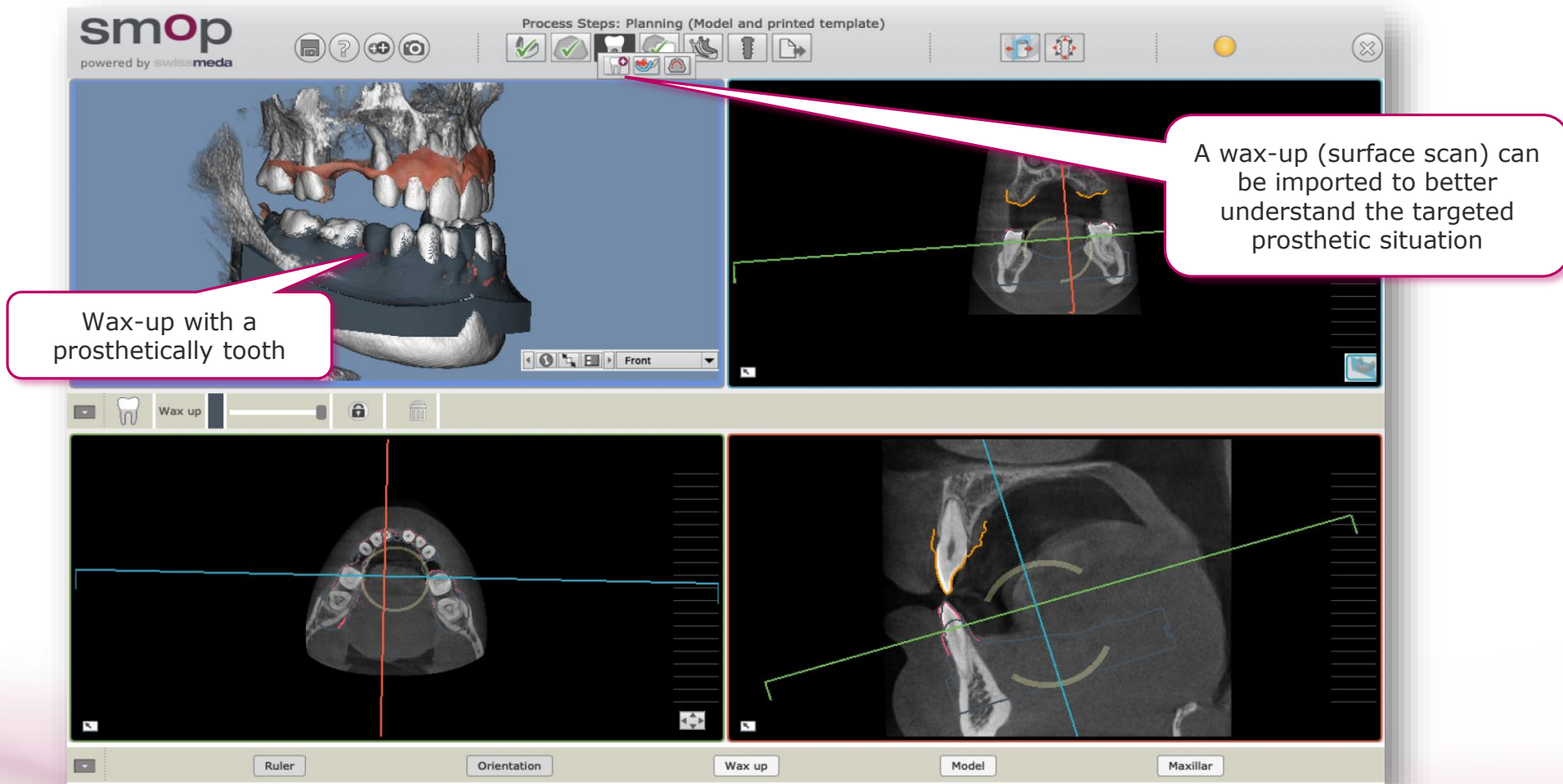


If the model alignment needs to be optimized after importing the model data, it is possible to automatically calculate a more accurate object position via "Rough Fit" procedure

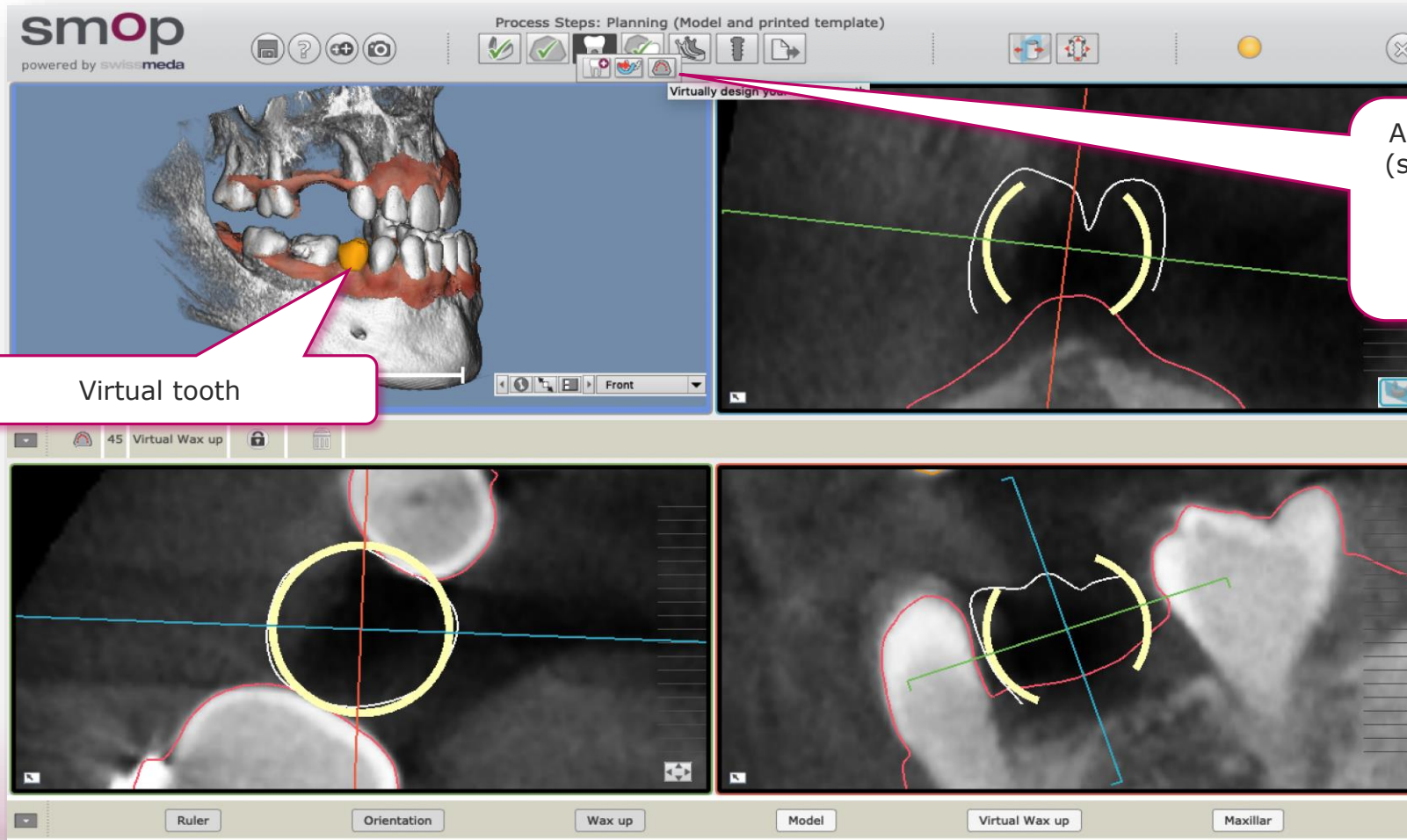
3b: ACCURATE **ALIGN** MODEL DATA



3c. **IMPORT WAX-UP** (Option)

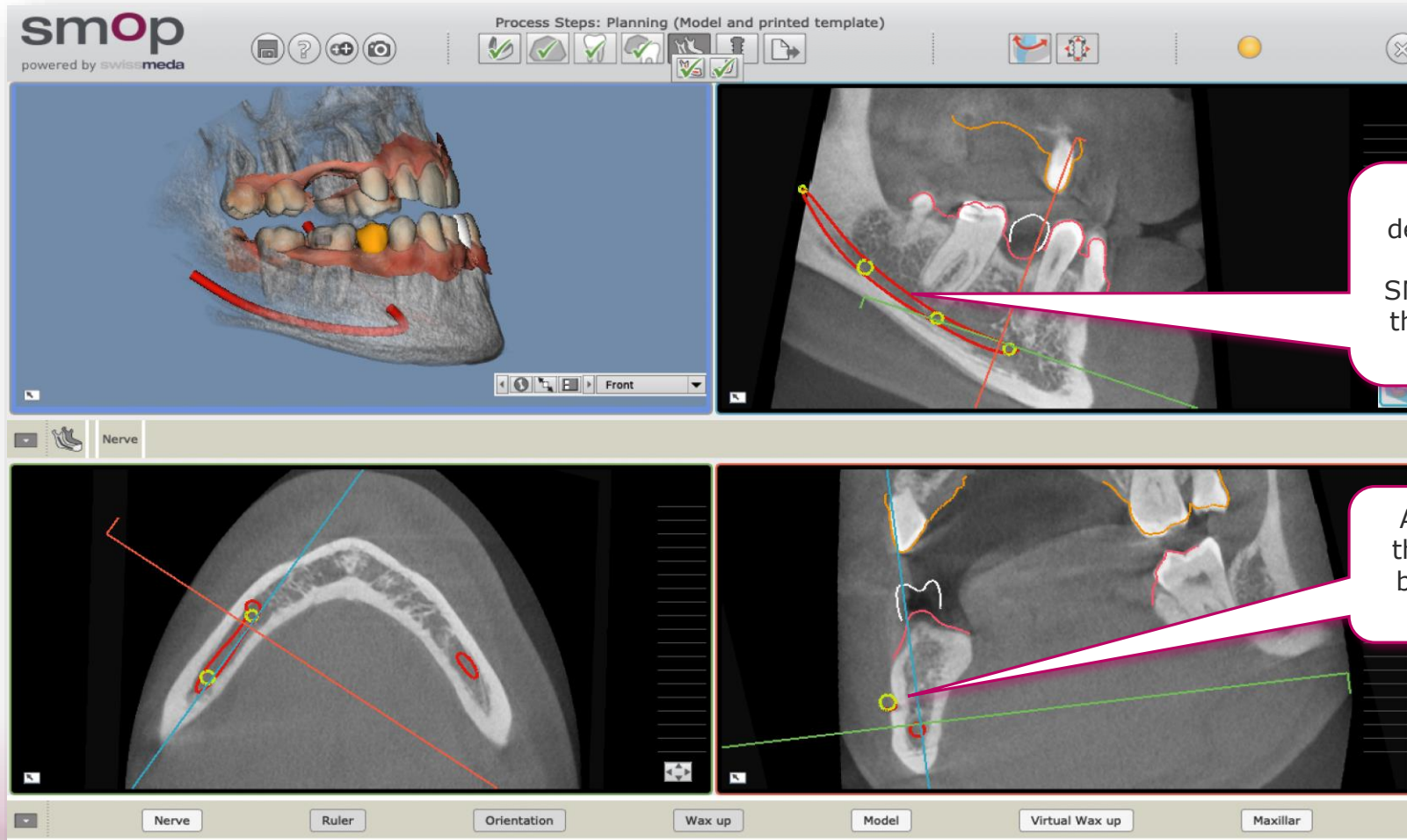


3d. ADD VIRTUAL TEETH (Option)

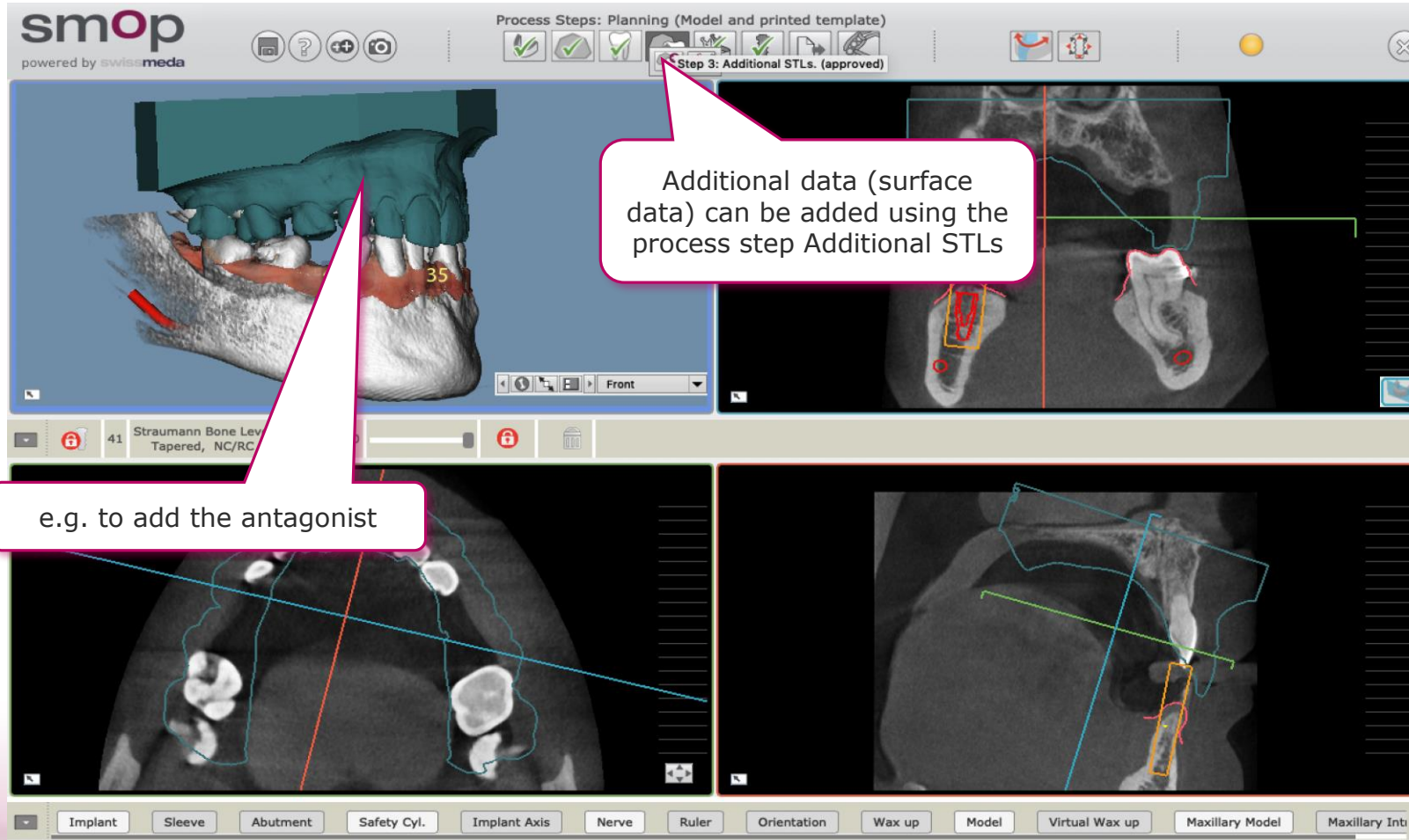


Alternatively to the wax-up (surface scan), virtual teeth can be added from our internal library to understand the targeted prosthetic situation

3e. MARK NERVE (for Lower Cases only)



3f. ADD ADDITIONAL DATA (Option)



3f. SHARE CASE (Option)

NEW PLANNING CASE
YOUR CASES
SHARED CASES
SOCIAL NETWORK
NEW VOLUME COMPARE CASE
NEW DEDICAM CASE

SEARCH A CASE...
CREATED DATE: FROM - TO
SORT BY: SAVE DATE

Case ID:
124560

Open Patient:
Demo Test LJ

Import Date:
12.11.2018 16:07

Case save history



Local

Sharing

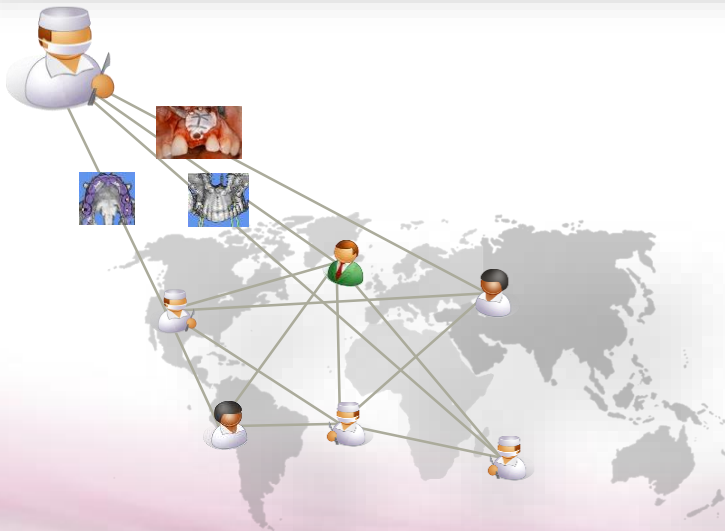
Server

Service Center

Show Details

Delete Case

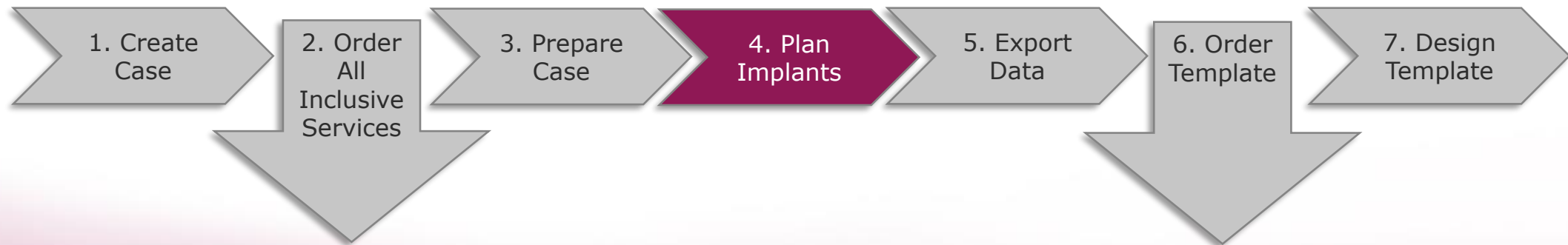
One click sharing with anybody of the smop community or your service partner



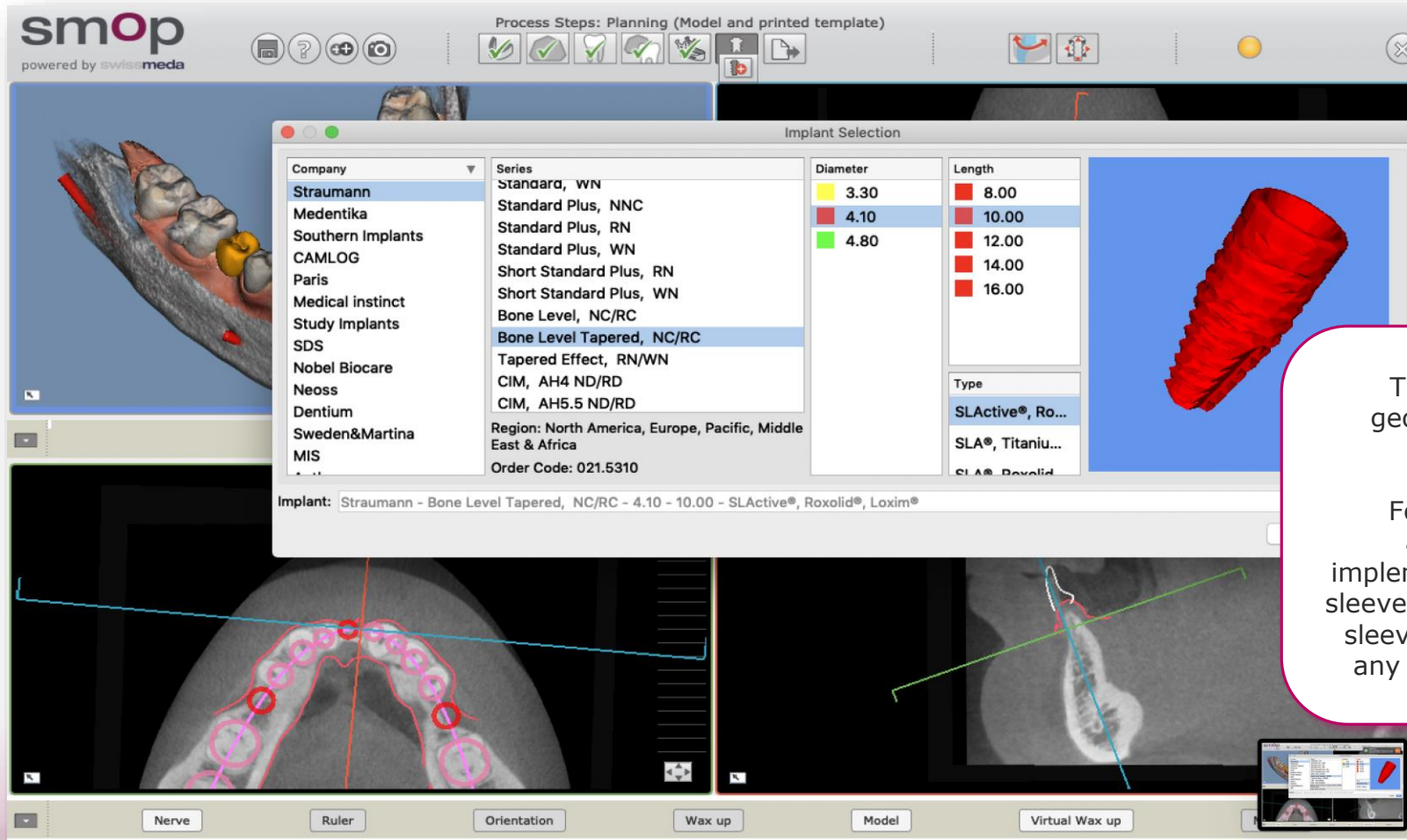
The smop community is an international network

4. PLAN IMPLANTS

- a. Add implants
- b. Define implant dimensions and positions
- c. Position sleeve / surgical Kit
- d. Add abutment



4a. ADD IMPLANTS



The SMOP's library contains geometries from more than 37 Implant Companies.

For each implant series, the appropriate surgical kit is implemented, too. Means the kind of sleeve and the relative position of the sleeve is clearly defined to prevent any mistakes during the planning

4b. DEFINE DIMENSIONS AND POSITIONS

smop
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Process Steps: Planning (Model and printed template)

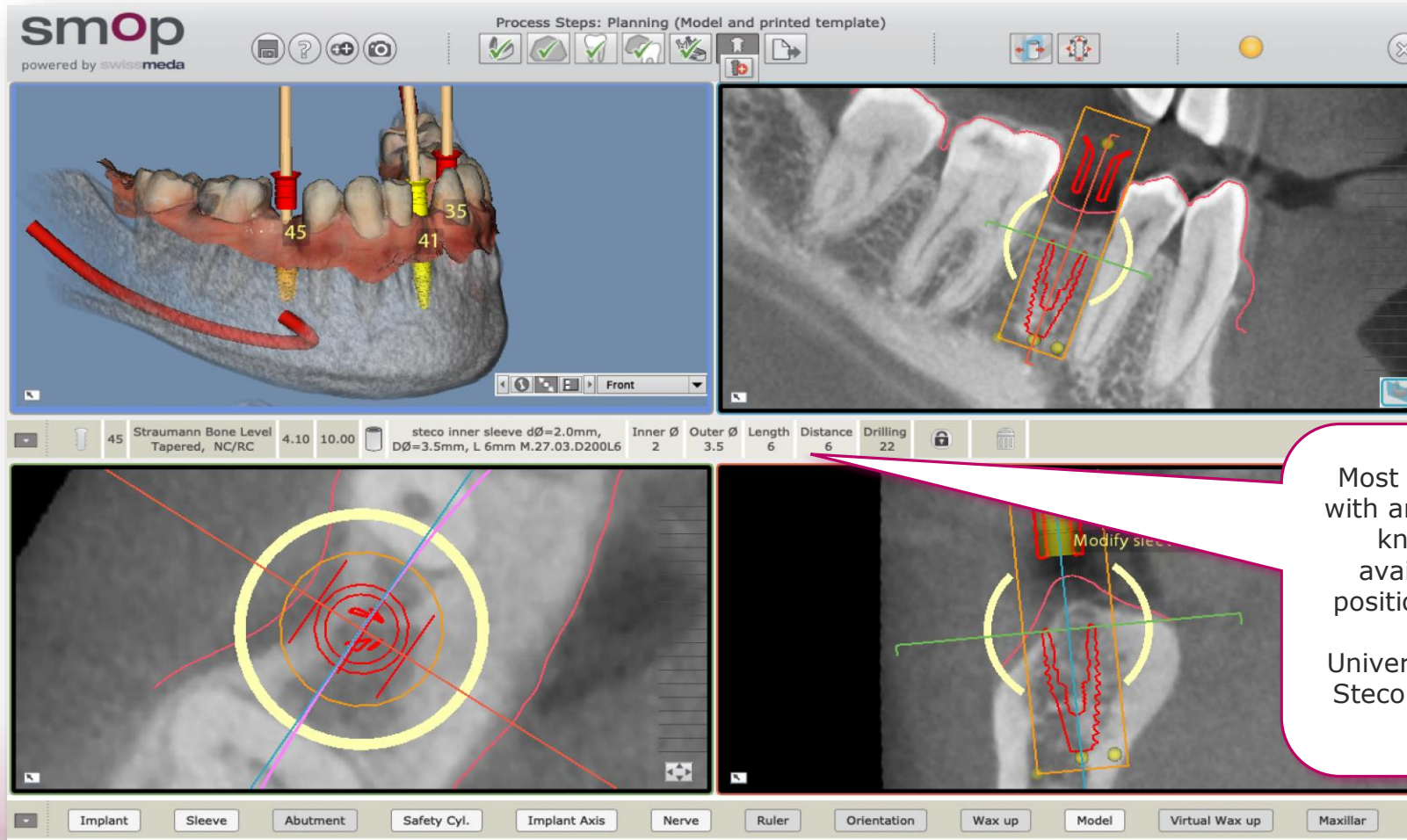
The implant position can be moved and rotated by drag and drop the implant handles and the implant itself

The middle toolbar displays the implant parameters. They easily can be changed using the control fields or the middle toolbar or by moving the yellow handles displayed in the slice views

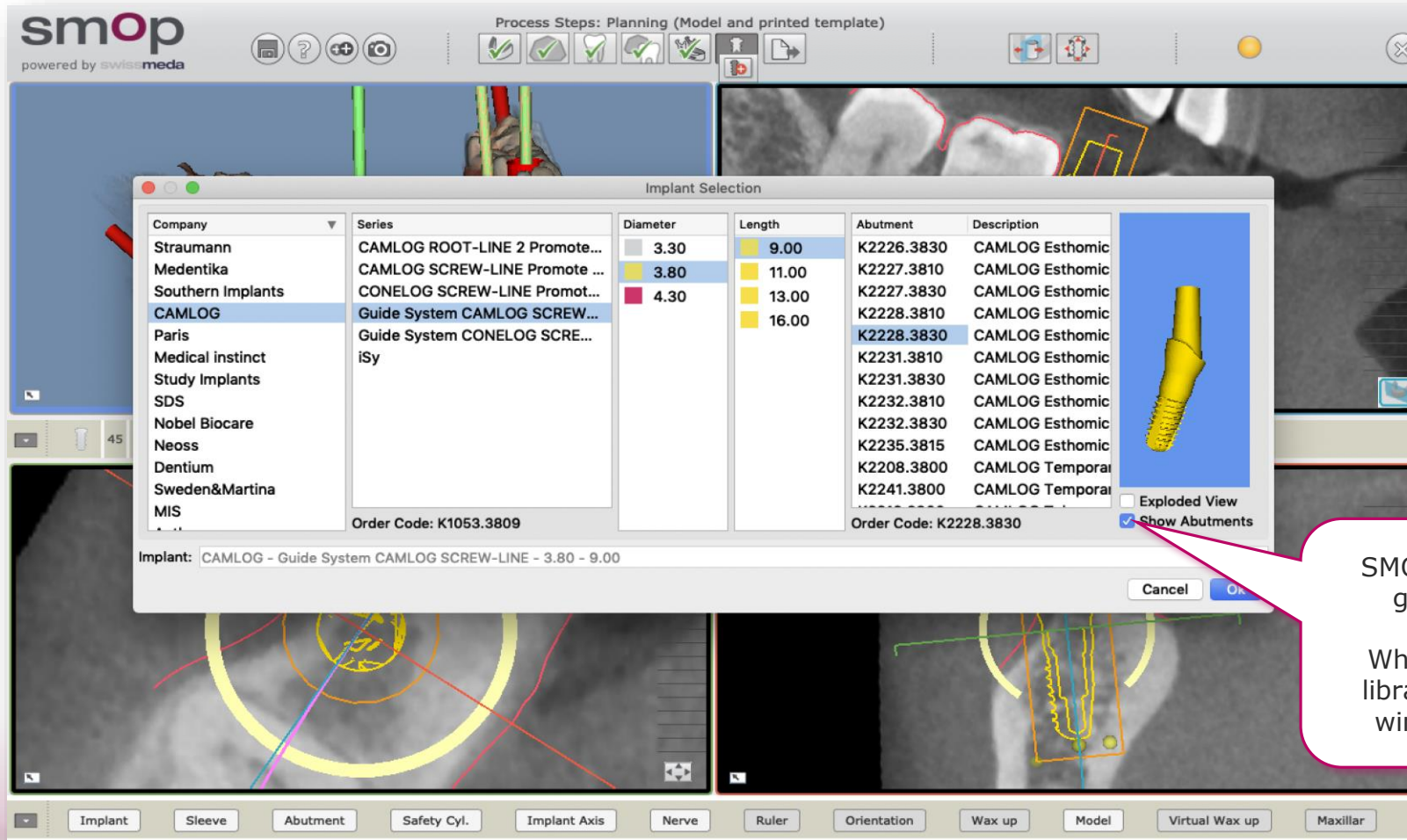
35 Straumann Bone Level Tapered, NC/RC 4.10 8.00 Straumann Kit Inner Ø 5 Outer Ø 6.3 Length 5 Distance 6 Drilling 20

Implant Sleeve Abutment Safety Cyl. Implant Axis Nerve Ruler Orientation Wax up Model Virtual Wax up Maxillar

4c. POSITION SLEEVE (Surgical Kit)

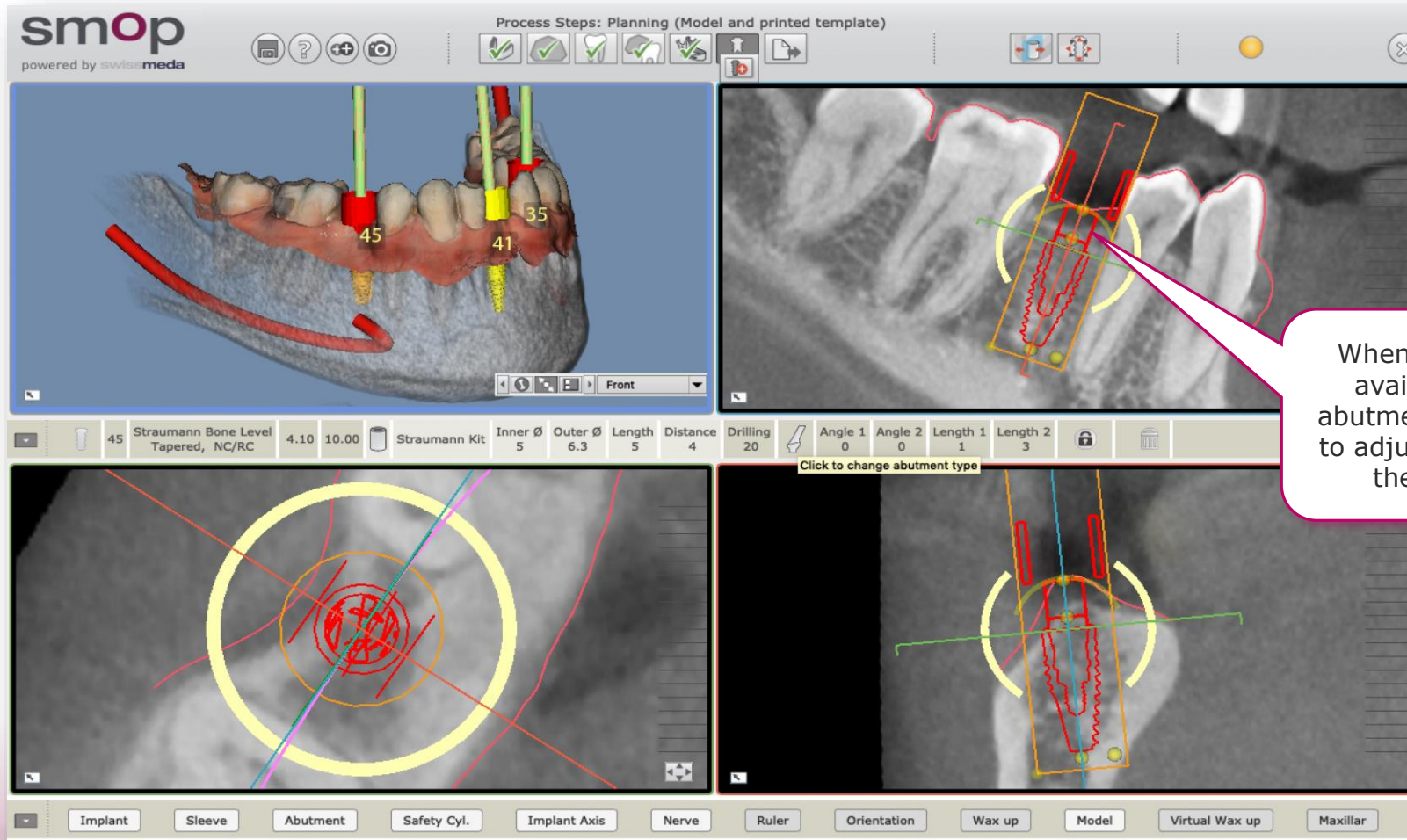


4d. ADD ABUTMENT



SMOP's geometry library contains geometries from fair amount Abutments Companies. When is available the abutments library will be visible on the same window where Implant can pick

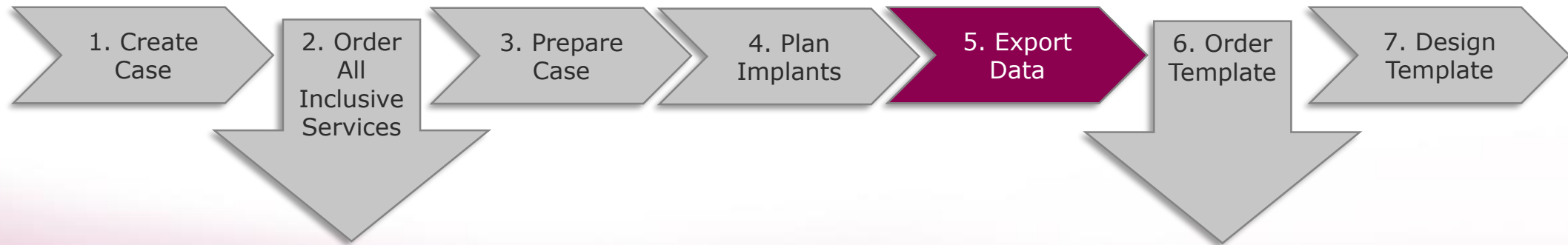
4d. ADD ABUTMENT



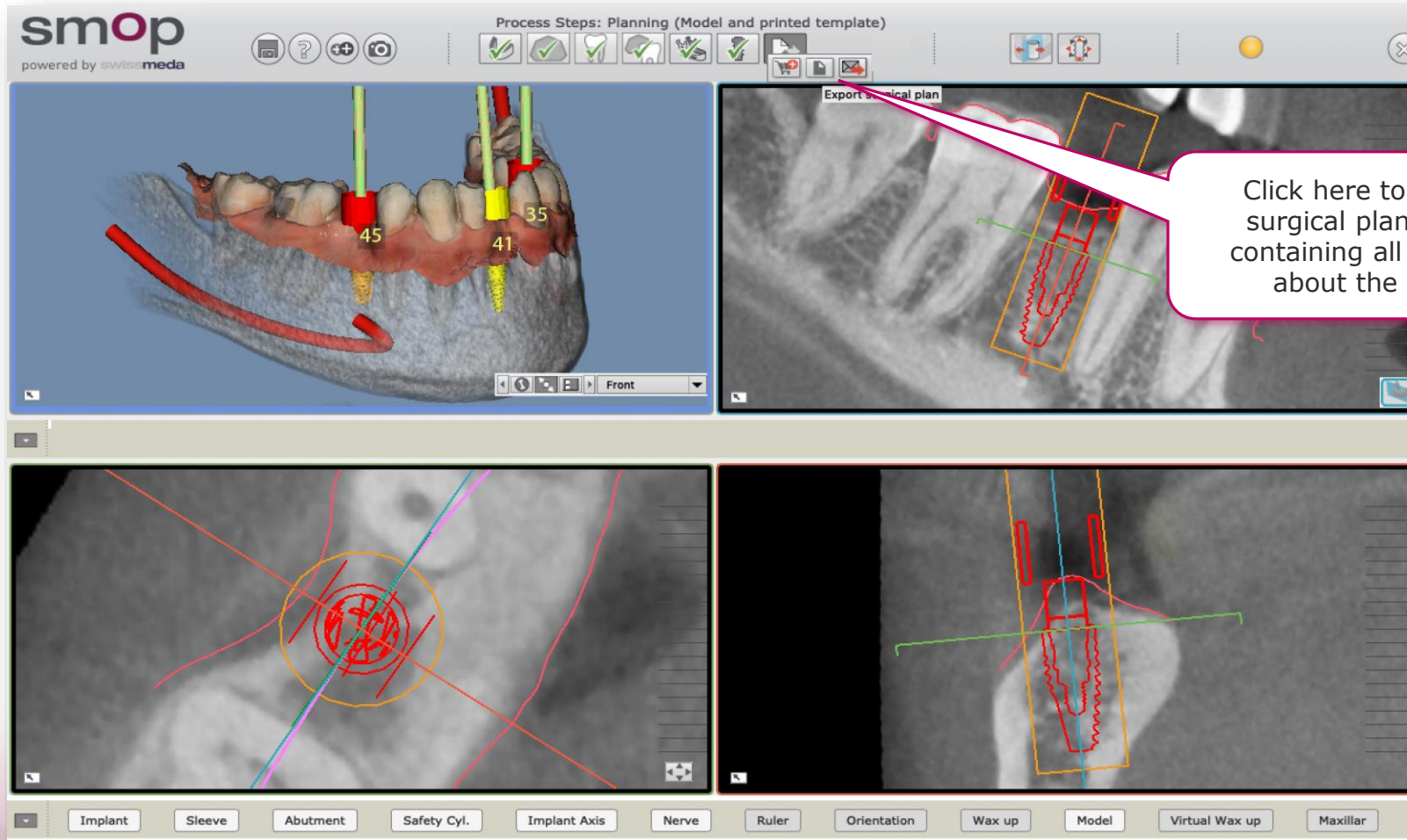
When real abutments are not available for an implant an abutment simulator can be used to adjust the implant position to the required prosthetics

5. EXPORT DATA

- a. Create Surgical Plan
- b. Send Message (to shared friends)



5a. CREATE **SURGICAL PLAN**



5a. SURGICAL PLAN

SURGICAL PLAN

Hugo Patrao
Case owner

(124058) Mutter Max LJ
Name of patient

2017-11-13
Date of scan

2018-11-07 23:25:36
Case locked

1
Version

1988-03-24
Born

2018-11-06 00:00
Date of surgery

2018-11-07 23:25:37
Plan printed

Table of all implants

1 Position 35		2 Position 41	
Manufacturer	Straumann	Manufacturer	Straumann
Implant	Bone Level Tapered, NC/RC	Implant	Bone Level Tapered, NC/RC
Length	8.00	Length	10.00
Diameter	4.10	Diameter	3.30
Implant order code	021.5308	Implant order code	021.3310
Type	SLActive®, Roxolid®, Loxim®	Type	SLActive®, Roxolid®, Loxim®

3 Position 45	
Manufacturer	Straumann
Implant	Bone Level Tapered, NC/RC
Length	10.00
Diameter	4.10
Implant order code	021.5310
Type	SLActive®, Roxolid®, Loxim®

Name: Mutter Max LJ
Born: 1988-03-24
Scan date: 2017-11-13 Version: 1
Locked: 2018-11-07 23:25:36
Printed: 2018-11-07 23:25:37

Page: 1/4

The first page gives an overview of all planned implants

1 | Implant Position 35

PLANNING Info		SURGICAL Info	
MANUFACTURER	Straumann	DRILL GUIDE KEY	+1
IMPLANT	Bone Level Tapered, NC/RC	DRILL LENGTH	20
LENGTH	8.00	IMPLANT	8.00
DIAMETER	4.10	H	6
SURGICAL KIT	Strauman Surgical Kit	CYLINDER	5
SLEEVE POSITION	6	DRILL GUIDE	+1
		DRILL LENGTH CHECK	8 + 6 + 5 + 1 = 20

• Screenshot

• Screenshots

Surgical plan

Name: Mutter Max LJ
Born: 1988-03-24
Scan date: 2017-11-13 Version: 1
Locked: 2018-11-07 23:25:36
Printed: 2018-11-07 23:25:37

Page: 2/4

For each planned implant one page is created to display all needed information

2 | Implant Position 41

PLANNING Info		SURGICAL Info	
MANUFACTURER	Straumann	DRILL GUIDE KEY	+3
IMPLANT	Bone Level Tapered, NC/RC	DRILL LENGTH	24
LENGTH	10.00	IMPLANT	10.00
DIAMETER	3.30	H	6
SURGICAL KIT	Strauman Surgical Kit	CYLINDER	5
SLEEVE POSITION	6	DRILL GUIDE	+3
		DRILL LENGTH CHECK	10 + 6 + 5 + 3 = 24

• Screenshot

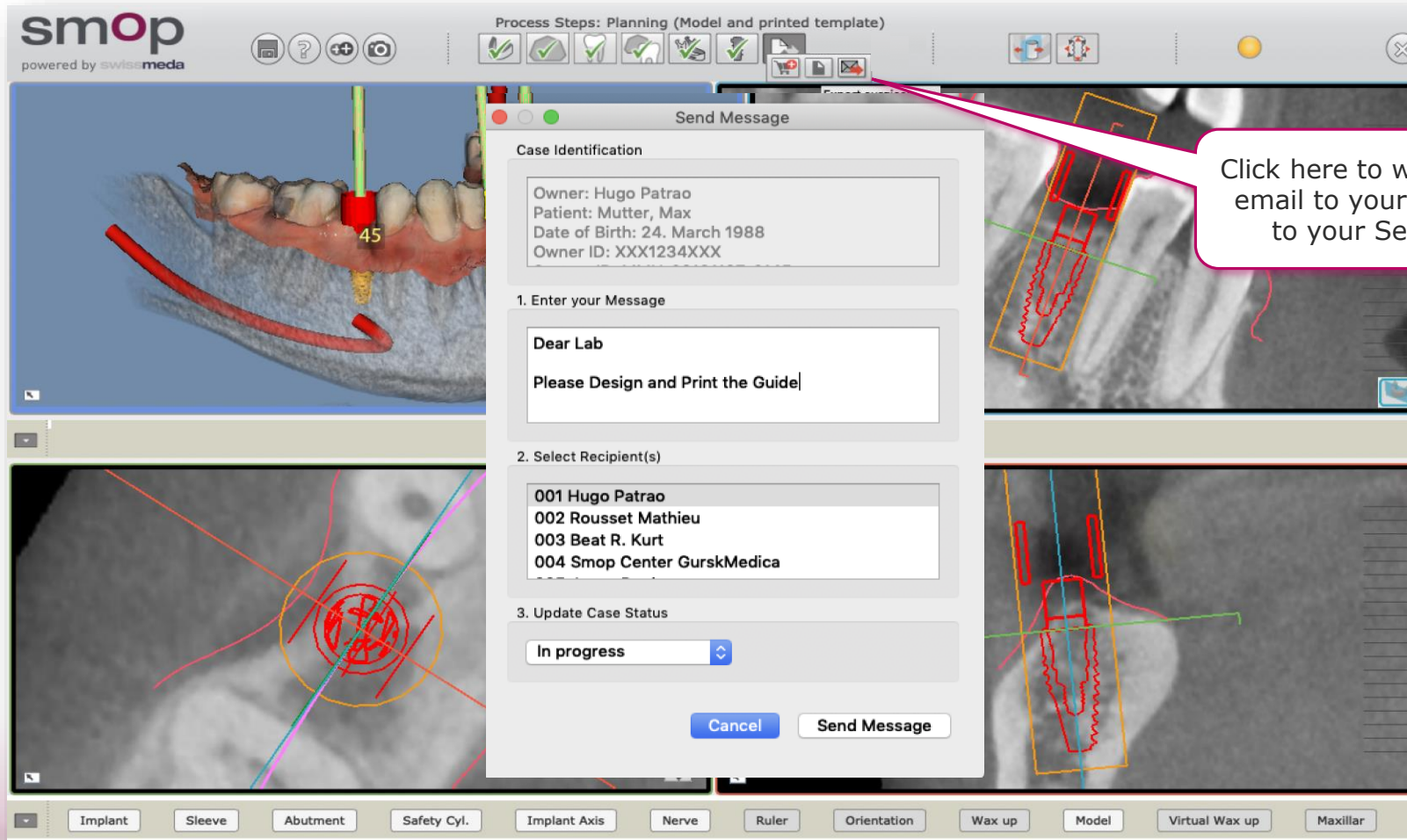
• Screenshots

Surgical plan

Name: Mutter Max LJ
Born: 1988-03-24
Scan date: 2017-11-13 Version: 1
Locked: 2018-11-07 23:25:36
Printed: 2018-11-07 23:25:37

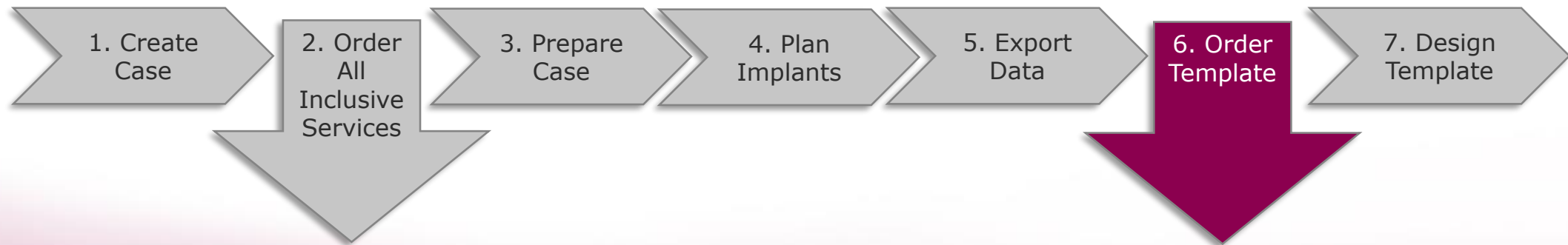
Page: 3/4

5b. SEND MESSAGE

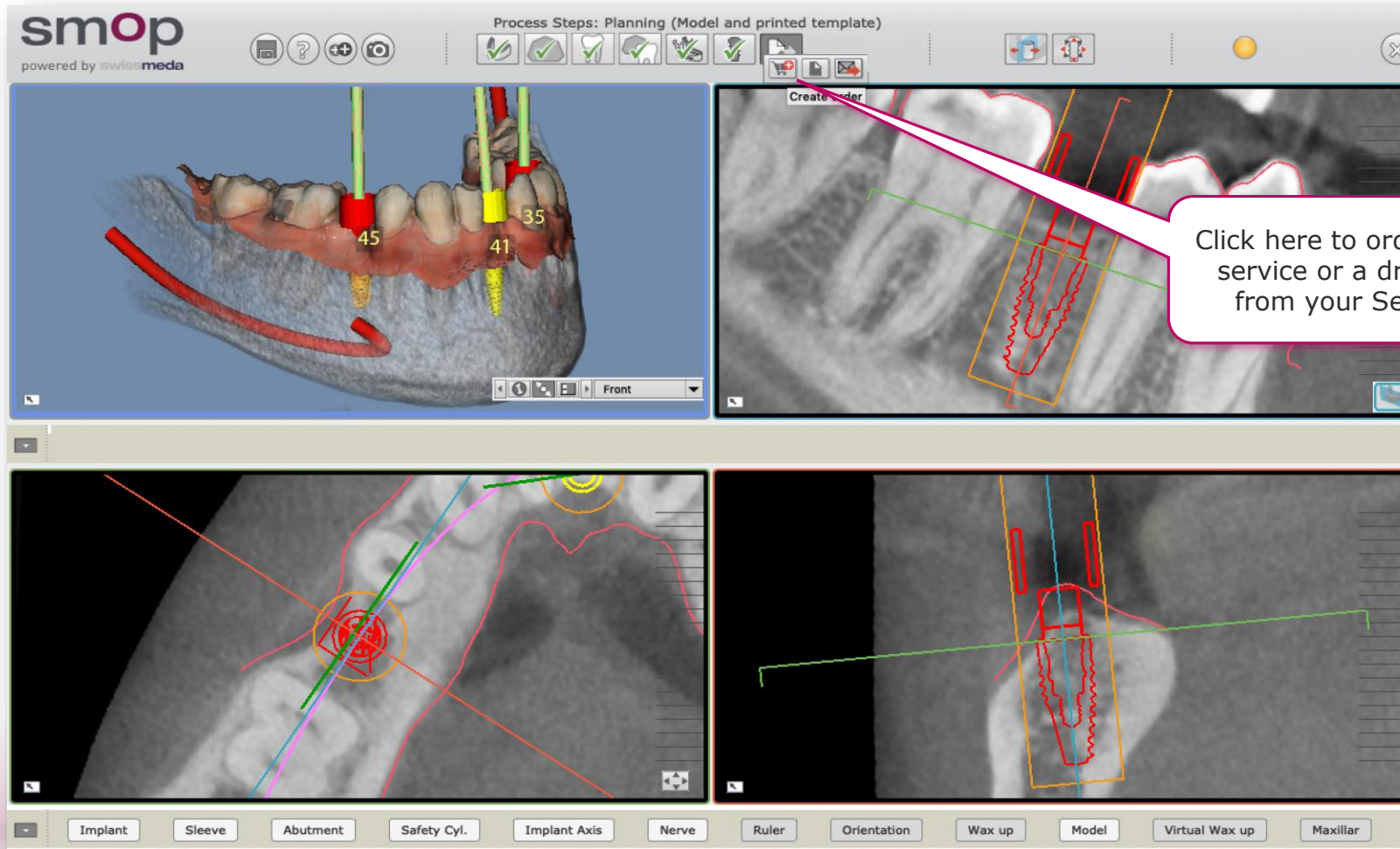


6. ORDER TEMPLATE

- a. Order a drilling template for your case
- b. Options to order a template design and print-out
- c. Details for design only order



6a. ORDER TEMPLATE



6b. OPTIONS TO ORDER **DESIGN AND PRINT-OUT**

The screenshot shows the 'Create Purchase Order' window in the smop application. The window is titled 'Process Steps: Planning (Model and printed template)' and 'Create Purchase Order'. It features a progress bar with four steps: 1) Service, 2) Address & Shipping, 3) Additional Options, and 4) Confirmation. The current step is 1) Service.

1. Select the planning services you want to order,

Order Name: Hugo Patrao FBU 124058-1

Services:

- ☒ Optical scan of model surface 15.00 €
- ☒ Optical scan of the wax up surface 15.00 €
- ☒ Optimization of the alignment of the model 15.00 €
- ☒ Optimization of the alignment of the wax up 15.00 €
- ☒ Preparation implant planning 50.00 €
- ☐ Express for the services: 2 days faster

2. Select the printing service and print options,

Template Name: Hugo Patrao FBU 124058-1

Print-outs of the template:

- ☒ 1 3d printout, printer: 'Objet', material: 'MED 610' 79.00 € 2 days
- ☐ Sleeve, Steco inner, D3.5, d2.35, L6 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.2, L6 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.0, L10 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.35, L10 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.5, L6 10.60 € 0 days
- ☐ Sleeve, Thommen inner 10.60 € 0 days
- ☐ Sleeve, Thommen outer 13.75 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.8, L6 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d2.0, L6 10.60 € 0 days
- ☐ Sleeve, Steco inner, D3.5, d1.6, L6 10.60 € 0 days
- ☐ Sleeve, MGUIDE MORE, D: 6.5mm 12.36 € 0 days

3. Click "Next" and select the shipping and address options for your order...

Estimated Delivery Date: 14-11-2018
Estimated total price (excl. VAT) : 189.00 €

Next

6c. DETAILS FOR **DESIGN ONLY ORDER** FOR SELF PRINTING

smop
powered by swissmeda

Process Steps: Planning (Model and printed template)

Create Purchase Order

Please follow the process to define the order details

1) Service | 2) Address & Shipping | 3) Additional Options | 4) Confirmation

Order Name: Jörg Danzberg D37 114253-2

Services:

- ☐ Positioning of model scan data 15.00 €
- ☐ Positioning of wax up scan data 15.00 €
- ☐ Preparation implant planning 50.00 €
- ☒ Design of drilling template / Export (SP) (1 implant) 190.00 €
- ☐ Express for the services: -
- ☐ Manufacture the template by 3d printing

Estimated Delivery Date: 18-10-2018
Total Price (excl. VAT) : 190.00 €

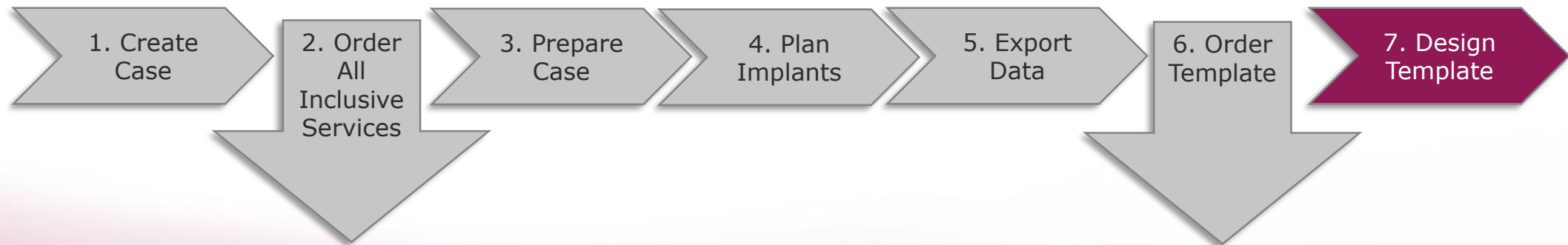
Next

1. If you want to print out the template yourself select only "Design of the drilling template",

2. Click "Next" and select address options for your order. The STL print file will be delivered by email

7. DESIGN TEMPLATE

Find all the information about the Template Designer in a separate documentation



2. BENEFITS OF SMOP - CLINICAL EVALUATION

Find the full list of 17 relevant articles and clinical evaluations about smop and guided implantology on our website:
<https://www.mysmop.com/universities-research/en>

<p>Clinical Implant Dentistry and Related Research, 2013 Apr 30. doi: 10.1111/cid.12076. [Epub ahead of print] Open on PubMed</p> <p>"Tunnel technique with connective tissue graft versus coronally advanced flap with enamel matrix derivative for root coverage: a RCT using 3D digital measuring methods. Part I. Clinical and patient-centred outcomes."</p> <p>Zuhr O, Rebele SF, Schneider D, Jung RE, Hürzeler MB</p>	<p>Clinical Implant Dentistry and Related Research 2015. E-pub ahead of print Open on PubMed</p> <p>"Accuracy of 3D Printed Templates for Guided Implant Placement Based on Matching a Surface Scan with CBCT"</p> <p>Kernen M, Benic G, Payer M, Schär A, Müller-Gerbl M, Filippi A, Kühl S</p>	<p>Clin Implant Dent Relat Res. 2018 Apr 25. doi: 10.1111/cid.12614. [Epub ahead of print] Open on PubMed</p> <p>"Accuracy of the match between cone beam computed tomography and model scan data in template-guided implant planning: A prospective controlled clinical study."</p> <p>Schnutenhaus S, Gröller S, Luthardt RG, Rudolph H</p>
<p>Journal of Clinical Periodontology, 2013;40(7):721-7 Open on PubMed</p> <p>"Dimensional alterations of extraction sites after different alveolar ridge preservation techniques - a volumetric study"</p> <p>Thalmair T, Fickl S, Schneider D, Hinze M, Wachtel H</p>	<p>Clin Oral Implants Res. 2015 Mar;26(3):320-5. doi: 10.1111/clr.12327. Epub 2014 Jan 18. Open on PubMed</p> <p>"In-vitro evaluation of the tolerance of surgical instruments in templates for computer-assisted guided implantology produced by 3-D printing."</p> <p>Schneider D, Schober F, Grohmann P, Hammerle CH, Jung RE</p>	<p>Clin Oral Investig. 2018 Jul 17. doi: 10.1007/s00784-018-2552-5. [Epub ahead of print] Open on PubMed</p> <p>"Is the pneumatization of the maxillary sinus following tooth loss a reality? A retrospective analysis using cone beam computed tomography and a customised software program."</p> <p>Schriber M, Bornstein MM, Suter VGA</p>
<p>Journal of Clinical Periodontology 2013 Oct 4. doi: 10.1111/jcpe.12178. [Epub ahead of print] Open on PubMed</p> <p>"Tunnel technique with connective tissue graft versus coronally advanced flap with enamel matrix derivative for root coverage: a RCT using 3D digital measuring methods. Part I. Clinical and patient-centred outcomes"</p> <p>Zuhr O, Rebele SF, Schneider D, Jung RE, Hürzeler MB</p>	<p>Clin Oral Implants Res. 2016 Feb 8. doi: 10.1111/clr.12786. Epub ahead of print Open on PubMed</p> <p>"Guided bone regeneration and abutment connection augment the buccal soft tissue contour: 3-year results of a prospective comparative clinical study"</p> <p>Benic GI, Ge Y, Gallucci GO, Jung RE, Schneider D, Hammerle CH</p>	<p>Clin Oral Implants Res. 2018 Sep 23. doi: 10.1111/clr.13365. [Epub ahead of print] Open on PubMed</p> <p>"A novel methodological approach using superimposed Micro-CT and STL images to analyze hard and soft tissue volume in immediate and delayed implants with different cervical designs."</p> <p>Sanz-Martin I, Permuy M, Vignoletti F, Nuñez J, Muñoz F, Sanz M</p>
<p>Clinical Oral Implants Research, accepted Open on PubMed</p> <p>"Soft tissue augmentation of ridge defects in the maxillary anterior area using two different methods: A randomized controlled clinical trial"</p> <p>Akcali A, Schneider D, Ünlü F, Köse T, Hammerle CHF</p>	<p>Oral Surg Oral Med Oral Pathol Oral Radiol. 2016 Apr;121:e72-e79 Download Open on PubMed</p> <p>"Retrospective study to determine the accuracy of template-guided implant placement using a novel nonradiologic evaluation method"</p> <p>Schnutenhaus S, Edelmann C, Rudolph H, Luthardt RG</p>	<p>Int J Comput Dent. 2018;21(2):97-105 Open on PubMed</p> <p>"Precision of sleeveless 3D drill guides for insertion of one-piece ceramic implants: a prospective clinical trial."</p> <p>Schnutenhaus S, von Koenigsmarck V, Blender S, Ambrosius L, Luthardt RG, Rudolph H.</p>
<p>Journal of Clinical Periodontology, accepted Open on PubMed</p> <p>"Soft tissue evaluation of different techniques for ridge preservation after tooth extraction: A randomized controlled clinical trial"</p> <p>Schneider D, Schmidlin PR, Philipp A, Annen BM, Ronay V, Jung RE</p>	<p>Clin Oral Investig. 2018 Jul;22(6):2363-2372. doi: 10.1007/s00784-018-2339-8. Epub 2018 Jan 22. Open on PubMed</p> <p>"3D accuracy of implant positions in template-guided implant placement as a function of the remaining teeth and the surgical procedure: a retrospective study."</p> <p>Schnutenhaus S, Edelmann C, Rudolph H, Dreyhaupt J, Luthardt RG</p>	
<p>Quintessenz Journals Open on PubMed</p> <p>"Zirconia Ceramic Single-Tetainer Resin-Bonded Fixed Dental Prostheses (RBFDPs) After 4 Years of Clinical Service: A Retrospective Clinical and Volumetric Study"</p> <p>Irena Sailer, Prof Dr. Med Dent, Christoph Hans Franz Hammerle, Prof Dr. Med Dent</p>	<p>Int J Implant Dent. 2018 Jun 5;4(1):17. doi: 10.1186/s40729-018-0128-4. Open on PubMed</p> <p>"3D-evaluation of the maxillary sinus in cone-beam computed tomography."</p> <p>Luz J, Greutmann D, Wiedemeier D, Rostetter C, Rucker M, Stadinger B</p>	

2. CLINICAL EVALUATION - BASIC STATEMENTS

Matching accuracy of SMOP equal to CBCT accuracy

Clin Implant Dent Relat Res. 2018 Apr 25. doi: 10.1111/cid.12614. [Epub ahead of print]

[Open on PubMed](#)

"Accuracy of the match between cone beam computed tomography and model scan data in template-guided implant planning: A prospective controlled clinical study."

Schnutenhaus S, Gröller S, Luthardt RG, Rudolph H

In summary, from a clinical point of view, both manual matching (using the SMOP implant planning software) and X-ray template-based matching are sufficiently accurate. Both methods result in a mean matching accuracy of 0.2 mm, which corresponds in magnitude to the accuracy of the CBCT (0.2 voxels), a value sufficient for implant planning and the resulting production of a surgical template for guided implant placement.

5 | CONCLUSION

This present prospective controlled clinical study examined the accuracy with which a scanned tooth model could be matched with a CBCT record. This step is required in implant-guided implantology for planning the prosthetically correct position of the implant as a function of the bone supply and to implement it clinically by means of a surgical guide/drilling template.

Out of a total of 60 patient cases, 39 patients could be included in the analysis following the application of stringent selection criteria.

First, an impression of the jaw to receive the implant was taken using an addition-curing silicone and a plaster cast was created and subsequently scanned. Based on this record, an X-ray template with three reference structures was produced that was subsequently placed in the mouth as the CBCT was recorded at a resolution of 0.2 voxels.

We investigated three different methods of assigning the model scan data to the CBCT data: Manual matching of the model scan data set using the SMOP implant planning software (Swissmeda Online Planning), matching the model scan data using the X-ray template with its three reference structures, and semi-automatic matching of the model scan data using the Geomagic Studio 9 CAD software.

In summary, from a clinical point of view, both manual matching (using the SMOP implant planning software) and X-ray template-based matching are sufficiently accurate. Both methods result in a mean matching accuracy of 0.2 mm, which corresponds in magnitude to the accuracy of the CBCT (0.2 voxels), a value sufficient for implant planning and the resulting production of a surgical template for guided implant placement.

Manual matching reaches its limits more quickly in the case of CBCTs with many artifacts. In cases where many artifacts are to be expected due to a preponderance of metallic restorations, the use of an X-ray template can still be indicated.

However, the semi-automatic assignment using the Geomagic-Studio 9 CAD software was significantly superior to either method, so that there is still potential for improvement with regard to the accuracy

2. CLINICAL EVALUATION - BASIC STATEMENTS

Much better prediction when using CAIPP protocols like SMOP

Quintessenz: Volume 38, Supplement, 2018

A Randomized Controlled Clinical Trial Comparing Conventional and Computer-Assisted Implant Planning and Placement in Partially Edentulous Patients. Part 1: Clinician-Related Outcome Measures



David Schneider, PD Dr Med, Dr Med Dent^{1*}
Manuel Sancho-Puchades, DDS^{2*}
Goran I. Benic, PD Dr Med Dent¹
Christoph H.F. Hammerle, Prof Dr Med Dent³
Ronald E. Jung, Prof Dr Med Dent, PhD⁴

The digital files thus generated (in surface tessellation language [STL] format) were matched to the radiographic CBCT data (in DICOM format) using another implant planning software (SMOP, SwissMeda). This software allows the clinician to merge the contour of the dentition (and soft tissues) in the digitized models with the dentition and tissues in the radiographic image and to plan the implant positions according to the prosthetic set-up. All

Results

Predictability of Surgical Planning

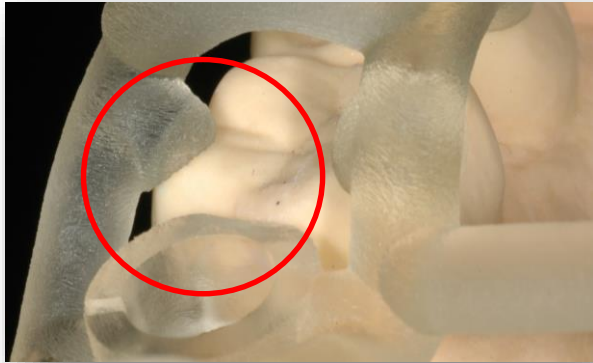
The matched contrasts between predicted and true outcomes are presented in Tables 1 to 6 (all tables in this article are available in the electronic version only, at www.quintpub.com). CAIPP protocols showed better prediction potential (kappa values) than the conventional protocol for the following variables: bone topography (C, 0.15; T1, 0.53; T2, 0.67), need for simultaneous GBR procedures during implant placement (C, 0.35; T1, 0.64; T2, 0.53), barrier membrane selection (C, 0.12; T1, 0.57; T2, 0.41), and implant length (C, 0.33; T1, 0.48; T2, 0.75). Prediction values (kappa) for implant type (C, 0.76; T1, 0.74; T2, 0.72) and implant diameter (C, 0.67; T1, 0.78; T2, 0.80) were high and similar in all groups. The ability

2. BENEFITS OF SMOP - **SUMMARY**

- Easiest software on the market
- Personal login for the users to access their cases everywhere with any computer
- Open interfaces (standard file formats are fully supported)
- 3 software configurations to support user needs (Basic user, Standard User, Chair Side User)
- Smop supports implants from more than 40 implant companies, the number is growing fastly
- Easy feature based template design process for smop's patented drilling templates
- Applicable for single missing tooth, partially and fully edentulous cases
- Simple collaboration (sharing procedure) between all registered users
- Accurate fitting of model and volume data: 3 point matching procedure with optimized fitting
- Integrated web-shop to order services and drilling template
- Automated creation of Surgical Plan
- Automated interface to read case data from Carestream's CS 3D Imaging software

2. BENEFITS OF SMOP - KEY FEATURE **SMOP TEMPLATE**

Accurate fitting in the patient mouse by using contact points on pre-defined locations (on tooth or gingiva):



Inaccurate fitting by design procedures provided by other software:

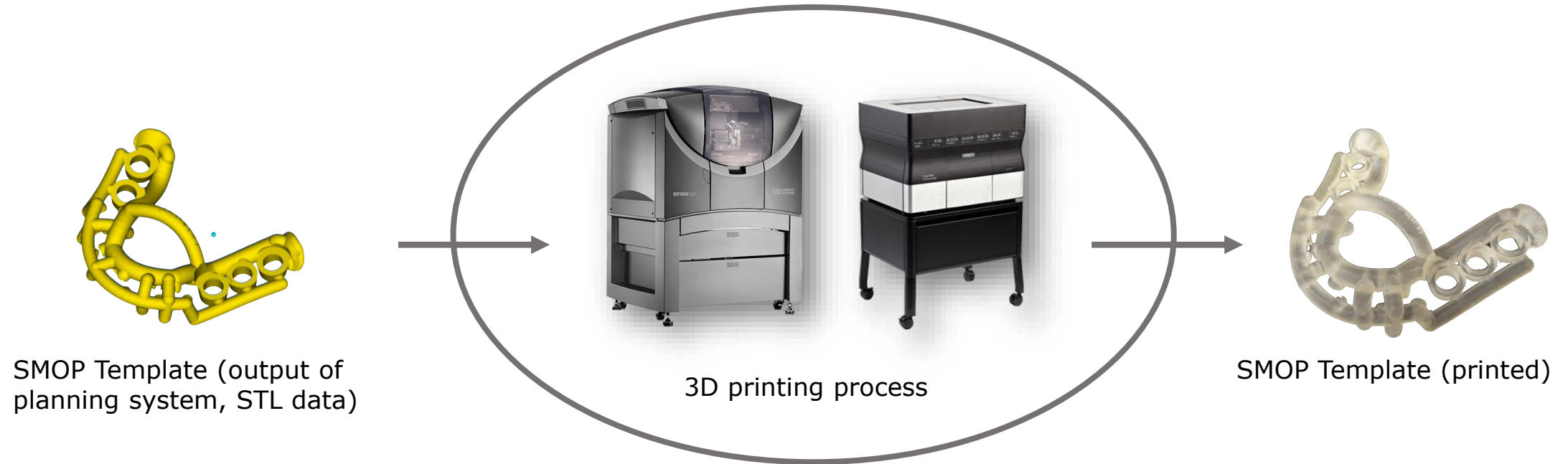


2. BENEFITS OF THE **SMOP TEMPLATE**

Patented best template worldwide. Why the light and open “Spaghetti” design?

- Full visibility on the surgical site
- Better control of the fit
- Allows cooling agent so water going into the osteotomy site reduces the frequency of pumping technique
- Easy to raise a flap
- Easier accessibility for surgical instrument insertion
- Reducing drastically the possibility of errors and distortions due to support the template only on selected stable points on the teeth and not covering the full surface on the teeth
- This kind of balcony design will keep the flap away from the drill, but no excessive opening/exposure of the flap due to our guide will not be necessary in contact with that gums
- Extra stabilization due to the use of palatal area. This feature “mucosa support” allows a clinician to proceed with surgery without a need for further extra stabilization accessories such as pins or screws
- Depending on the implant system and its surgical kit no metal sleeve is needed to guide the drill (e.g. Straumann, Astra, SIC...). The spoon of the kit can directly be plugged into the plastic-whole of the template. This increases the accuracy of the drilling and reduces costs by saving the sleeves

2. SMOP TEMPLATE **OPTIMIZED FOR 3D PRINTING**



The smop Template is optimized to be manufactured by 3D printing technology

Swissmeda has had good experiences using the Polyjet printers from Stratasys with the certified material MED610

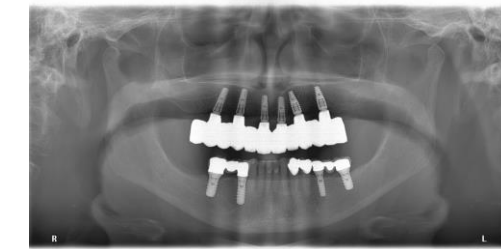
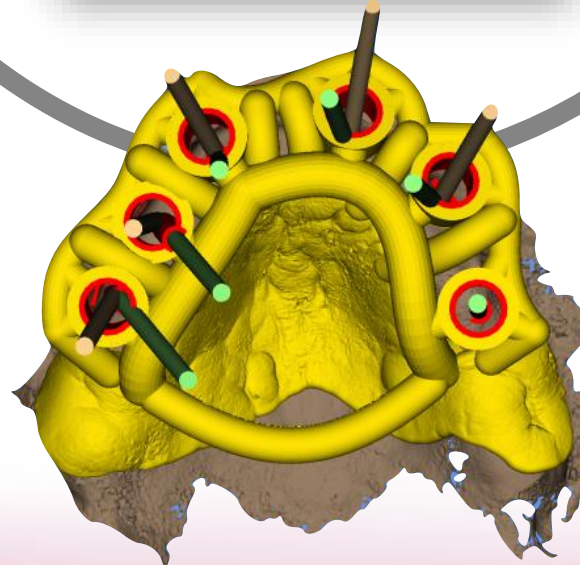
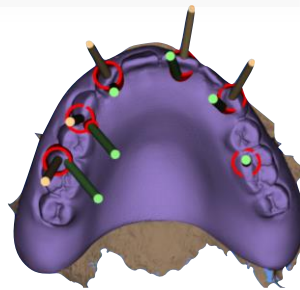
2. SMOP TEMPLATE **OPTIMIZED FOR 3D PRINTING**

There are a lot more 3D printers on the market supporting medical resin (e.g. Nextdent SG):



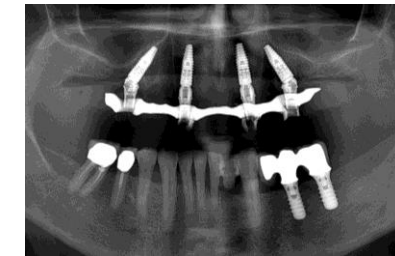
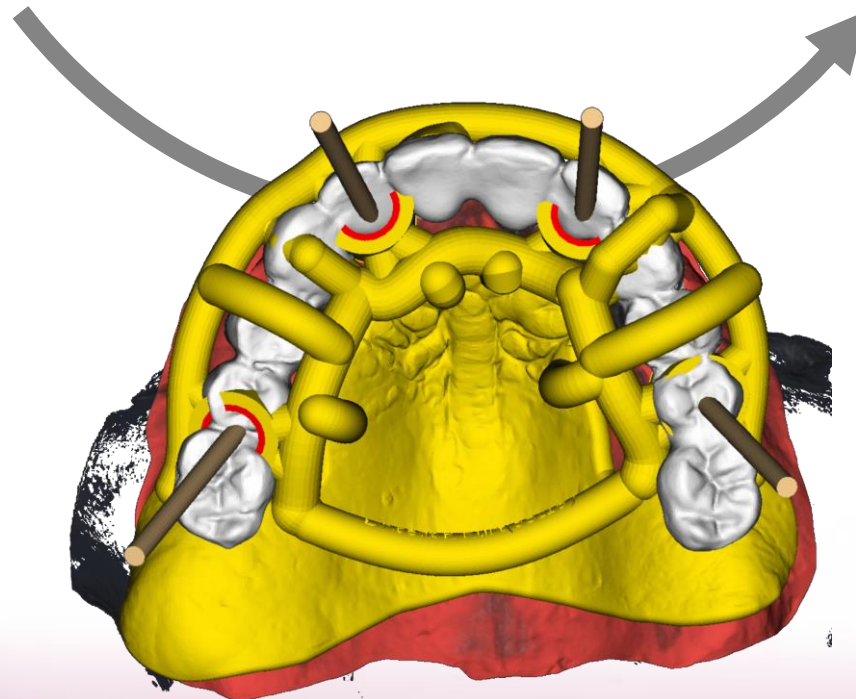
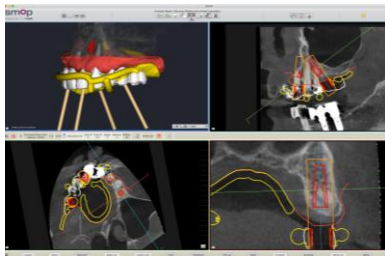
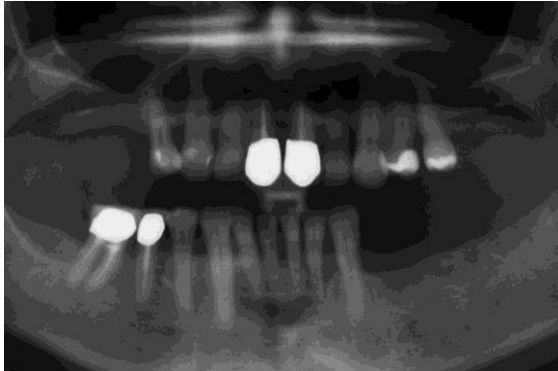
Please note, Swissmeda has no experience with the listed examples and can't give any recommendation.

3. SUPPORTED INDICATIONS – **FULLY EDENTULOUS**



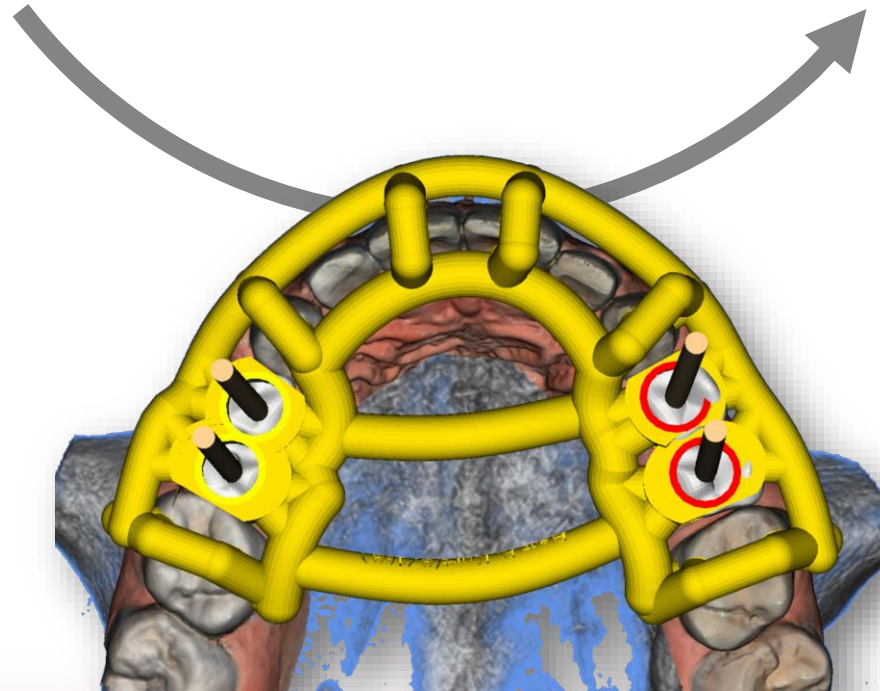
*Courtesy of Dental Clinic, Lucerne
Copyright 2018, Dr. med. Beat Kurt*

3. SUPPORTED INDICATIONS – FULLY EDENTULOUS – ALL ON FOUR



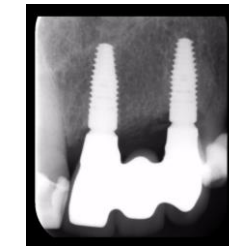
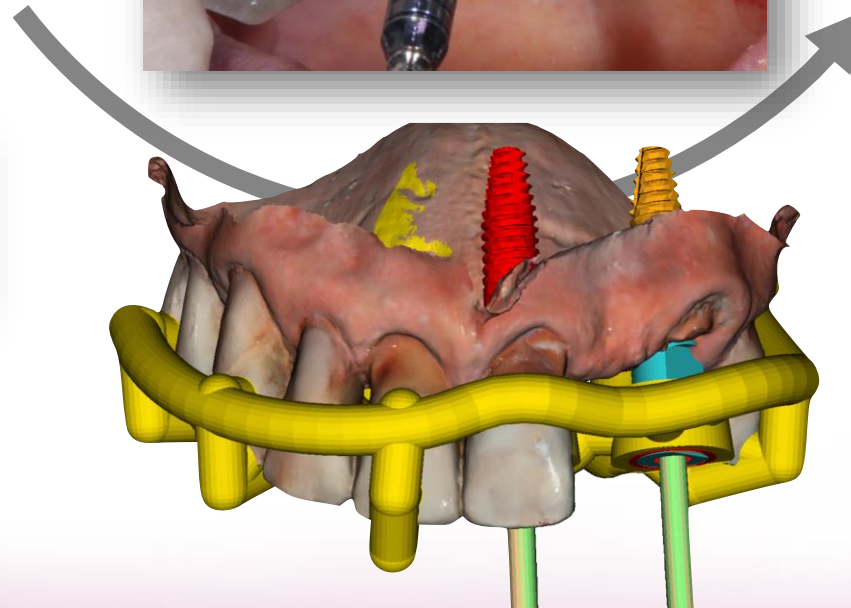
*Courtesy of Dental Clinic, Lucerne
Copyright 2018, Dr. med. Beat Kurt*

3. SUPPORTED INDICATIONS – **PARTIAL EDENTULOUS**



*Courtesy of Dental Clinic, Lucerne
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3. SUPPORTED INDICATIONS – **TOOTH GAP**



*Courtesy of Dental Clinic, Lucerne
Copyright 2018, Dr. med. Beat Kurt*

4. **PRODUCT CONFIGURATIONS** for different user needs

smop **MOBILE VIEWER** (for iPad and iPhone)

For Approval of implant planning and template design

Condition: The Basic User is connected to the Service Partner he registered with.

smop for **BASIC USER**

Basic Users can create cases and order any case planning and template design. Case preparation, template design and printing are provided by the Service Partner. Beside case creation, the Basic User has the option to plan implants or adjust any provided implant planning.

Condition: The Basic User is connected to the Service Partner he registered with.

smop for **STANDARD USER**

Standard User can create cases and do all case preparation and implant planning himself. He can order any planning and template design by their Service Partner.

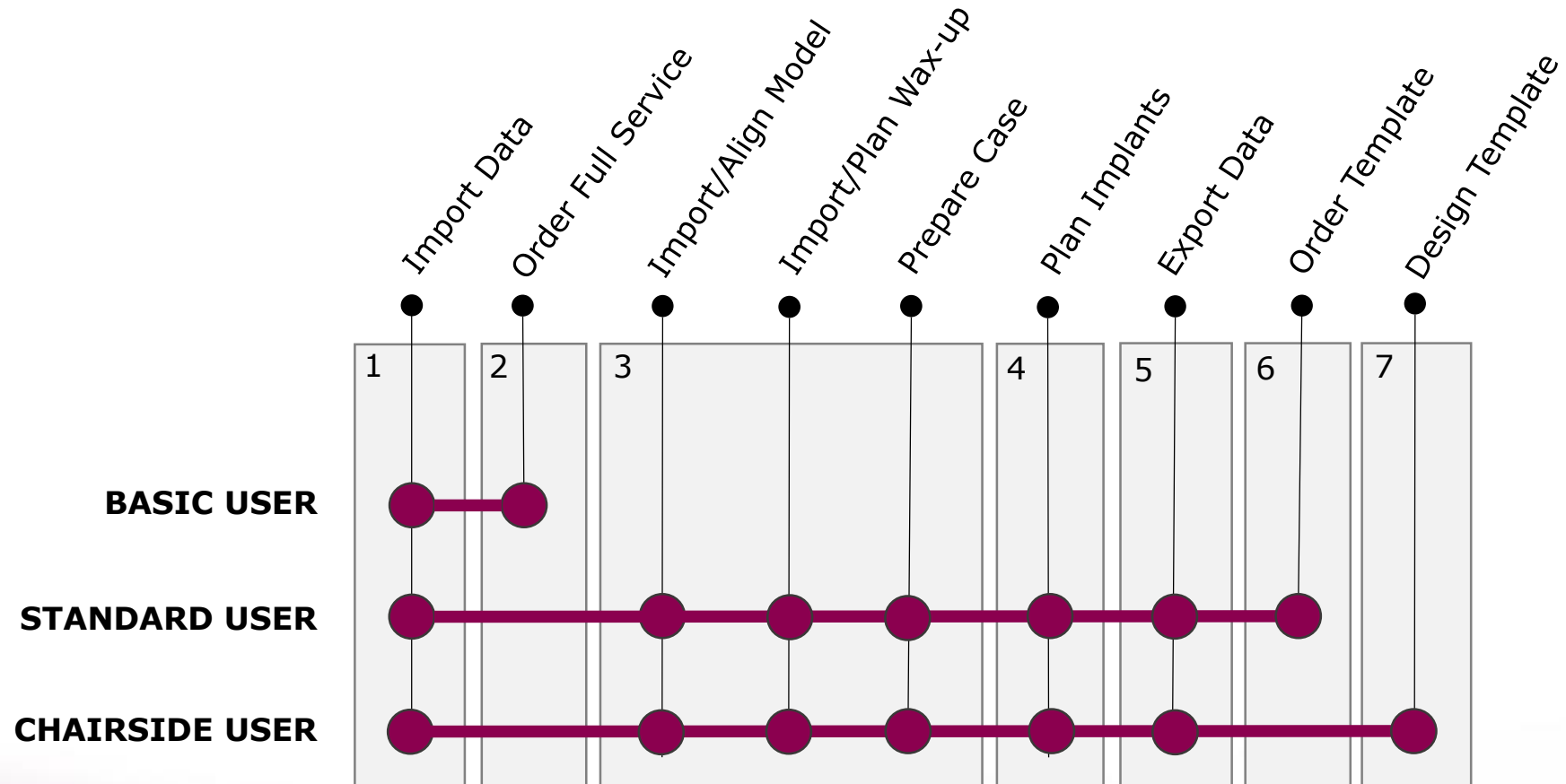
Condition: The Standard User is connected to the Service Partner he registered with.

smop for **CHAIR SIDE USER**

Chair Side User can create cases, do all case preparation, implant planning and template design.

Condition: The Chair Side User has the option to be connected to any smop Print Partner, to order printouts

4. SMOP WORKFLOW



5. HOW TO REGISTER SMOP

2

SMOP SERVICE PARTNERS NEAR YOU:

Swissmeda can help you with any questions you may have. However, sometimes it is easier to talk to a local service center. Please feel free to choose a preferred partner.

Swissmeda EUR - Smop

78462 Konstanz
Germany
+41 43 818 2515

smop@swissmeda.com

Register via this SP

Asia Implant Support &

367954
Singapore
+65 6223 2229

asia@implant.com.sg

Register via this SP

Swissmeda CSD

United States

csd@swissmeda.com

Register via this SP

Makatidentscan

1207 Mak
Philippines
+632 896

www.maka
makatiden

1. Dentist or Service Partner goes to website www.mysmop.com and scrolls down to section «SMOP SERVICE PARTNERS NEAR TO YOU»
2. Go to any Service Partner, click on «Register via this SP»
3. Enter personal details (of the dentist) and click «next»
4. Confirm the price plan and enter the captcha
5. Pay the first membership fee by credit card

3

Join the Swissmeda Community

Create a Swissmeda account today to gain access to our innovative products and services. If you have already signed up and cannot log in, please [contact us](#).

Welcome

Price Plan

Contact Data

Review & Confirm

Fill Contact Data

Max

swissmeda
medical applications

We have received the following data concerning your order:
Amount: **800.00 EUR**
Date: **2018-11-09**
1 x One Year Subscription

123456

New York

United States

max.muster@swissmeda.com

max.muster@swissmeda.com

5

4

community

to gain access to our innovative products and up and cannot log in, please [contact us](#).

Contact Data

Review & Confirm

Price Plan [change](#)

STANDARD: Swissmeda CSD
600 € /yearly

Order services from Service Partner, including case data preparation, implant planning and surgical guide design. You can also view the work results and do final implant planning yourself.

☐ I agree to the «Order Form» and «Terms of Service» *

hxc9

[Reload image](#)

6. SYSTEM REQUIREMENTS **SUPPORTED COMPUTERS**



SMOP planning software for Windows and Mac Computer



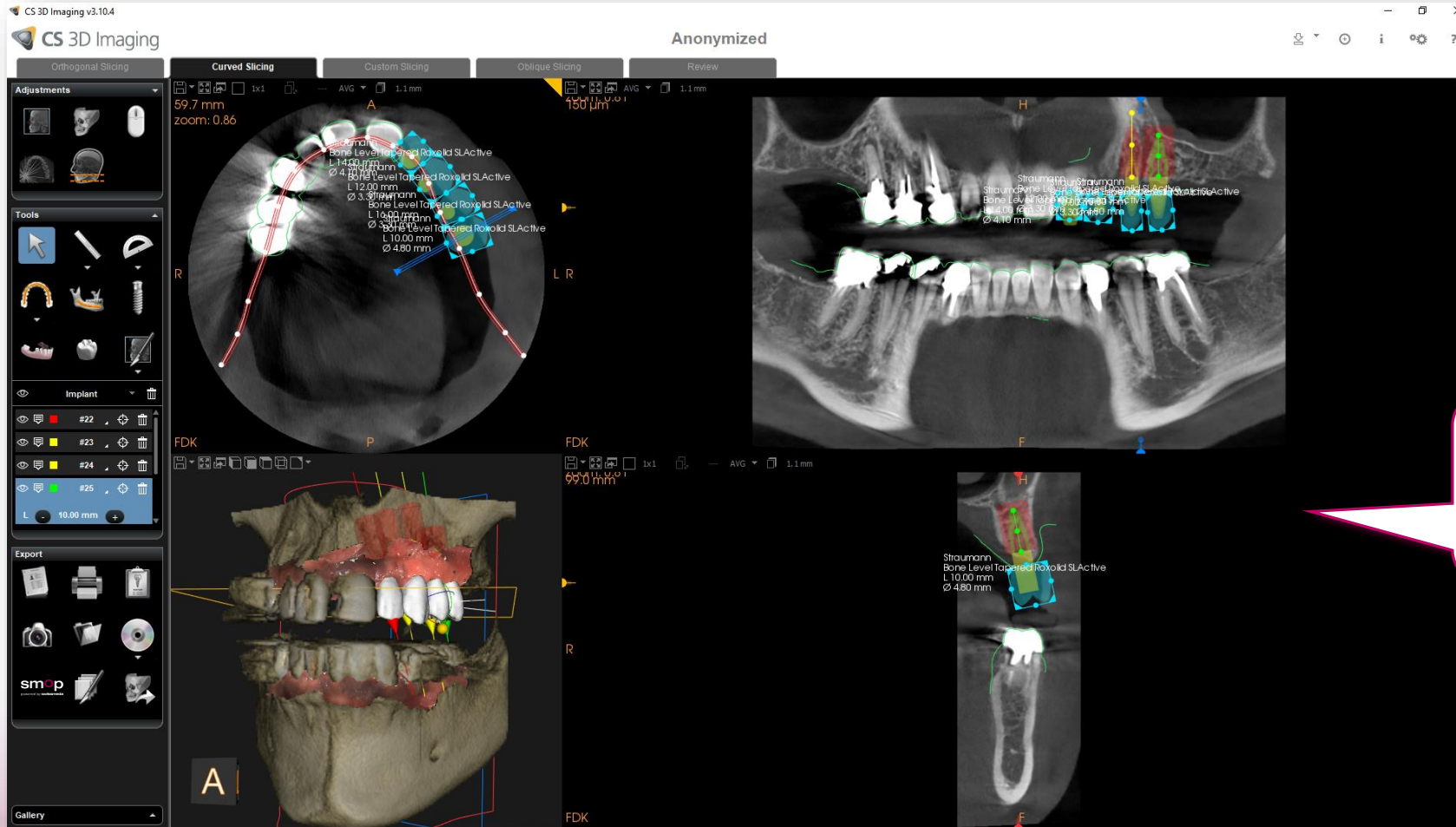
SMOP Mobile Viewer for iPad and iPhone (iOS)

6. SYSTEM REQUIREMENTS

- Software:
 - 64-bit Windows (v7, v8, v8.1 or v10)
 - Windows XP / Vista has been discontinued
 - 32-bit architecture is no longer supported
 - macOS: 10.10 or later
- Hardware:
 - 64-bit (x64) processor
 - Minimum 4GB of RAM
 - Minimum 1GB of available hard-disk space
 - Minimum 112 MB of Graphic Card Memory. Radeon HD 4000 Series or higher, Intel HD and Iris Graphics 7th generation or higher, GeForce 400 series or higher. For the best performance, we recommend using cards from NVIDIA or AMD
 - Internet connection min 3 Mbit/s download and 0.5 Mbit/s upload speed recommended

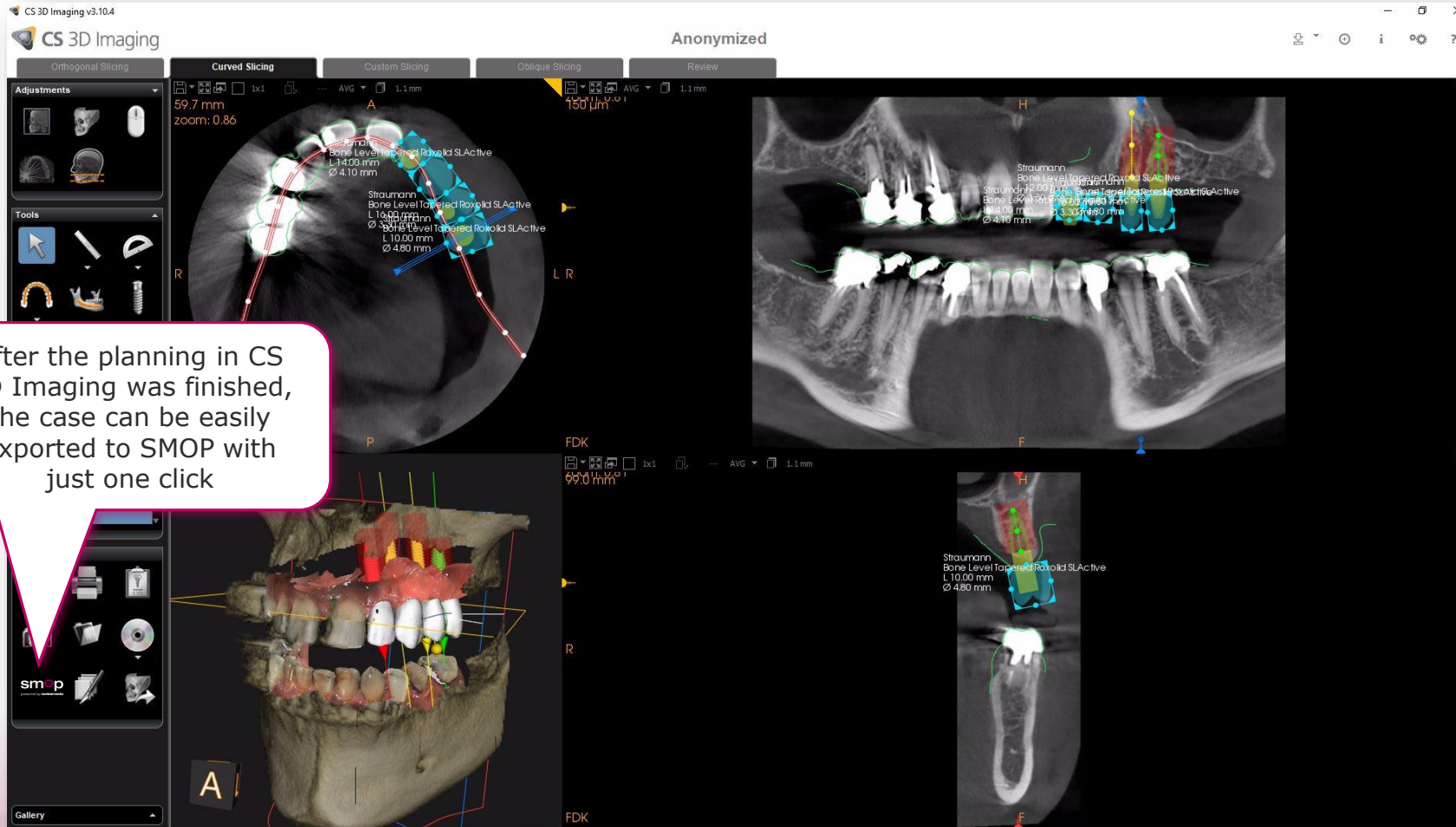
Note: *if you use older versions of video cards, there may be some issues with the software. Please also be aware that the software does not run in a virtualized environment and we do not offer support for this. Please use the native mac or windows MSOFT version for the corresponding operating systems.*

7. INTERFACE TO CS 3D IMAGING SOFTWARE

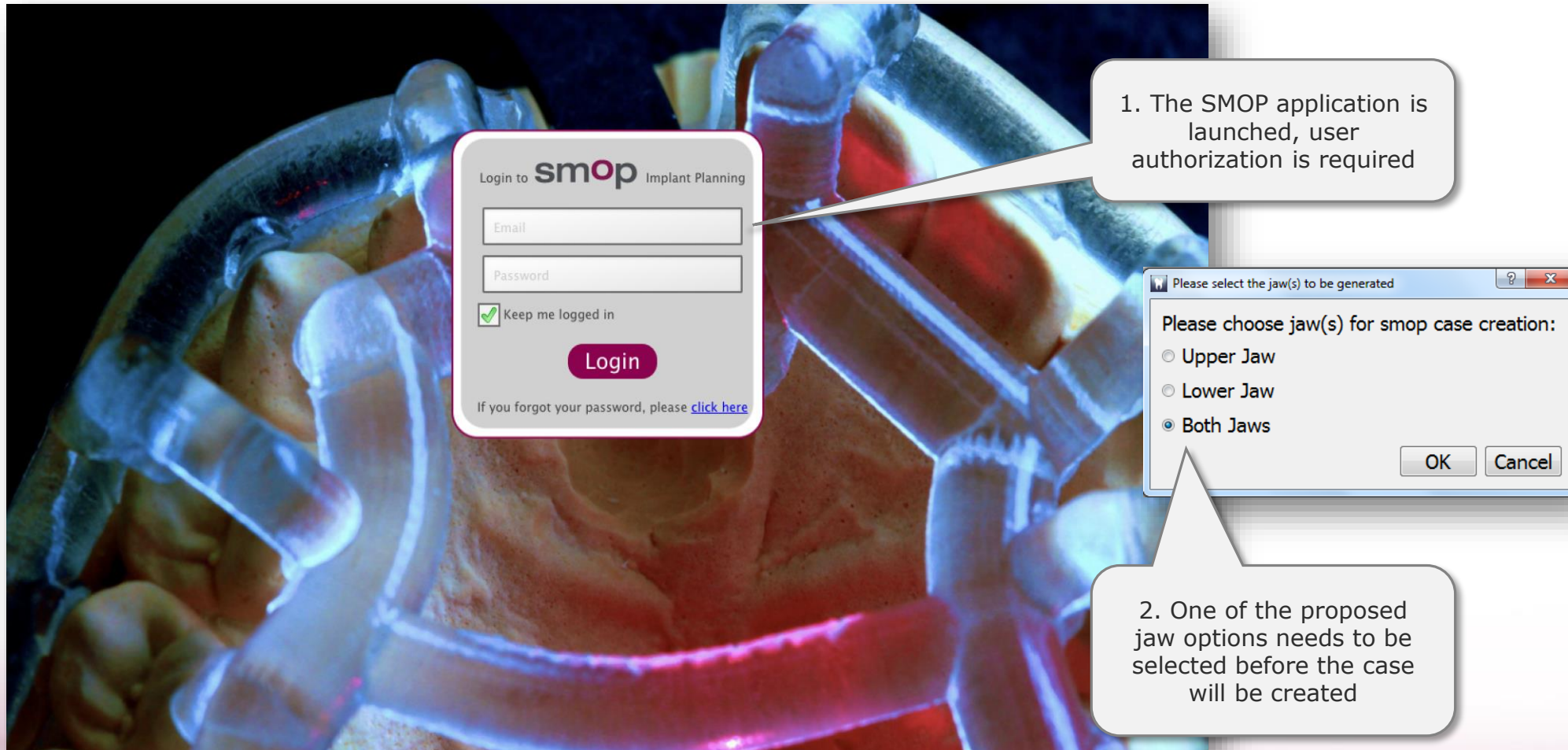


Within CS 3D Imaging software DICOM data are imported and implants and prosthetics can be planned

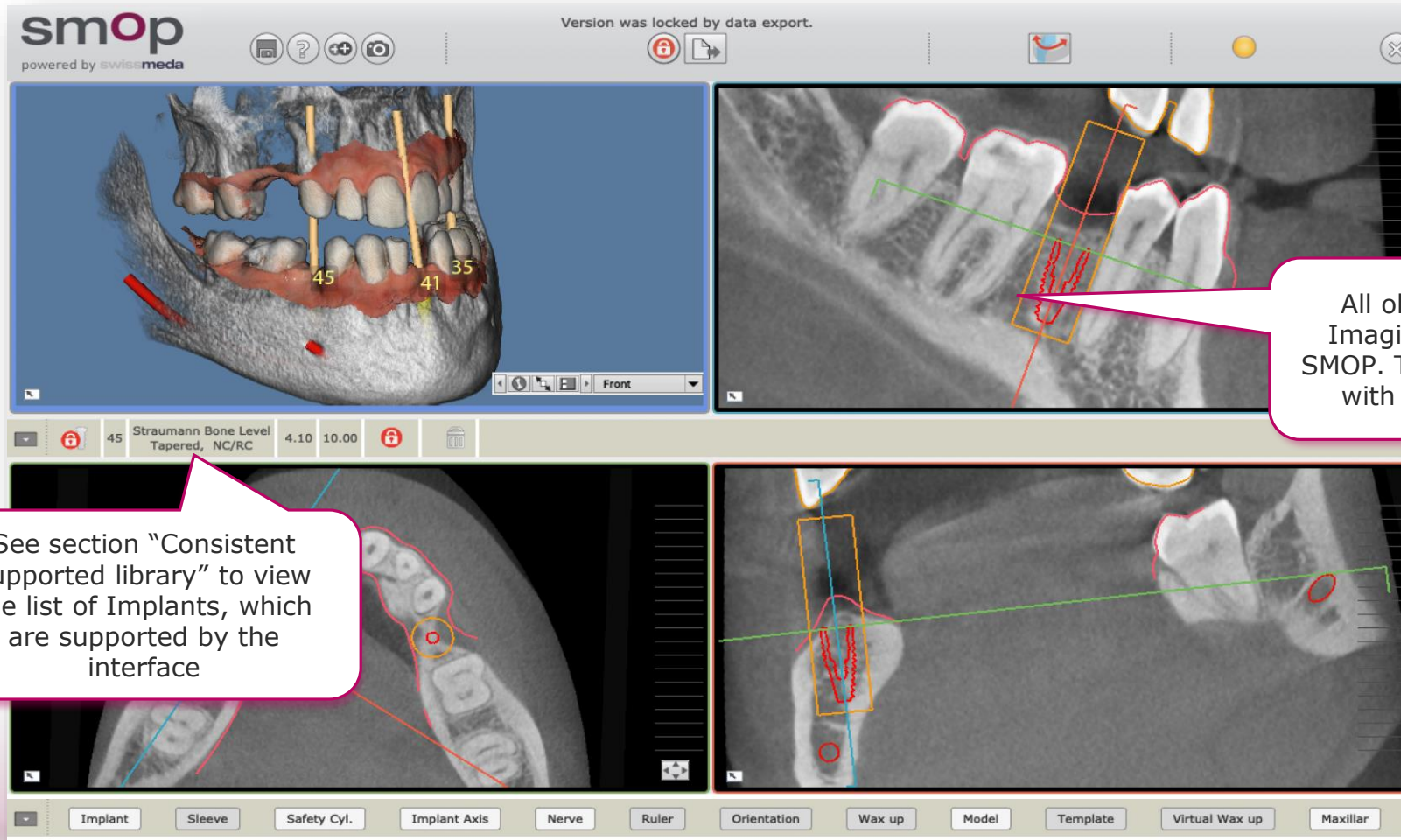
7. INTERFACE TO CS 3D IMAGING - EXPORT DATA TO SMOP



7. INTERFACE TO CS 3D Imaging – **OPEN CASE IN SMOP**



7. INTERFACE TO CS 3D Imaging – **DISPLAY CASE IN SMOP**



7. INTERFACE TO CS 3D Imaging – **CONSISTENT SUPPORTED LIBRARY**

Available now:

Alpha Bio	Futur Implant	TAG
Anthogyr	Generic	Thommen Medical
Astra Tech	JDental	TRI
BTI	Keystone Dental	Vita
B&B Dental	Medentika	Zimmer
Bego	Medentis	
Biodenta	Medical Instinct	
BioHorizons	MIS	
Biomet 3i	Neoss	
Biotech Int.	Nobel Biocare	
Bredent Medical	Osstem	
Camlog	Paris	
C-Tech	SDS	
Demo	SIC	
Dentaurum	Southern Implants	
Dentium	Straumann	
Dentsply	Study Implants	
DIO	Sweden&Martina	
Fair Implant		

Coming soon:

Dentium (update)
 Dentsply (update)
 Medentika (update)
 Southern Implants
 (update)
 BTK
 JDental care
 Steco (new sleeves)
 Noris Medical
 Bredent (update)
 Implant Direct
 Sweden & Martina
 (update)
 Neodent
 Straumann (update)
 TRI (update)
 OsteoCare
 Camlog (update)
 Keystone Dental
 (update)
 Cortex Dental

END