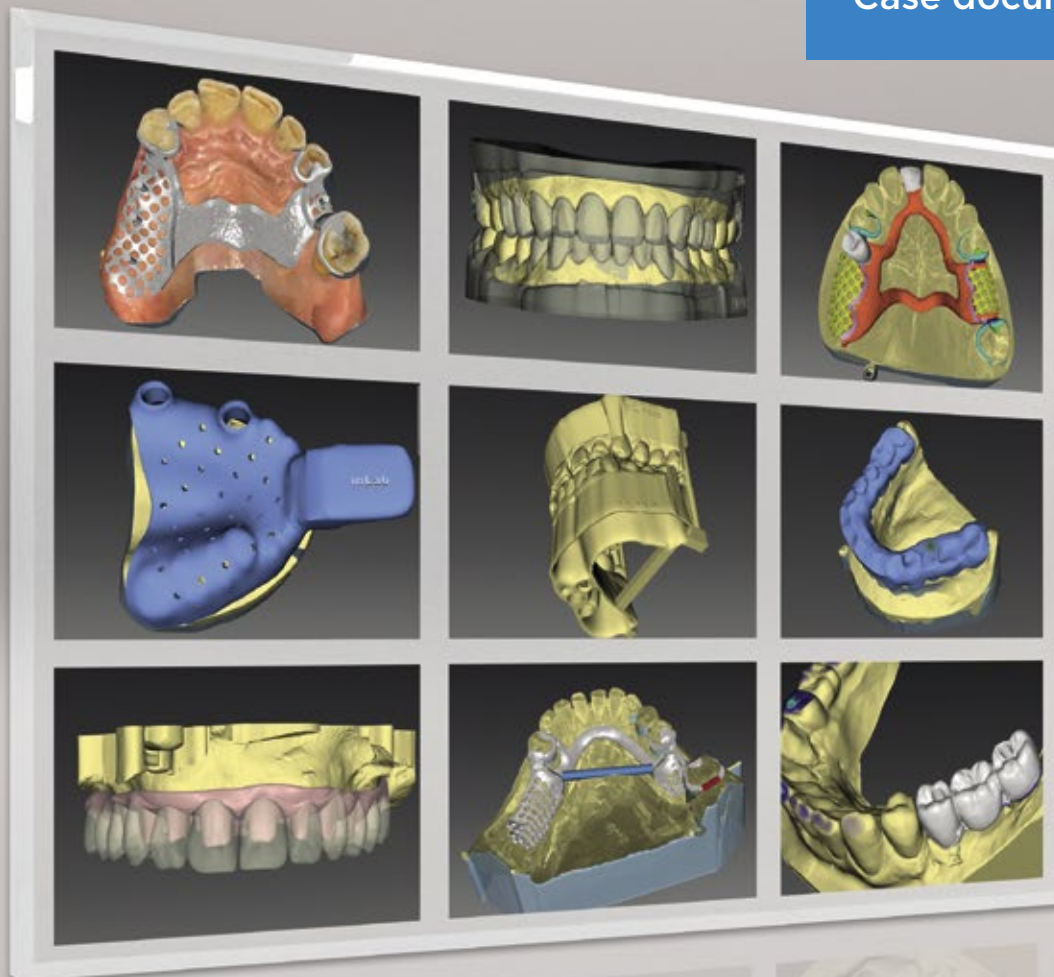


Universal, indication-appropriate, dental-technically oriented

The inLab CAD software in practical use

Case documentations



Comfortable design of splints

Craniomandibular dysfunction (CMD) is an important topic in dentistry. Its high prevalence and its impact on public health are considerable. For example, CMD is regarded as the cause of many cases of head, neck, and back pain. An occlusal guard or splint is often prescribed to help treat the condition. The following case shows how to design an occlusal splint using the inLab 18.0 CAD software.

Case report:

A 42-year-old patient presented at the dental practice with temporomandibular joint (TMJ) pain and tension in the neck area, which were found to be related to bruxism. An occlusal splint was prescribed to relieve the pressure on the temporomandibular joint and to prevent grinding. In addition to the normal impression, the dentist also took a construction bite, which showed the maxillomandibular relationship most suitable for the patient. The splint was manufactured according to this construction bite, as demonstrated by the following illustrations.



The Author

Andreas Beining

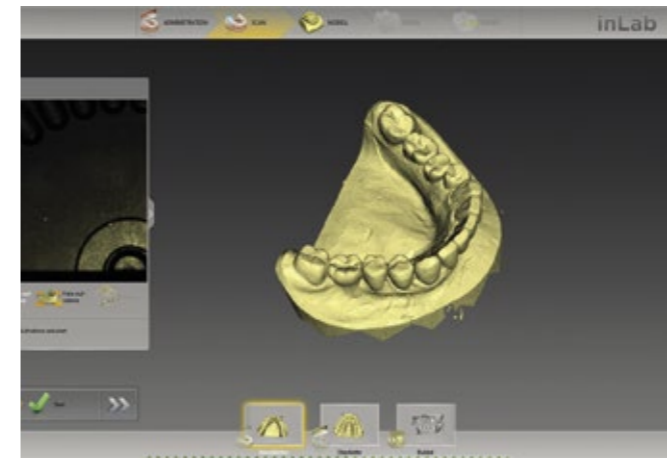
Dentaltechnik Beining
Baugenossenschaftsstraße 2
95145 Oberkotzau, Germany
E-Mail: beining-connect@t-online.de
Phone: +49 (0) 92 86/63 24



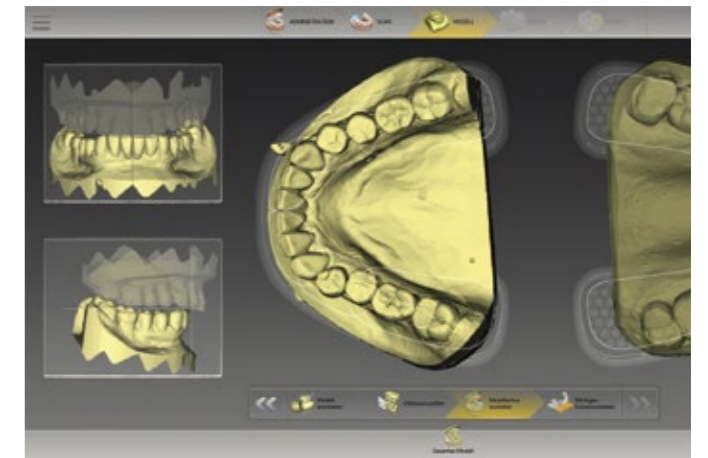
After taking an analog impression and a construction bite in the dental practice, a corresponding case or the fabrication of a Michigan splint was set up in the lab using the inLab CAD software 18.0 (inLab "Administration" phase).



The model was scanned using the inEos X5 laboratory scanner. This transferred all the data required for the subsequent procedure to the inLab CAD software.



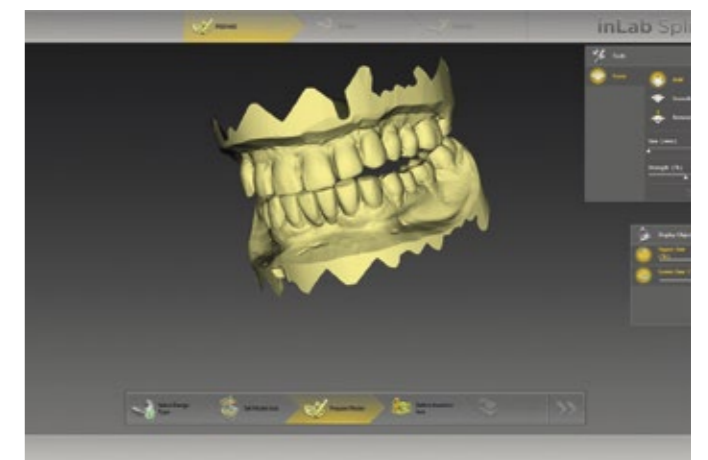
Experience has shown that the scanning quality of the inEos X5 is so high that in most of all cases there is no need to rework the model surface. This is only necessary if inaccuracies had previously been overseen on the original model.

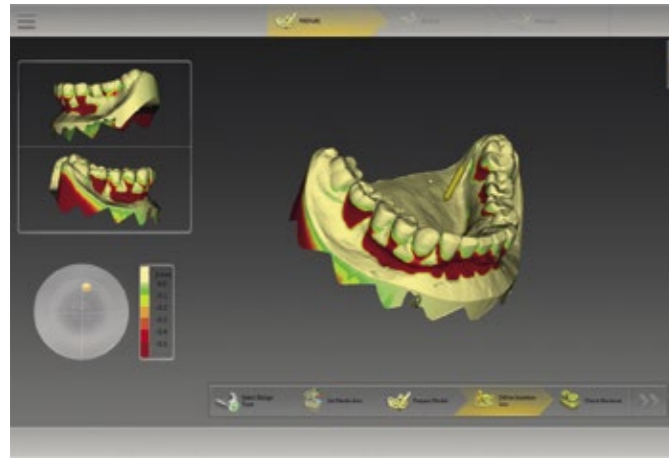


Next, the model axis is manually aligned (inLab CAD SW "Model" phase). As mentioned in the step above, the software already calculated the scan of the construction bite which was taken in the "Scan" phase under "buccal scan".

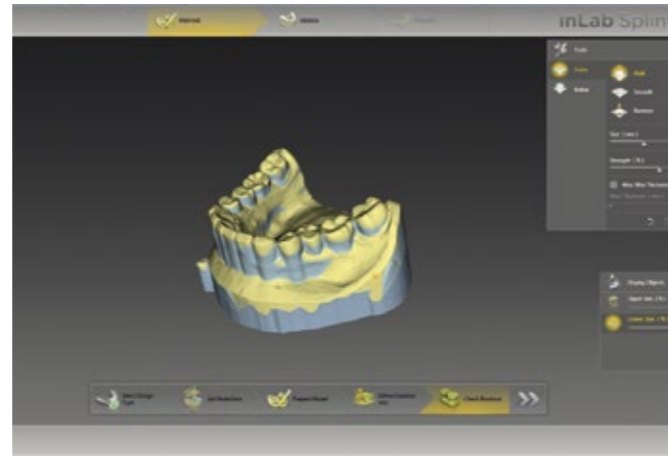


The case was transferred into the inLab Splint app with a single click, where an additional opportunity for editing the model is provided. In the present case – as in most cases – this was not necessary.

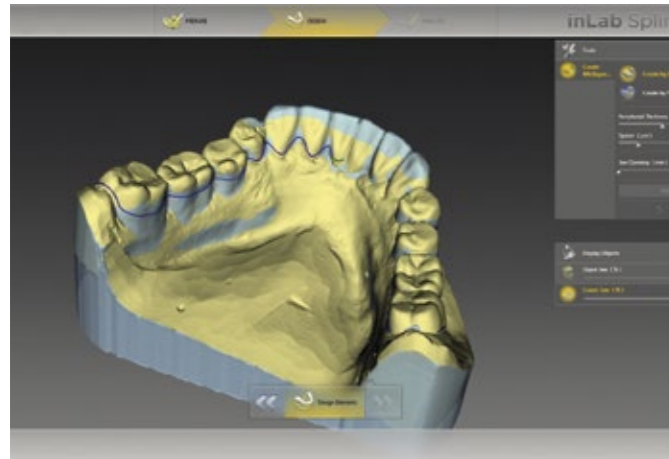




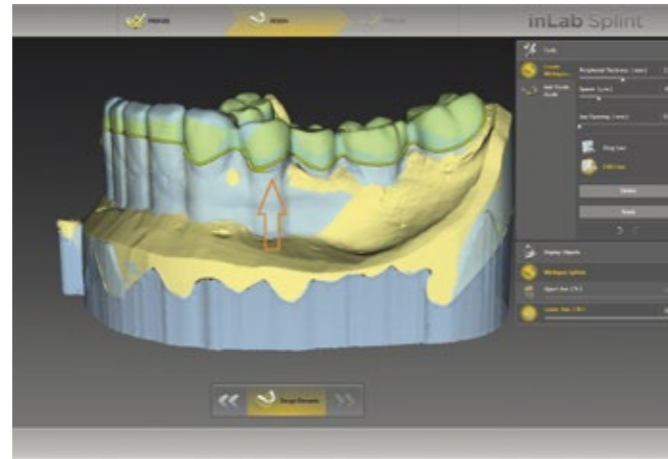
The insertion path of the splint was defined by moving the arrow (shown in yellow in the middle of the model). The coloured markings on the model indicate the extent of the undercuts.



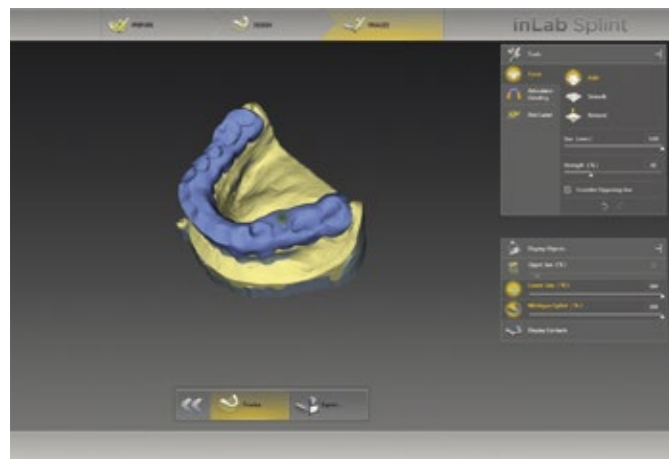
After the undercuts are blocked out, the result can be further refined or corrected by the software tools provided.



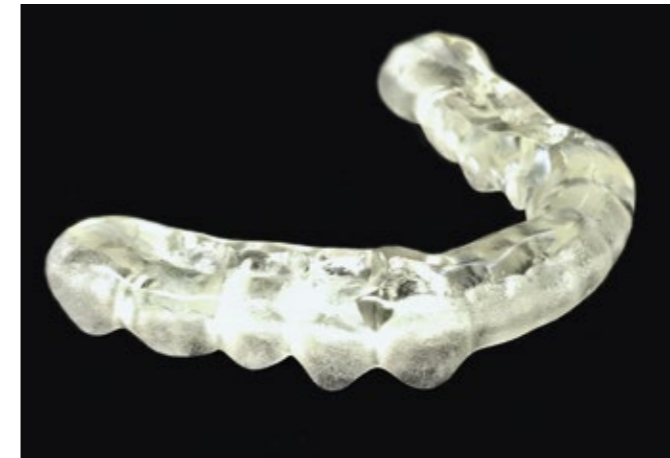
In the next step, the contour of the splint itself was outlined. The software offers two methods to achieve this, "Create by Line" or "Create by Plane". In the authors lab the freehand "Create by Line" mode is most preferred.



After outlining the splint, it is still possible to make corrections to the line contour — an optional step in the event that improvements are still needed. The software automatically merges the corrections with the remainder of the splint contour.



In the following step, the splint design, including the adjusted occlusal surface, was calculated by the software. Further modifications (adding, removing, smoothing) can be carried out in this step using the form tools if necessary. Individual engraving or labeling on the splint is possible.



The finished splint design was exported in STL file format and transferred to the software of a 3D printer for production. The 3D printer built the designed splint from a special acrylic resin approved for this application, a process that took about 60 minutes. The finished and polished splint on the model. The accuracy of fit was excellent.

Benefits for the laboratory

Using the inLab CAD software, splints such as the adjusted occlusal splint shown here can be fabricated reliably, quickly and easily in a CAD/CAM procedure. The design calculated by the software ensures an excellent fit. The possibility to export the data in STL format offers the lab technician considerable flexibility in manufacturing.

As an alternative to 3D printing, however, subtractive production using a milling process is also an option. The system's own inLab MC X5 milling unit can be used to carry out and produce the design shown here for example in PMMA.

Designing a model – simple and reliable

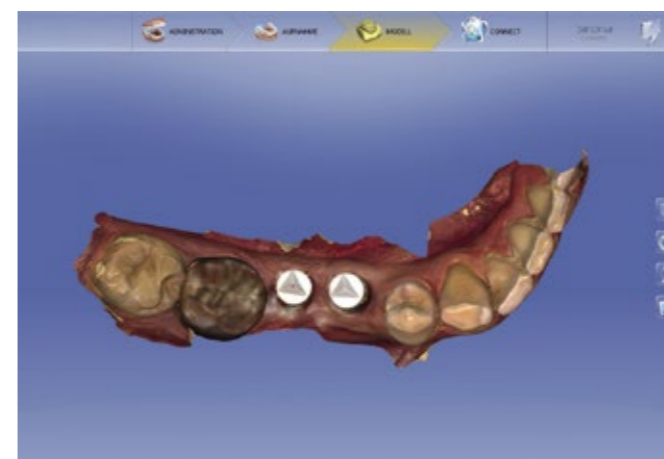
Every restoration made in the dental laboratory is started by creating a model. Even though a model-free approach is sometimes possible in less complex cases today, a physical model remains indispensable in more complex situations. The digital transformation has opened up new avenues of model production in the dental laboratory, which makes workflows simpler and more economical. The inLab CAD software is living proof of this. Based on digital intraoral impression data, this open software can be used not only for designing restorations, but also, with the integrated inLab Model app, for designing complete models for subsequent physical finishing.



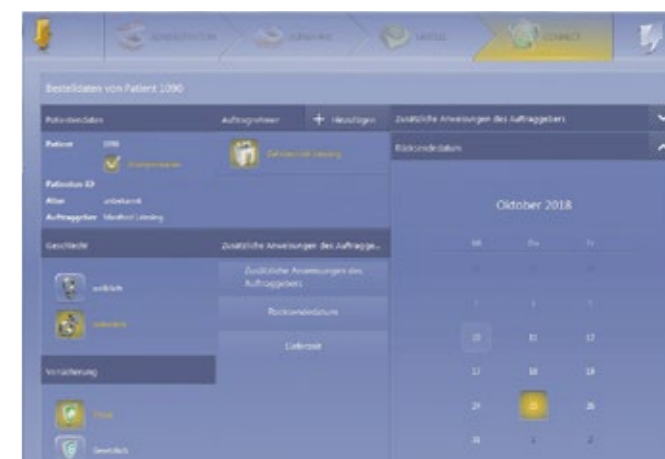
The starting point was taking of the digital impression by the dentist using Omnicam Connect and Sirona Connect software. An intraoral scan was made of the mandible (without scanbodies for now) ...



... and maxilla (antagonist jaw).



An image already reduced to the relevant areas illustrates the position of the implants with the help of the scanbodies.



Scan data and order information such as patient data, material selection, return date, and other notes are sent to the laboratory via the Sirona Connect portal.*

Case report:

A patient presented at the dental office with a missing lower right second premolar and first molar (teeth 45 and 46). During the consultations, it was agreed to replace the teeth with implant-supported crowns (abutment plus all-zirconia crown). The following case illustrates the production of the model using the fully digital method – digital impression-taking and data transfer to the laboratory, model design with the inLab CAD software, and export for production using a 3D printing process.



The Author

Manfred Leissing

Zahntechnik Leissing
Woldemei 10
59555 Lippstadt, Germany
E-Mail: info@leissing-zahntechnik.de
www.leissing-zahntechnik.de
Phone: +49 (0) 29 41/775 00



The dental laboratory conveniently receives the scan data via the Sirona Connect Portal, which is downloaded directly to the inLab software where the case receives a preliminary inspection. Questions can be asked if necessary and the order can be accepted.



In the "Administration" phase of the inLab CAD software (shown here: inLab SW 18.0), the order is initially created with a few clicks based on the dentist's specifications. Placing checkmark in the "Multilayer" checkbox allows the crown and abutment to be designed in a single operation and produced from different materials.

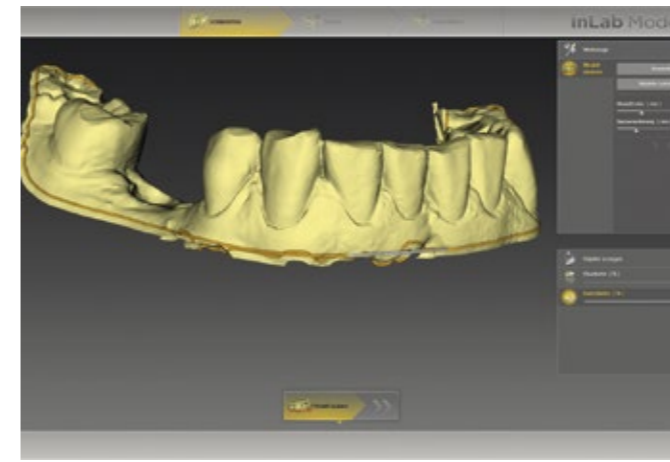
* For reasons of data protection, no patient data are shown here.



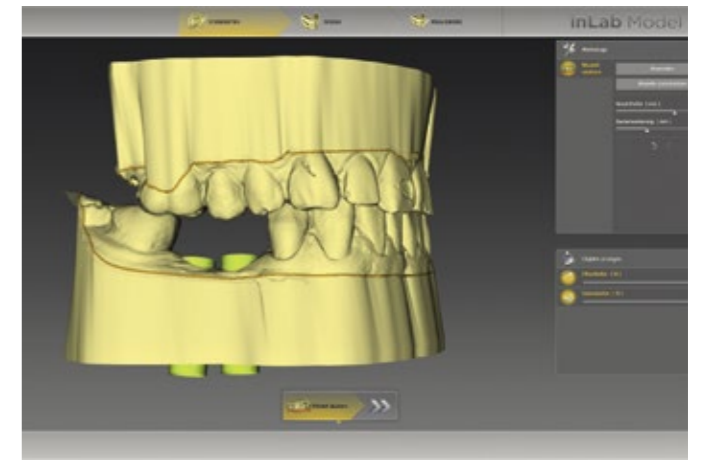
In addition, the option "Model" is selected in the menu for the upper and lower jaw.



In the software, any excess and any model areas that are not needed can be discarded using the cut tool.



The case is then transferred to the inLab Model app. The first step here is to clean up the models ...



... and to determine the model height. In the present case, the model height had to be increased by at least 13 mm so that the implant analog (DIM) can be boxed correctly. The implant positions and, hence, the positions of the analogs are automatically transferred by the inLab SW.



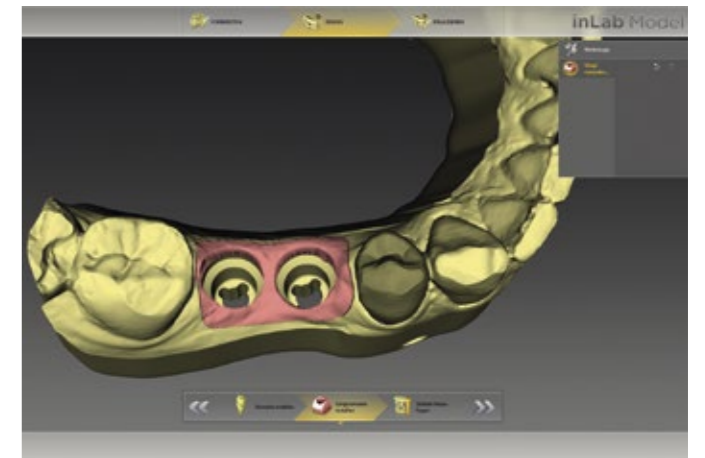
The view with the scanbodies displays the discarded areas in a discreet grey.



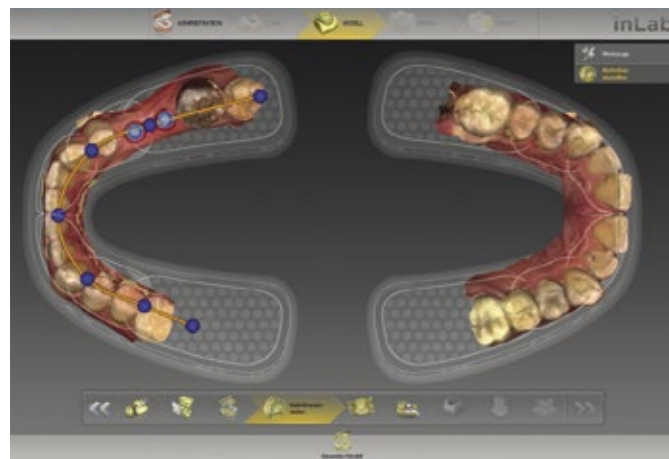
To check the occlusion, the software displays the maxillary and mandibular contact points in graded shades.



In the subsequent "Design" phase, all removable components of the model are planned. In the present case, this includes the implant analogues (DIM, nt-trading) ...



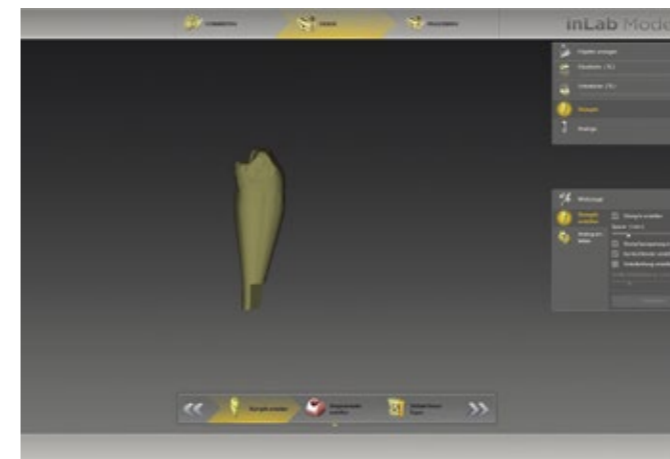
... and the gingival mask ...



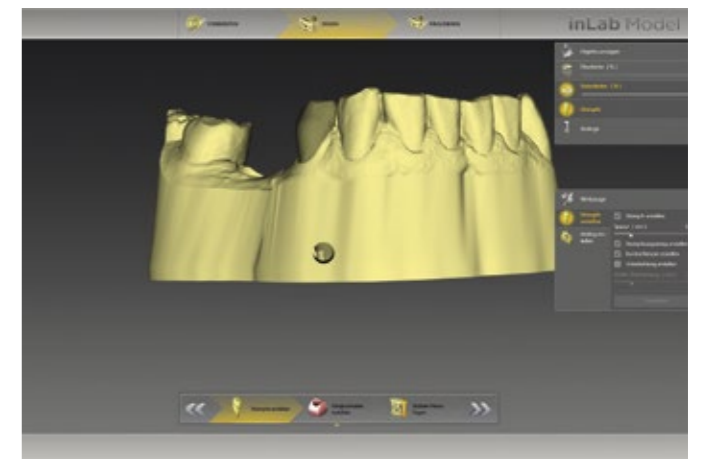
When adjusting the jaw line, the model is aligned and the teeth (which are to be restored) with their respective numbers are positioned.



To determine the correct implant position, the tips of the scanbodies are selected by double-clicking them before the design step is initiated.



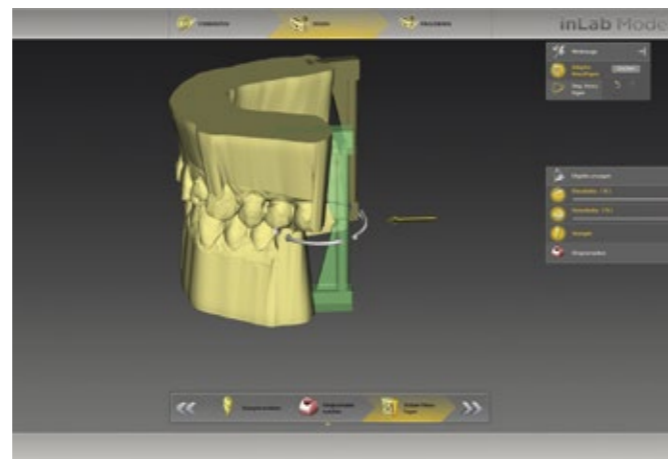
... as well as the die, which is calculated from the available model data. They later assist in more precise adjustment of the contact points.



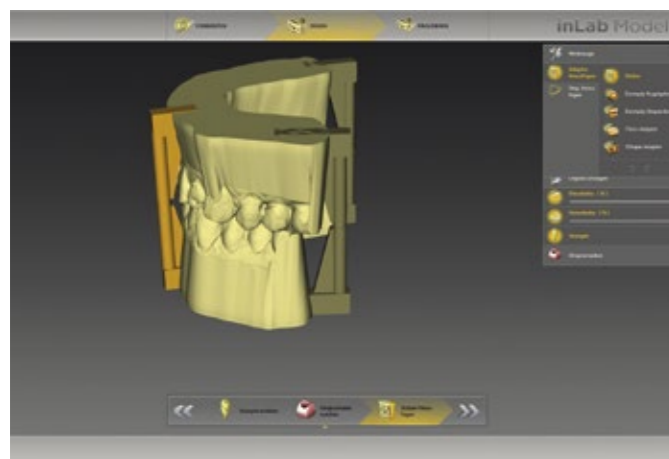
A checkmark in the respective box creates an inspection window that appears in the lower area of the model. It provides a clear view of the die, allowing the technician to determine whether the die has actually reached its final position.



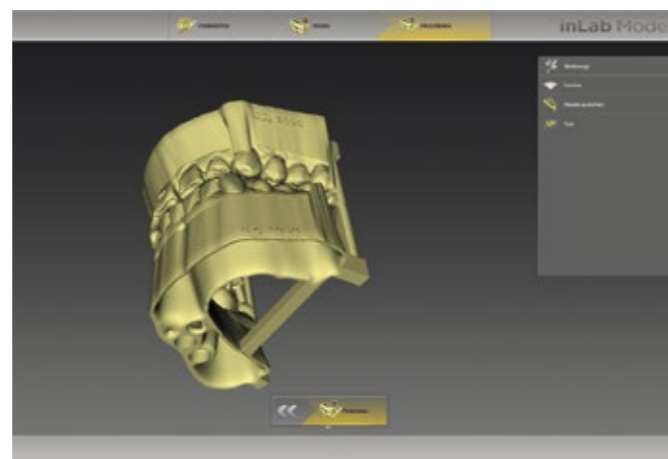
If required, the inLab Model app can be used to create two-part support structures. Although sufficient dental support was available in the present case, a corresponding supporting structure was inserted to fix the model in centric bite. These structures can also be used for mounting the model in an articulator.



The supporting structures can be rotated and modified individually.



This approach is indispensable — especially for partial models — in order to ensure the necessary cohesion. In the present case, as the screenshot illustrates, a three-point support was used for the correct representation of the occlusion.



Before the finished model is released for production (in this case by 3D printing) as an STL dataset, the model bases can be hollowed out to save material. It is also possible to use a cross brace to counteract any dimensional changes during production. The model can also be labeled.



The printed model with removable die, implant analog and gingival mask.

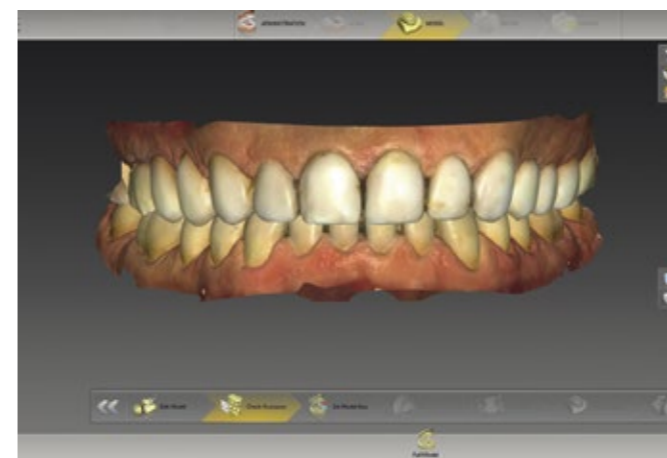


Benefits for the laboratory

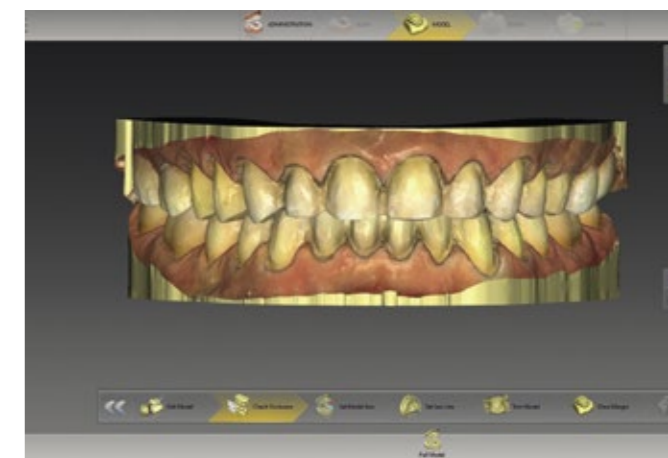
When a digital impression reaches the dental laboratory, the proper digital procedure is required to create a physical model. After all, as in most cases the CAD/CAM workflow should also allow that approximal and occlusal contact points be checked on that model. The procedure shown here, using the inLab CAD software, makes this happen just as effortlessly as the subsequent design of the actual restoration. One evident advantage is the time savings, since the dental technician can start designing the prosthetic restoration while the model is still being fabricated. All the essential information for the case is already stored in the inLab CAD software. Ideally, the fabrication of the model and restoration can even be coordinated so that they are completed almost simultaneously, allowing the fit to be checked immediately.

Restoration design based on patient specific data

Restorations designed in the dental lab aim to reach results that blend in well with the overall remaining dentition, to create a harmonious image, along with achieving stable occlusal conditions. This task can be especially demanding if the treatment extends over a larger area of teeth or regions, respectively. In such cases the inLab BioCopy function allows for an efficient and highly accurate procedure to provide the dental technician with an individual and synchronized design proposal.



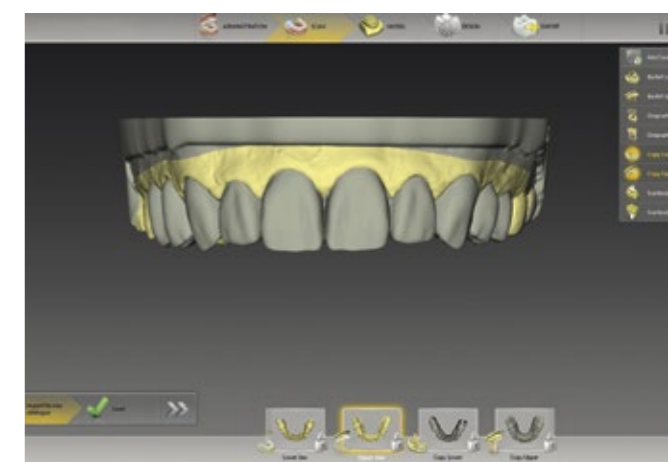
The scan of the initial situation showed the patient's old composite restorations which will be replaced by a total of sixteen veneers and two inlays (teeth 11 to 15, 21 to 25, 31 to 34 and 41 to 44).



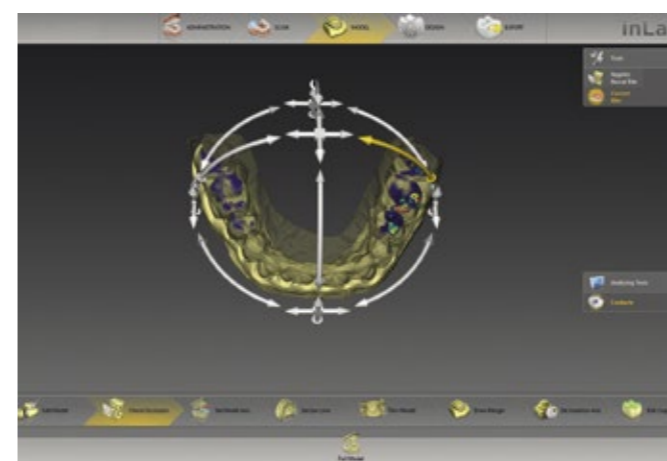
Using the CEREC Omnicam the dentist also provided a data set of the scanned preparations.



In the "Administration" phase of the inLab SW (version 18.0) restoration types were chosen and settings for the milling unit, the material and the processing mode were made. Also the checkbox "Copy" was activated in order to access the BioCopy function.



A scan of the diagnostic mock-up was imported into the software as well. It was later used as the basis for the BioCopy.



But first an adequate occlusion had to be verified. For this the software provides analyzing tools that visualize the occlusal contact points with the help of a color scheme.



In order to give the software the best possible data base to make an initial proposal, the model axis was aligned.

Case report:

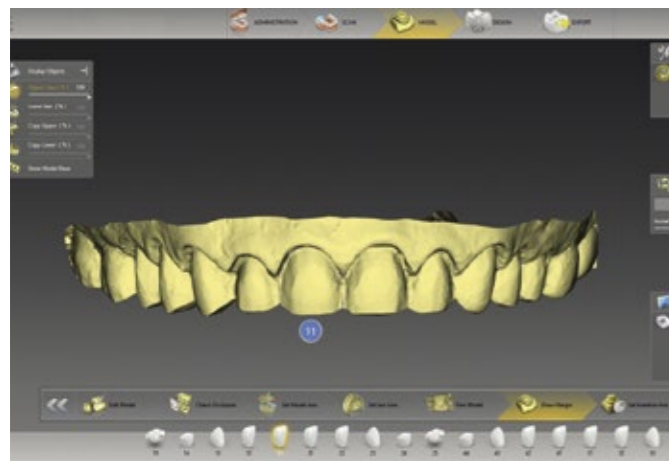
A patient presented in the dental practice with a large number of aesthetically insufficient composite restorations in the anterior and premolar regions of both jaws – more precisely, the teeth 15 to 25 as well as 34 to 44. In coordination with the dentist and the patient it was agreed that the existing restorations should be removed and replaced by a combination of veneers and inlays made from feldspar ceramic. A total of eighteen restorations were planned to be manufactured using the CAD/ CAM-workflow of the inLab system based on the digital impression taken with the CEREC Omnicam. In the following, the author describes the lab-side process.



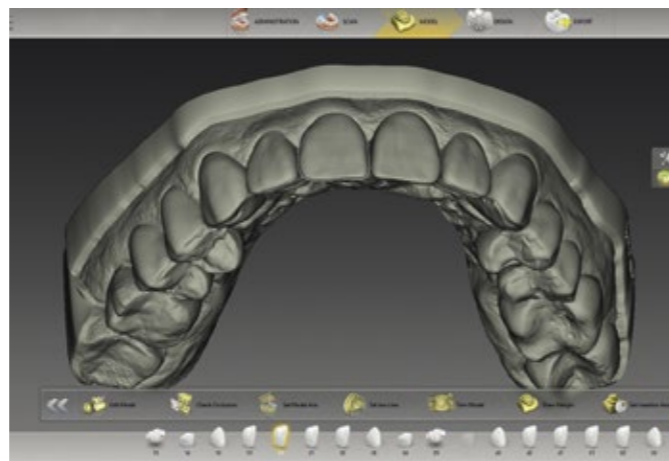
The Author

Ángel Ballesteros

CORUS Dental
Avinguda de Ragull 50
08173 Barcelona, Spain
E-Mail: angel.ballesteros@corusdental.com
www.corusdental.com
Phone: +34 934 470 874



After the setting of the jaw line and the trimming of the model, it was time to enter the preparation margin. This can be done using the auto function, but in this case the author decided to mark it manually as illustrated here using the example of tooth 11.



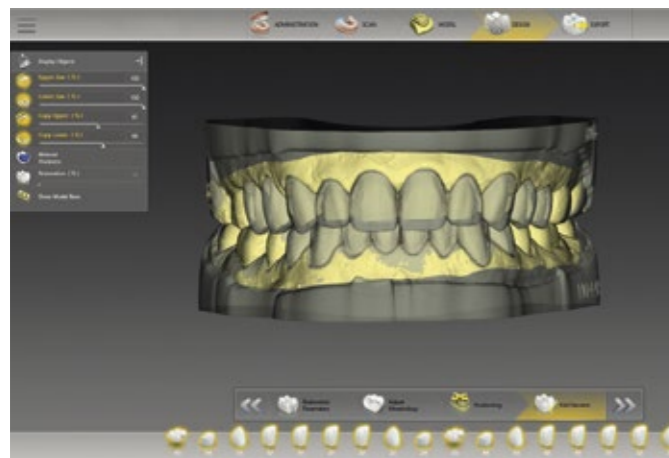
The last step consisted of editing the copy lines. Here, it was possible to click through the different restorations and receive a proposal for every copy line - which can be modified if necessary. This is an important part of the process since the software will only take into account marked parts for the initial proposal of the BioCopy.



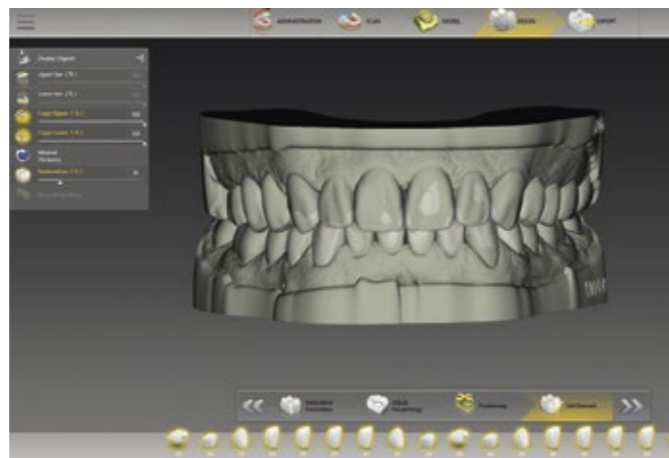
After all adjustments are made, the inLab software presented us with the design of the final restorations adapted to the preparations and based on the mock-up.



Before passing on the design to the milling unit - in this case an inLab MC XL - the software allowed for presenting only the restorations themselves by fading out all other objects.



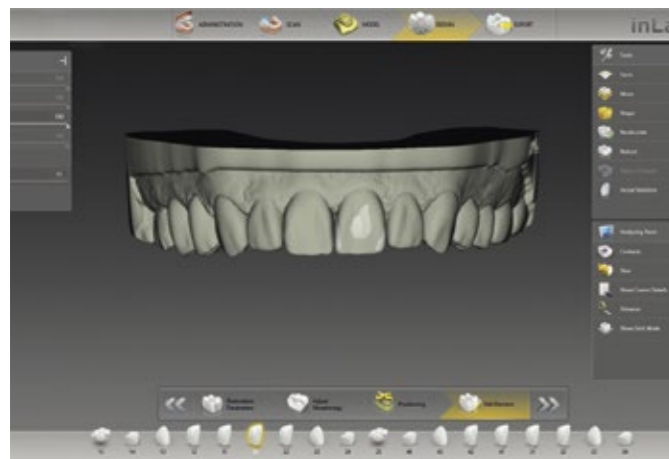
Switching to the "Design" phase we now received the aforementioned initial proposal via the BioCopy function - taking into account the selected areas of the mock-up. As shown in this screenshot it was possible to depict this proposal as a semi-transparent layer on top of the preparation.



The following steps now allowed for a selection of the different restorations in order to adjust their shape, form and position. As shown here, all restorations can be activated at the same time ...



The initial situation with the old composite restorations in direct comparison to the aesthetically pleasing treatment result.



... or you could only activate a single restoration (tooth 21)



... or only one of the jaws, in this case the upper jaw.

Benefits for the laboratory

When looking for a more efficient, streamlined way to achieve a restoration design, the BioCopy function of the inLab software is - in many cases - the way to go. It provides the dental technician with an initial design proposal for the relevant restorations taking into account patient specific information like intact natural teeth, a temporary restoration or, as shown in the above case, a diagnostic mock-up. On the one hand, this procedure shortens the design process, on the other hand, it automatically makes sure that important parameters are being considered while still allowing for adjustments. This way, the dental laboratory has a much easier time creating aesthetically and functionally adequate restorations - especially with a view to their occlusal conditions.

With digital support to the individual impression tray

Not every impression can be taken satisfactorily with a conventional impression tray. Practitioners therefore prefer and commission the production of custom trays in a number of different scenarios. The following case shows how this task can be accomplished with digital support.

Case report: :

Custom trays are highly useful in a large number of situations, whether impressions with a functional marginal design, anatomical impressions for unusual jaw forms, or implant impressions. Using the example of an individual tray for an open impression tray, this case report illustrates how the dental laboratory can quickly and reliably achieve the desired result with version 18.0 of the inLab CAD software.



The Author

Jens Richter

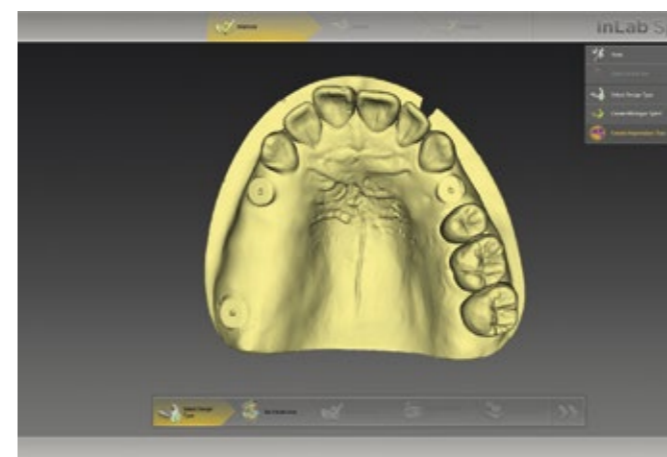
Zahntechnik Kerstin Straßburger
Noßwitzer Weg 1
09306 Rochlitz, Germany
E-Mail: post@sofg.de
www.sofg.de
Phone: +49 (0) 37 37/4 25 87



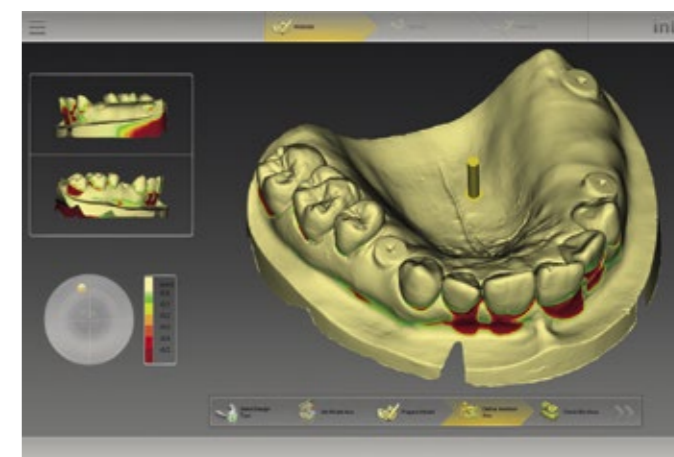
First, the case details are logged in the "Administration" phase of the inLab CAD software, and the "Michigan Splint & Tray" indication is selected.



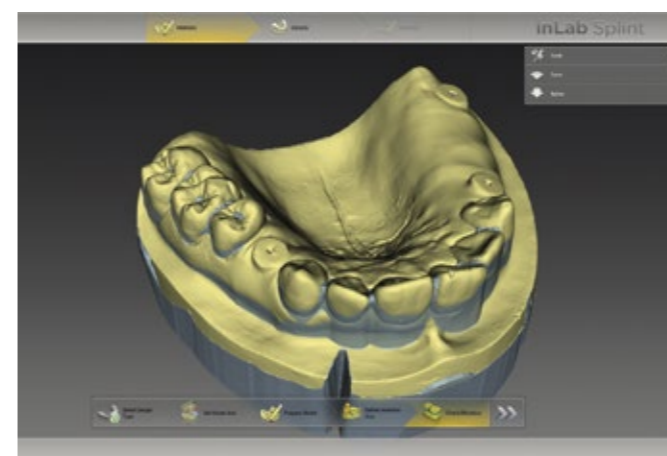
In the present case, the impression was scanned with the inEos X5 within the inLab software. Next, the inLab Splint app is started to which the existing scan data are automatically transferred.



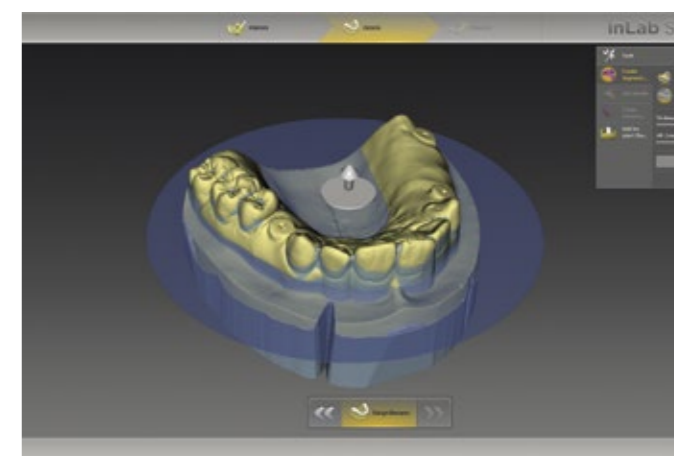
In the inLab Splint app, the model is displayed in the "Prepare" phase, "Create impression tray" is then selected.



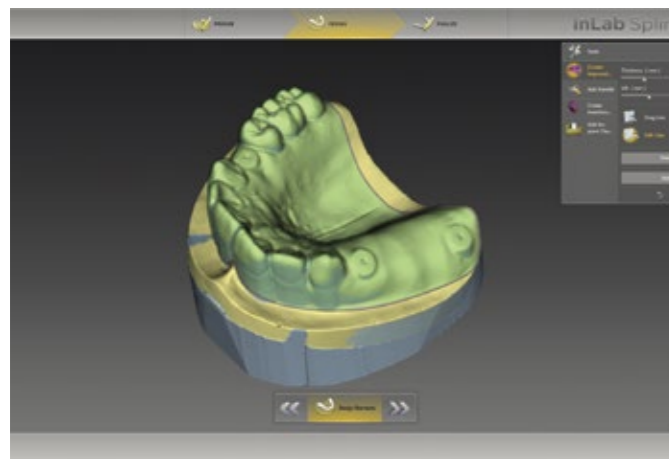
The insertion axis can be set by moving either the yellow arrow in the middle of the model or the orange sphere near the left edge of the screen.



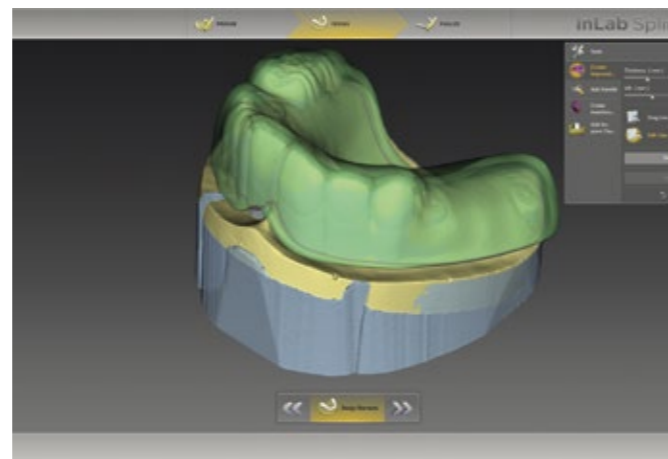
The software then automatically calculates the blocked out areas, shown here in light blue, for checking.



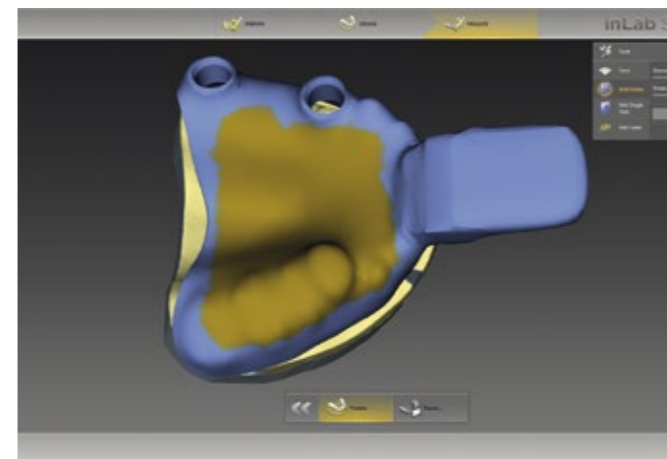
In the following "Design" phase, the tray contours are outlined first. The software offers two options to achieve this, "Create by Line" or "Create by Plane." The latter was chosen for the presented case.



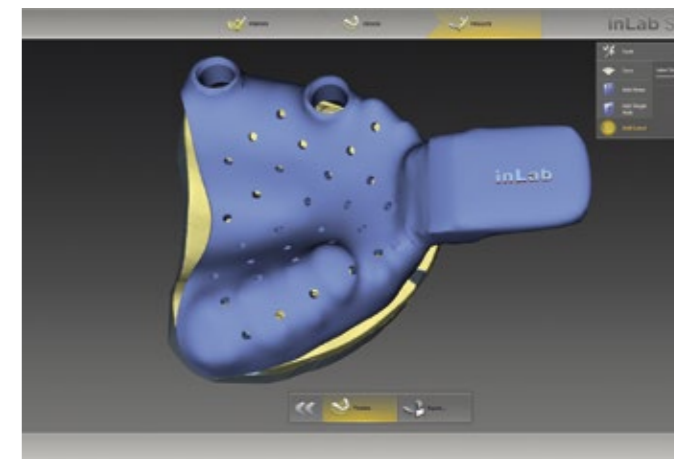
The calculated proposal can be reviewed individually and edited if required.



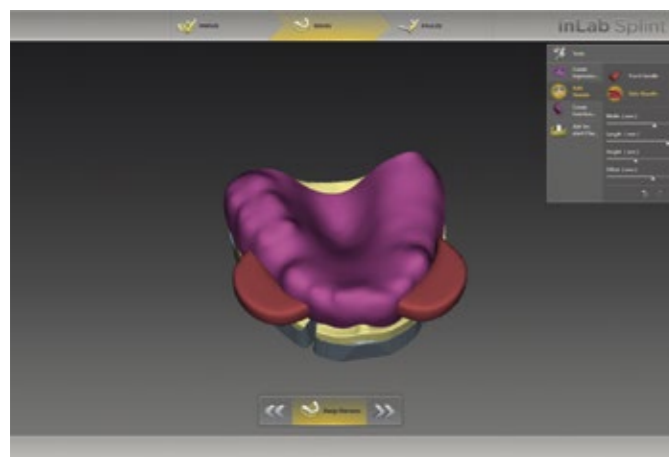
Furthermore additional settings can be applied, e.g. tray "thickness" and the "lift" between soft tissue and inner side of the tray. These adjustments can be found in the "Tools" window by simply activating the slider to the desired setting.



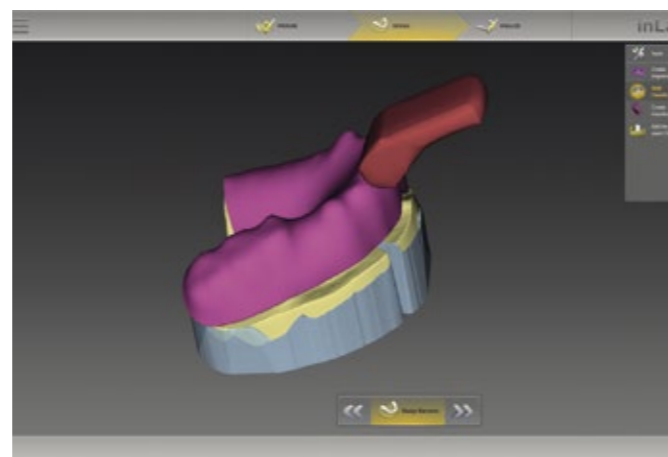
In the "Finalize" phase, for any retention holes that the tray may require, the relevant area is first highlighted.



Clicking "Apply" adds the retention holes according to the specifications. The finished design can be exported as an STL file via the inLab software interface for subsequent manufacturing using the process of choice.



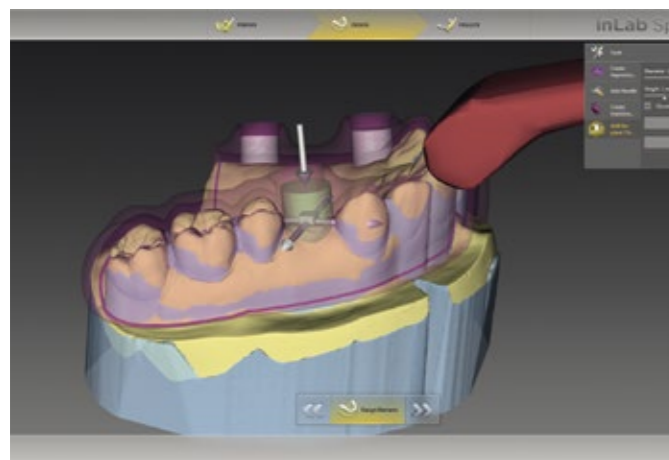
The software also provides for the placing of different grips: on either side ...



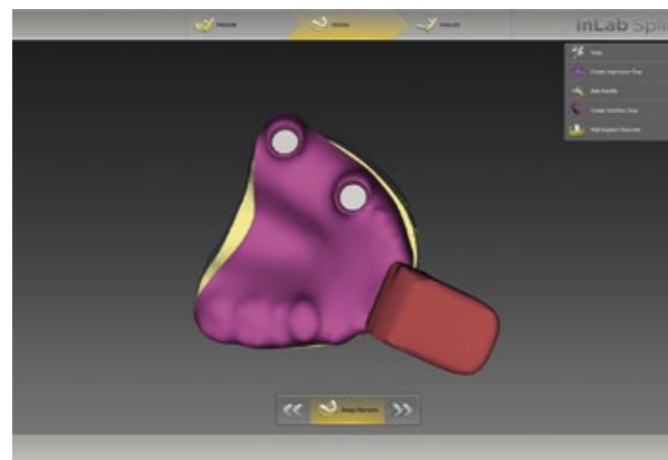
... or up front of the tray.



The design created with the inLab CAD SW was produced using a 3D printer.



Implant channels can be placed and individually adjusted in width and height for both open and closed impression trays. Impression stops are also provided.



The next step displays the finished tray - here with open implant channels for impression posts on the implant sites and a labially positioned grip.

Benefits for the laboratory

The inLab Splint app has proven to be a versatile and user-friendly application for the production of individual functional impression trays. It allows the tray to be designed simply, quickly and according to the requirements of the respective case. In addition, the optional interface module to the inLab CAD software facilitates exporting the data of the finished restoration, including the implementation of the design using a 3D printer.

inLab Partial Framework simplifies the creation of frameworks for removable partial dentures

The digital workflow offers the dental laboratory a broad variety of design options. What may be less well-known is the fact that this digital workflow can also support dental technicians in producing classical types of restorations.



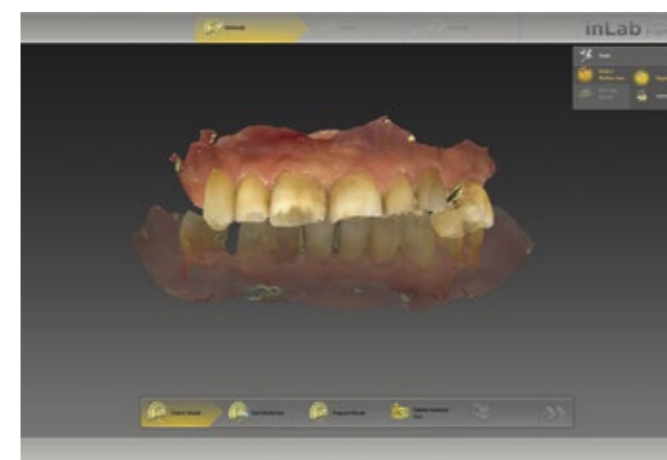
The digital order is received, checked, and accepted in the inLab CAD software via the Sirona Connect portal. The design type "model casting" is then specified in the "Administration" phase.



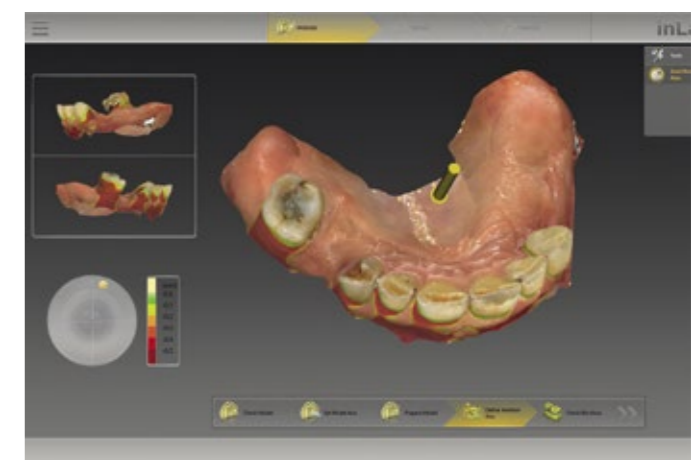
In the "Model" phase, the upper and lower jaws are displayed based on the digital impression so that the occlusion can be checked.



Once the model axis has been precisely aligned, ...



... the Partial Framework app of the inLab software is loaded in the appropriate window. The case data is automatically passed on to the Partial Framework app. In the next step, the upper jaw is selected as active jaw.



The insertion axis is defined, in which the degree of the under-cuts, the position of the clasps and where the tips of the clasps should be placed.

Case report:

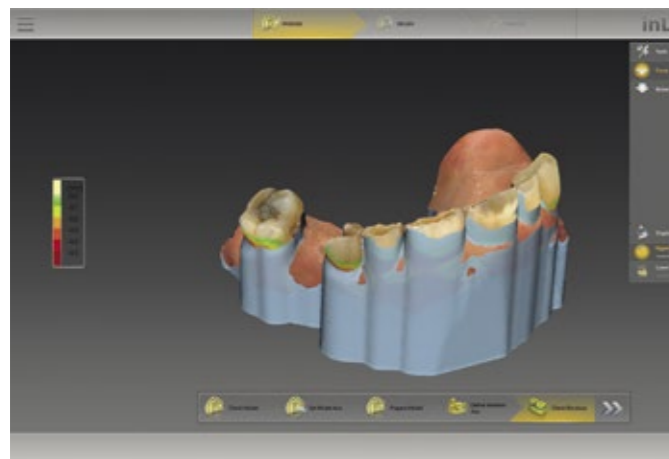
For the partially edentulous jaw, this has long become a proven restorative mode. Partial denture frameworks, produced from cast metal are classical products in everyday dental laboratories. Thanks to digitization, the associated workflow is now simplified, more reliable and optimized in terms of cost-effectiveness. The following case report illustrates exactly how this optimization works. In this example, a cast metal partial framework denture was digitally fabricated using the inLab CAD software 18.0.



The Author

Jens Richter

Zahntechnik Kerstin Straßburger
Noßwitzer Weg 1
09306 Rochlitz, Germany
E-Mail: post@sofg.de
www.sofg.de
Phone: +49 (0) 37 37/4 25 87



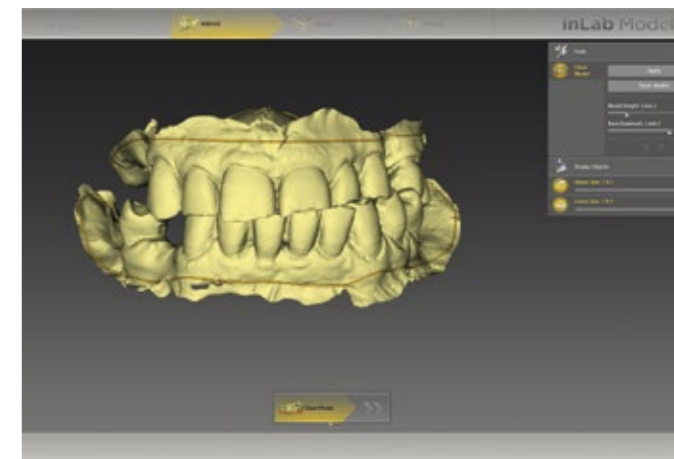
In the following block-out model screen, a reduction can be made in the area of the clasps. This ensures that the clasp tips will later be sufficiently deep inside the retentive undercuts.



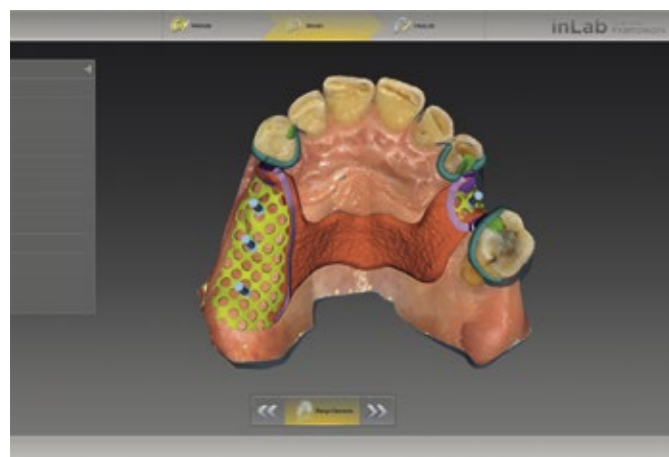
In the following "Design" phase, the dental technician can apply all the elements required for casting – such as palatal plates, bars, or clasps – to the model as needed.



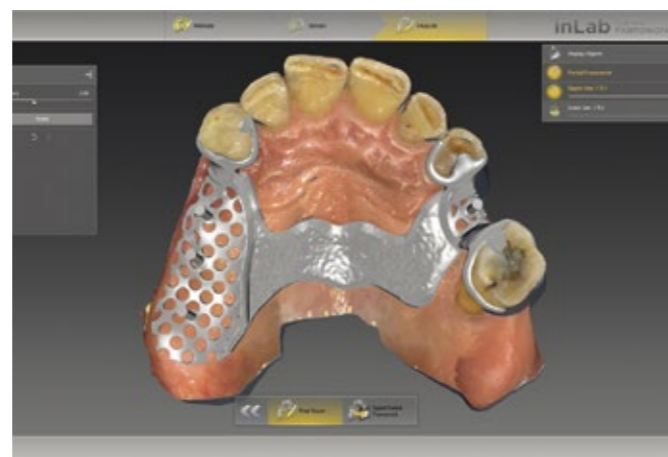
Before transferring the data to the 3D printer, a support bar (blue) is added for stabilization. The clasps also received an additional support before going to printing (red). This complete design can now be easily printed, sprued and cast.



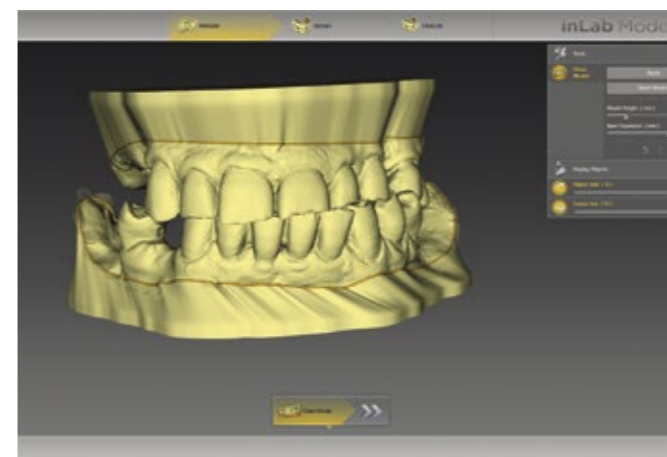
In the presented case, a physical model is produced after the partial framework design has been cast in metal. This facilitates the inspection of the fit at a later stage.



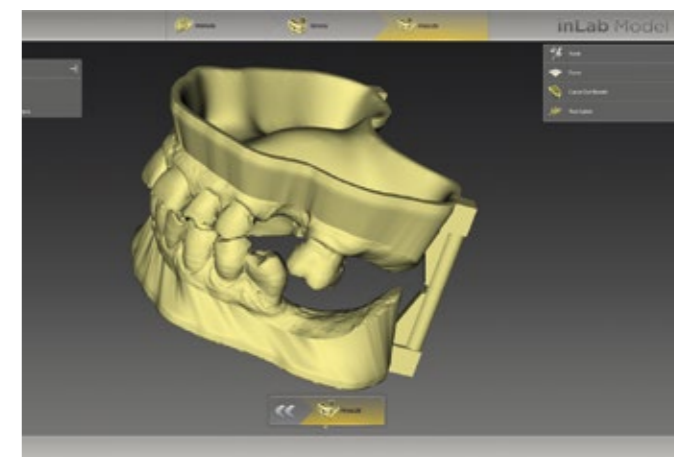
Having added the required design elements, these are first shown individually (recognizable by their different colors) on the model.



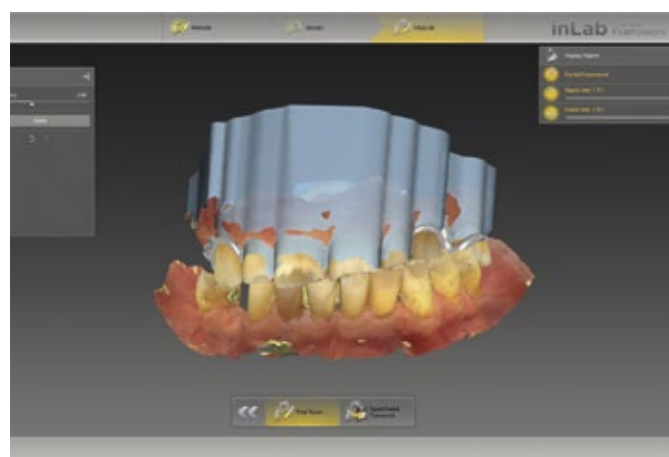
The software then merges the individual elements into a uniformly displayed workpiece. Before finalization, additional material can be applied or other refinements made.



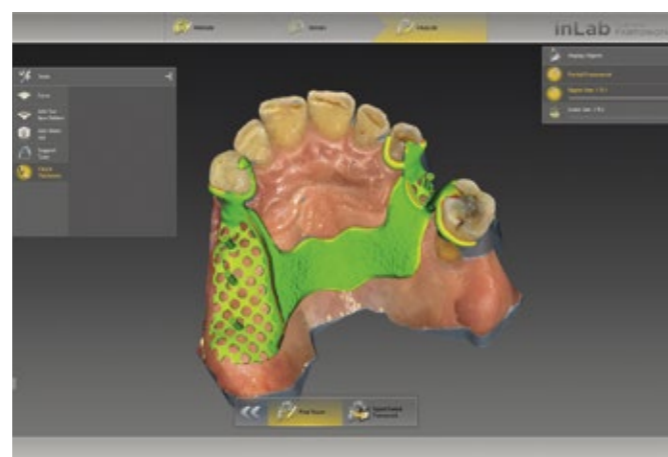
Therefore the existing impression data is transferred to the inLab Model app, where the models first receive a model base, ...



... supporting connectors are added for subsequent mounting in the articulator and finally, the model bases are released for 3D printing.



In the following "Finalize" step, the occlusion can be checked against the opposing jaw.



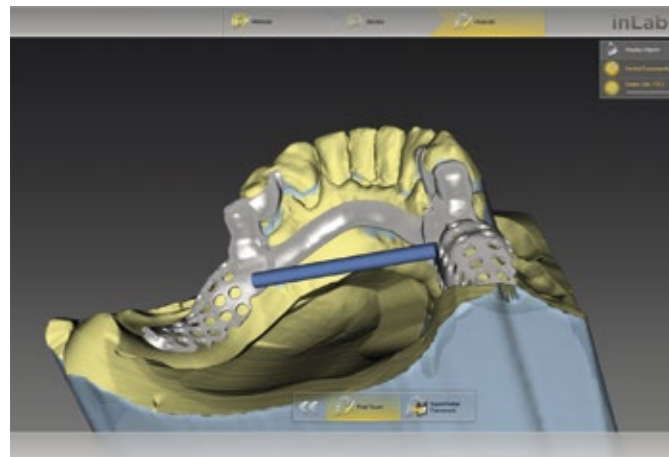
A particularly useful feature of the inLab software is the option of checking the thickness and strength of the material. The color scale shows the technician where material might need some adding. For example, in the present case, a small amount of material was added in the area of the clasps.



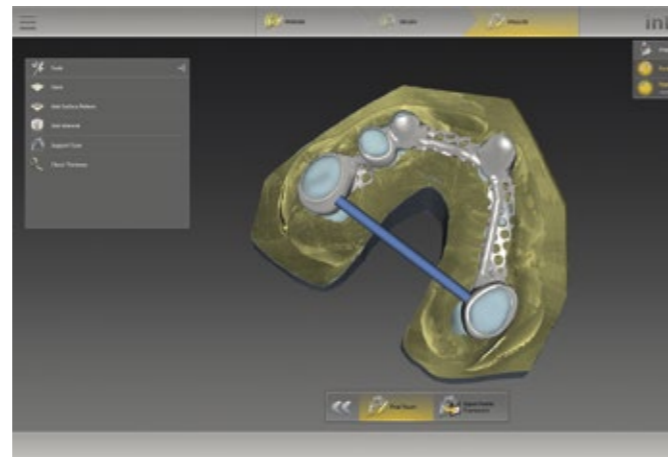
The finished cast metal framework for checking on the printed model.



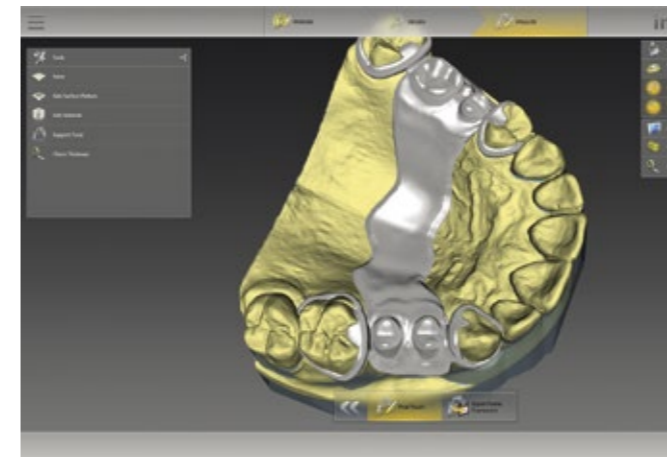
inLab Partial Framework: There is more



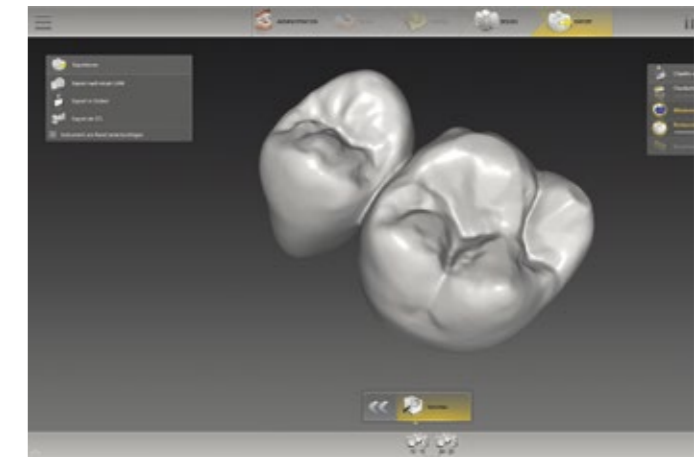
Digital production of frameworks with precision attachments, ...



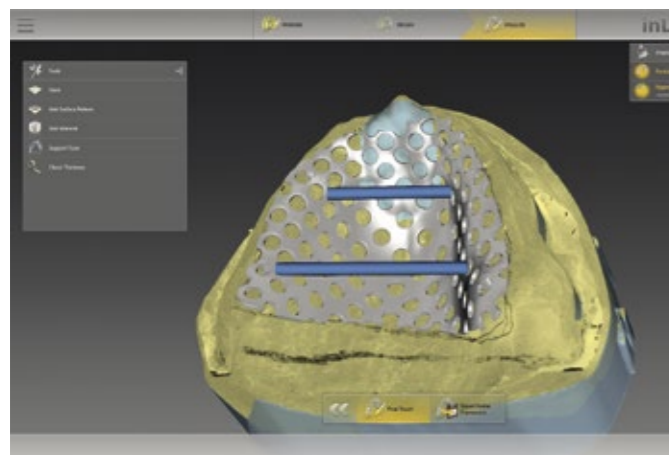
... telescopic dentures, ...



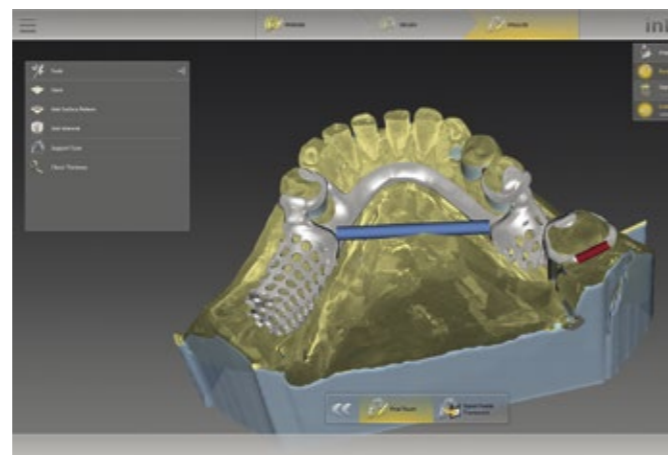
A further option would be a framework milled from a highly elastic resin (PEEK) including customization with matching restorations. In the case shown here, both the PEEK framework and the bridges were made on the inLab MC X5 and adhesively joined immediately thereafter.



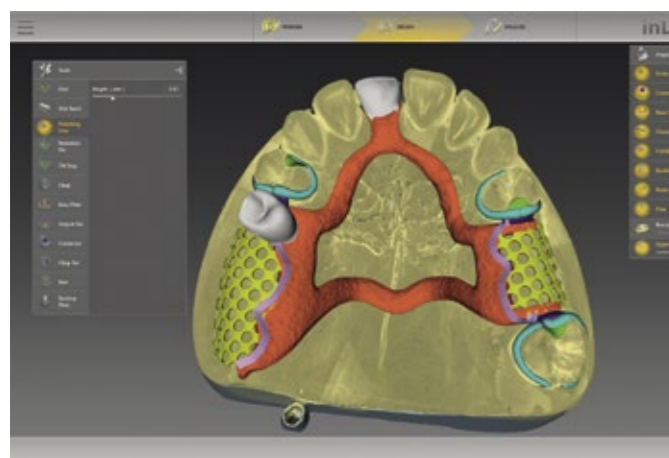
The restorative design is created directly in the inLab software and then converted into zirconia (Cercon) for maximum esthetics. In this way, inLab Partial Framework can also be used to create completely metal-free restorations.



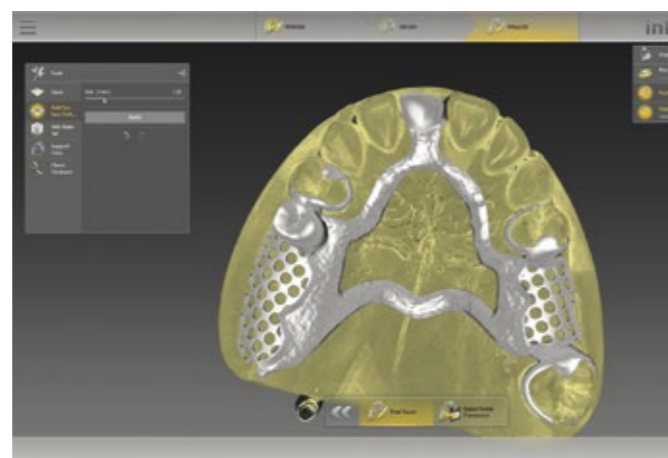
... retentive meshes, ...



... or cast metal frameworks for mandibular dentures.



Cast metal frameworks can also be designed with backing plates and occlusal surfaces.



Benefits for the laboratory

The all-digital workflow presented here, with the intent to create a framework for a removable partial denture, starts with a digital impression. It continues on to the design step using the inLab CAD software, and proceeds to exporting the data into an open STL file format finally to the physical representation by means of a 3D-printer to form a model from synthetic material. This procedure offers several advantages compared to the classical casting method. These advantages include shorter preparation times and reduced material use, both of which help improve economic efficiency. In addition, the printed object can be used to check the fit of the framework before actually casting it in metal. Any necessary corrections can thus be taken care of in advance, shortening the time needed for finishing.

As an alternative to the 3D printing process described here, the framework could also be milled from PEEK on a milling unit such as the inLab MC X5. An alternative approach, would be to use the design (since it is presented in open STL format) to produce the framework directly using the selective laser-melting (SLM) process. This means that the dental technician has various manufacturing options available when using the inLab software, and can customize the workflow for the needs and requirements of the case on hand.

Multilayer Gingiva Design

Especially with edentulous or partly edentulous patients there is a need to fabricate restorations that also reproduce satisfactory pink-white aesthetics in an efficient manner. With the multilayer gingiva function, the inLab CAD Software offers the dental lab a reliable option to achieve this goal.

Case report:

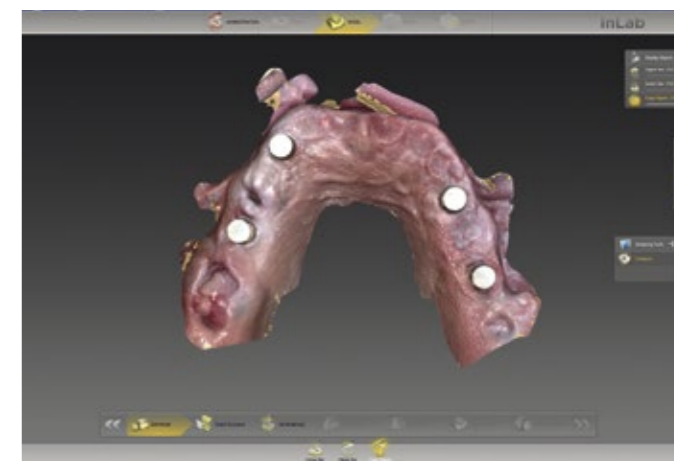
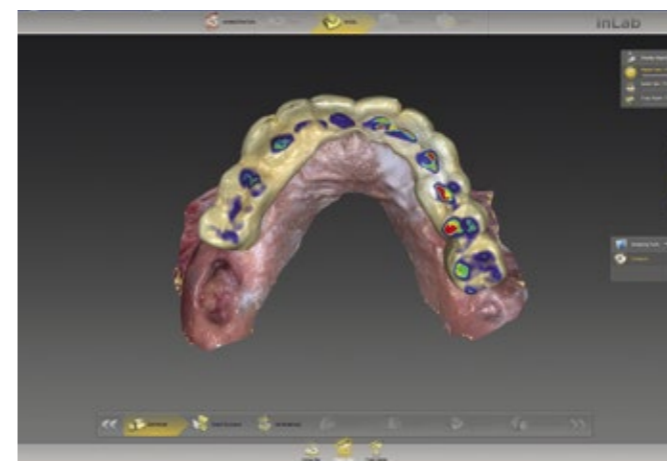
A patient presented in the dental practice with a completely edentulous upper jaw that had been treated with an aesthetically and functionally insufficient implant-supported prosthesis. The treatment plan called for a replacement of mentioned prosthesis in order to restore the best possible masticatory function and provide the patient with pleasing pink-white aesthetics again. For this purpose the dental laboratory used the multilayer gingiva function of the inLab CAD SW 18.0 to design a prosthesis framework with gingiva and preparations as well as the three corresponding top layer bridges in one coherent workflow. The following descriptions shows the laboratory procedures in detail.



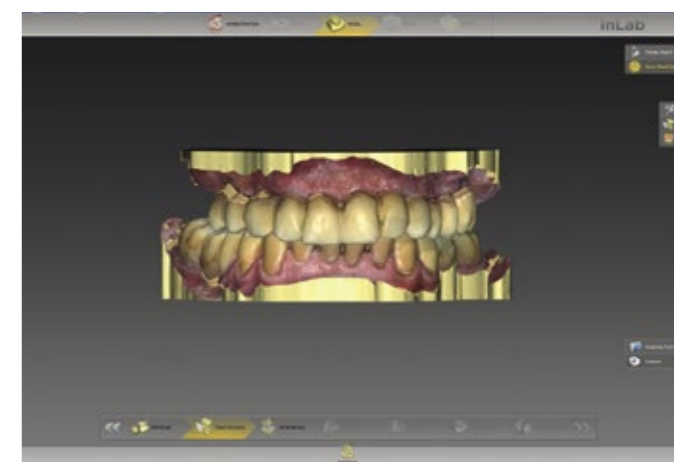
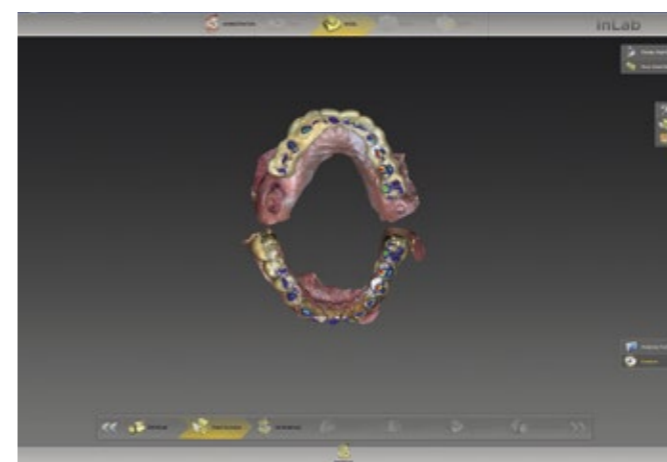
The Author

Massimo Merli

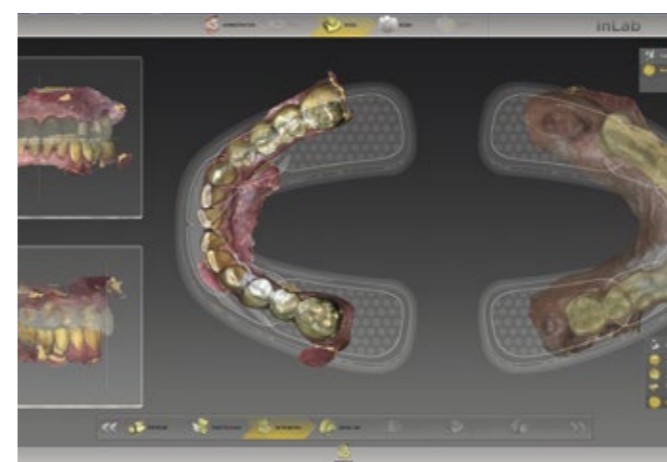
Via Garibaldi 5B
20882 Bellusco, Italy
E-Mail: info@massimomerli.com
www.massimomerli.com
Phone: +39 039 62 27 68



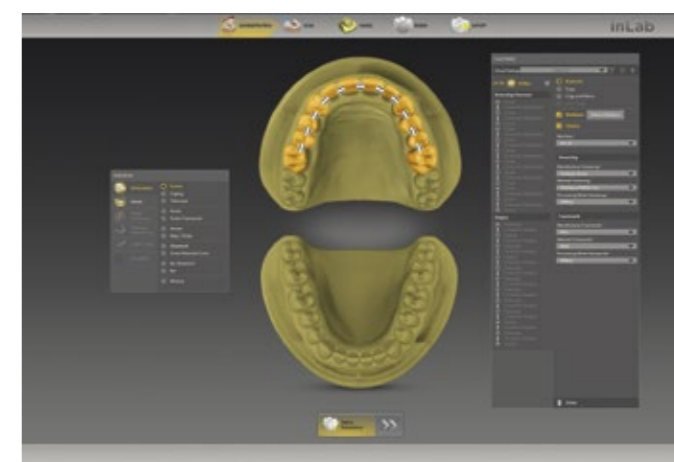
First of all, the case is downloaded via the Sirona Connect Portal. A corresponding form contains information on the case and offers the dental technician to either accept or decline the case. The intraloral scan data are displayed directly in the inLab software. Shown here, the superior BioCopy (left) and the upper jaw (right). The latter already displays the four conus caps of the individual abutments (Atlantis Conus Abutment (OD), Dentsply Sirona Implants) which have been customized beforehand. Both images are automatically correlated during intraoral scanning in order to determine the occlusal height and the vestibular situation. This way a functional restoration with superior esthetics is designed safely and easily.



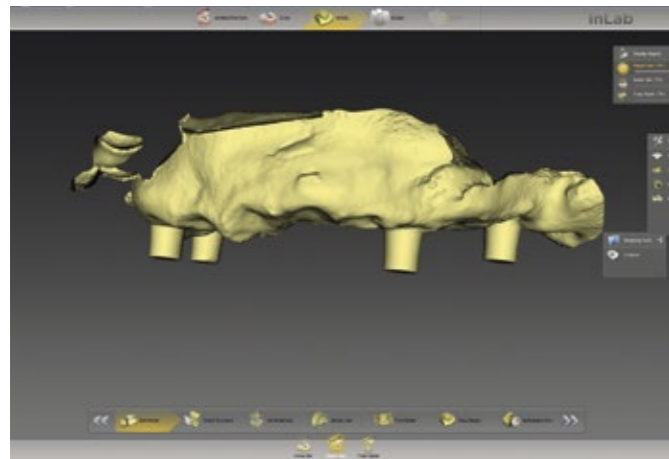
Check the balance of occlusal contacts of the existing restoration.



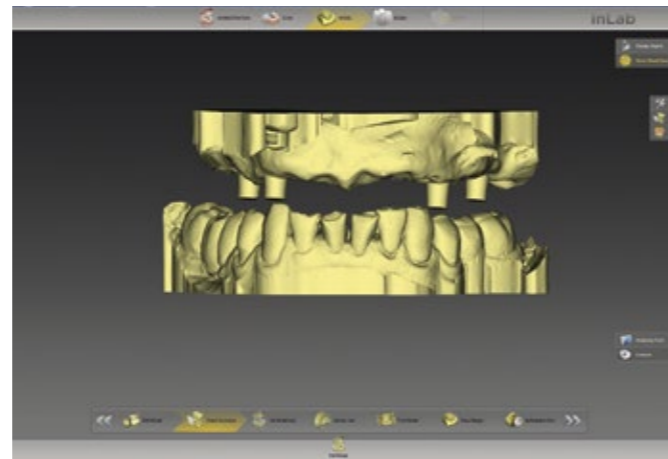
The model axis is aligned and the files are exported in the STL format in order to create a new case within the inLab software.



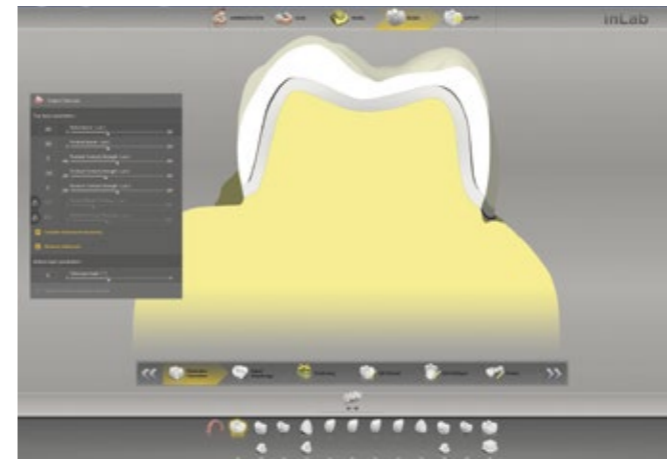
In the "Administration" phase the checkboxes "Multilayer" and "Gingiva" are activated. The esthetic portions of the restoration are split into three bridges (14 to 16, 13 to 23 and 24 to 26).



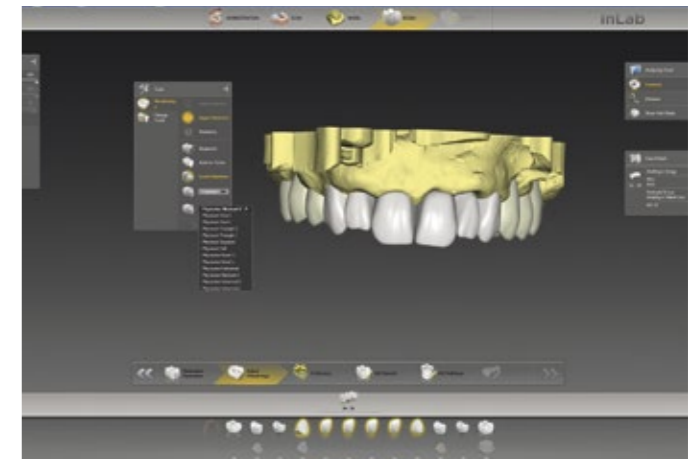
Both jaws of the model can now be separately viewed (the picture shows the upper jaw).



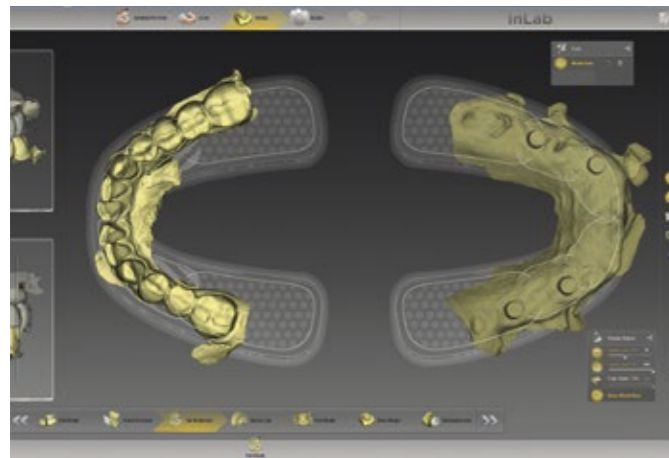
Also the dimensional relationship between the two arches is checked.



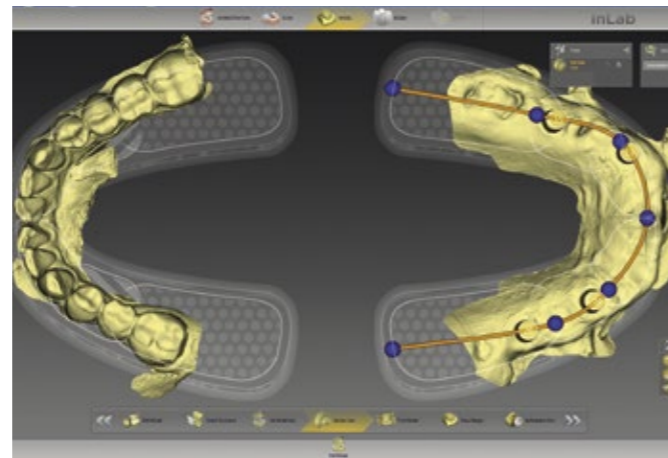
In the "Design" phase different parameters of the multilayer bridge are defined.



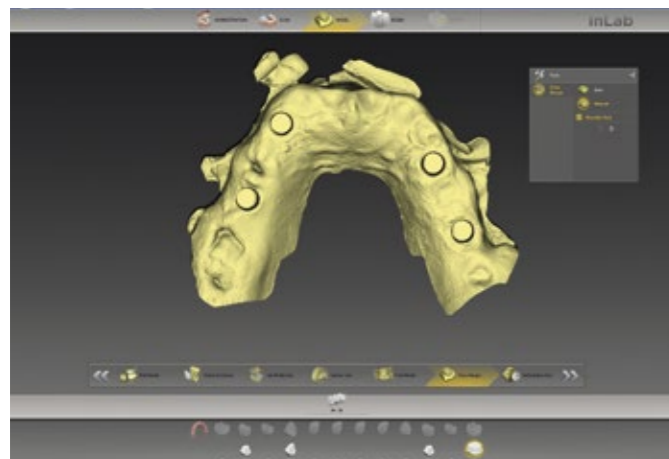
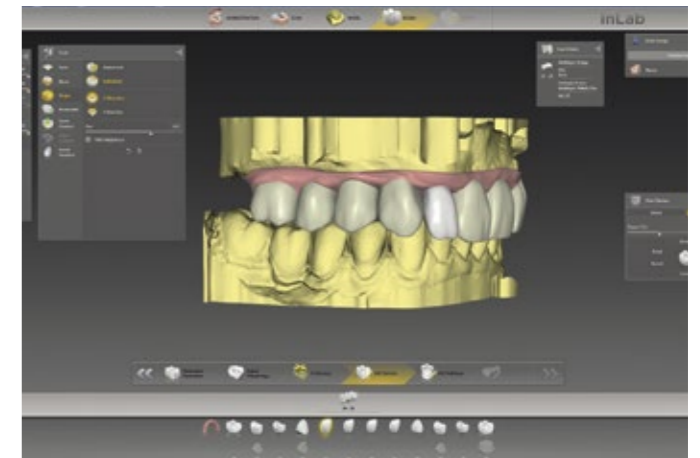
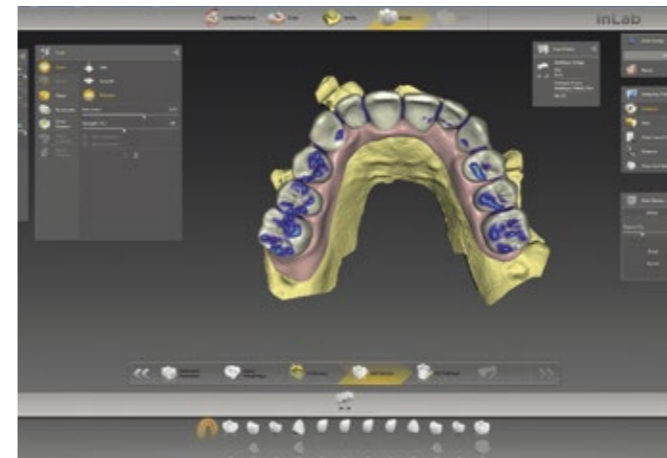
The desired dental morphology is chosen using one of the integrated tooth libraries of the inLab SW.



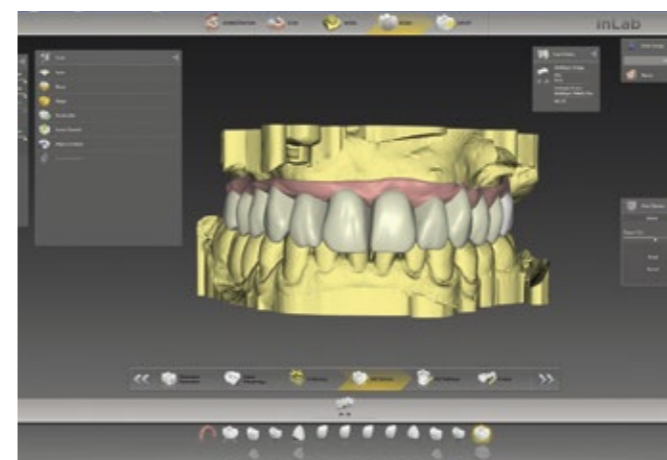
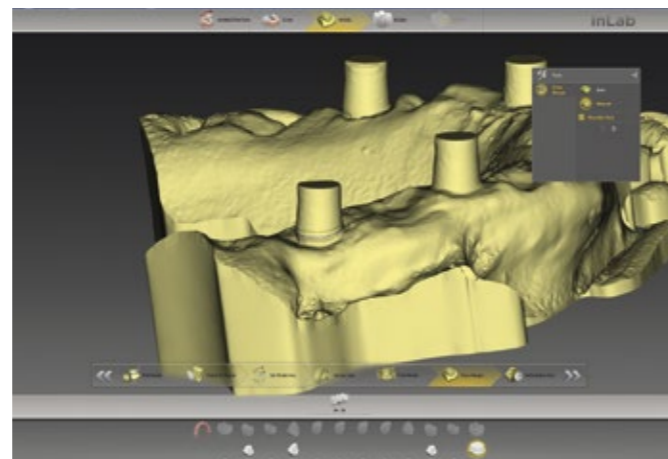
Based on the BioCopy scan (to the left) the models of the upper and lower jaw positions are adjusted in their correct alignment.



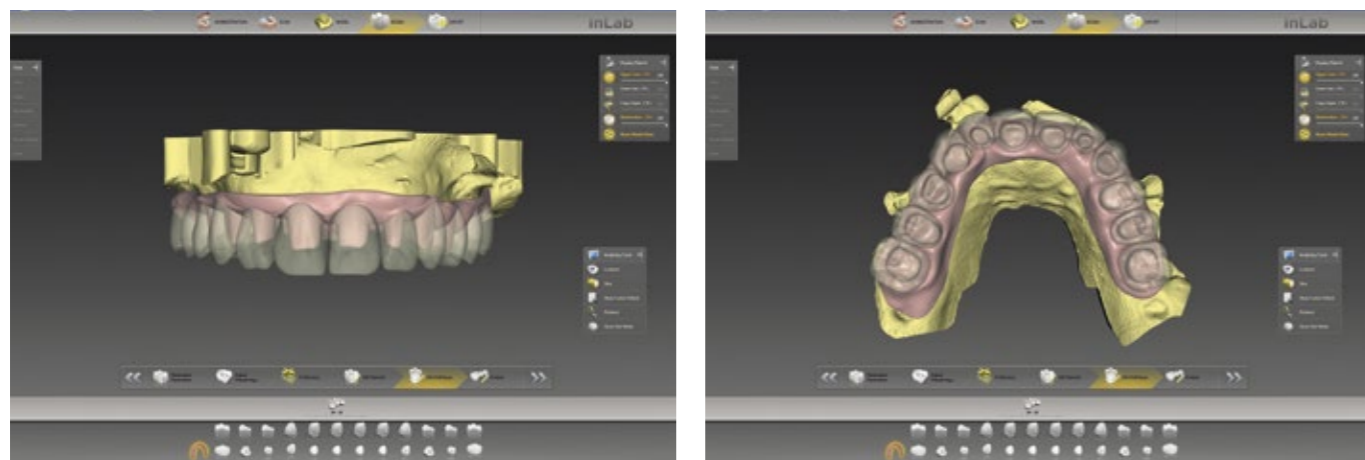
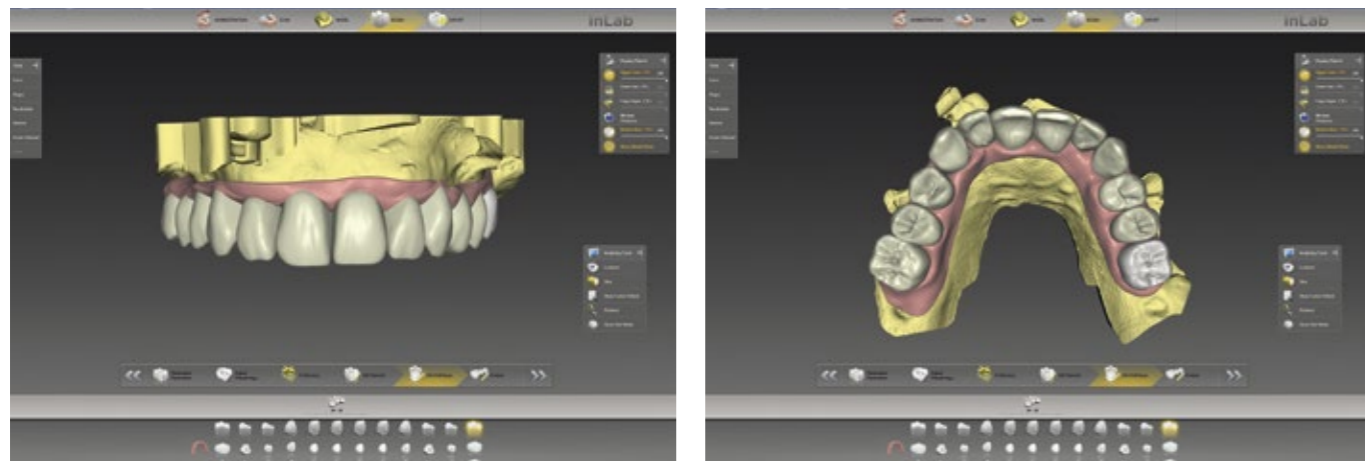
Next, the jaw line of the upper jaw (to the right) is defined. This step is particularly essential since it has a decisive impact on the software's design proposal.



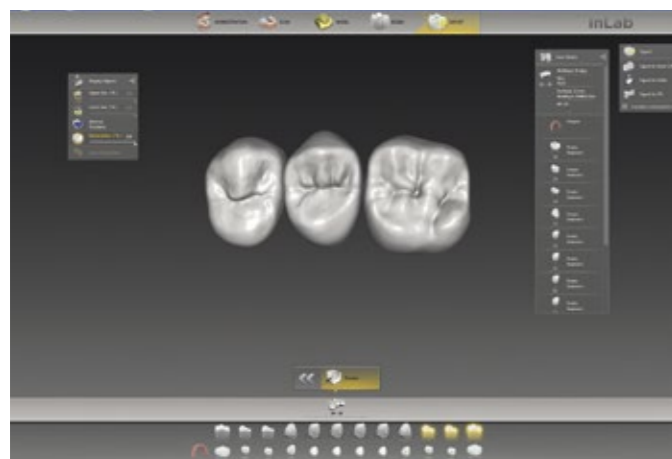
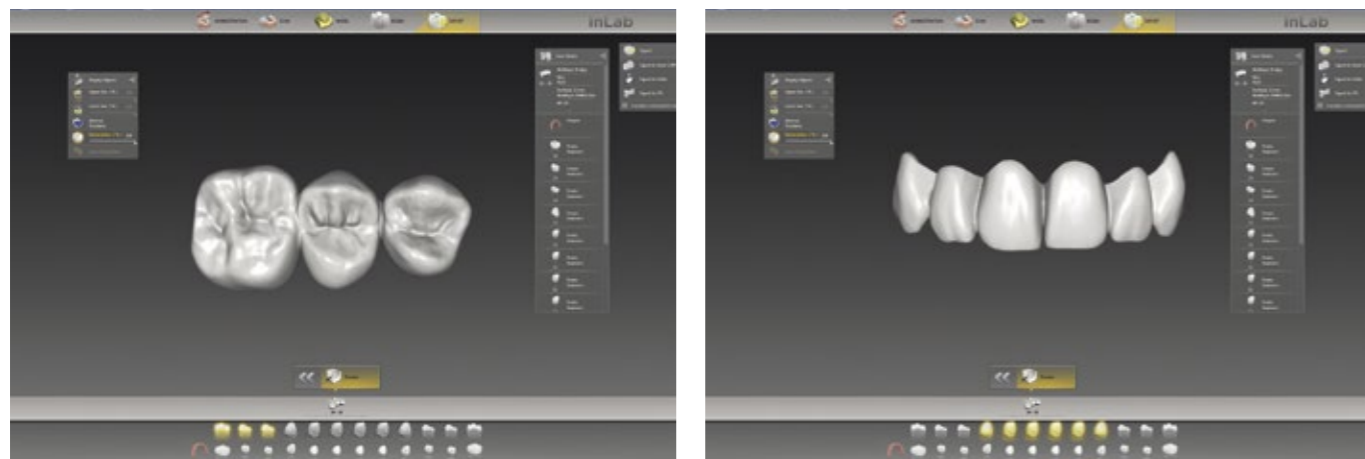
The margins on the caps are drawn, this can be done automatically or, as shown here, manually. Furthermore, the common insertion axis is determined by using the virtual model.



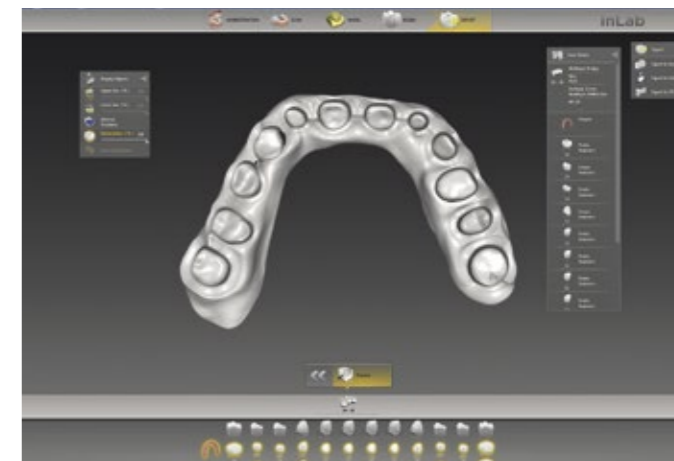
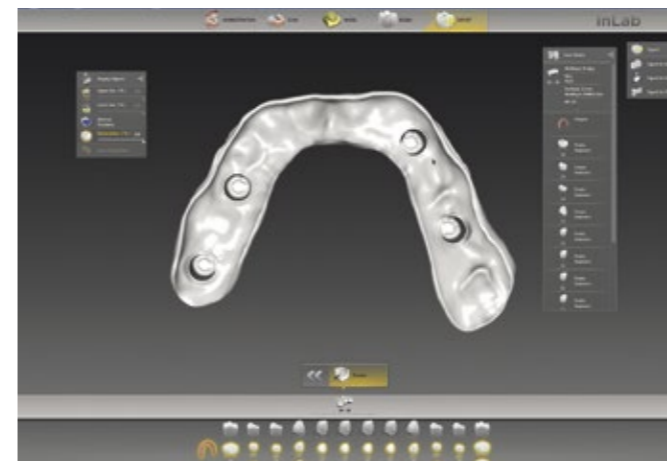
The final bridge design with gingiva visualized by occlusal, labial and sagittal views.



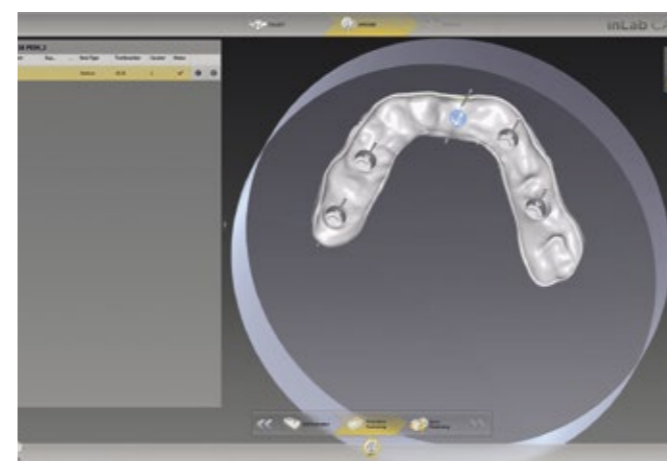
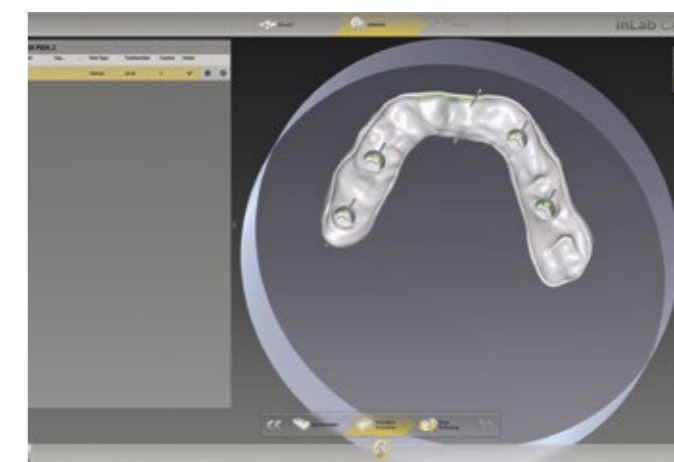
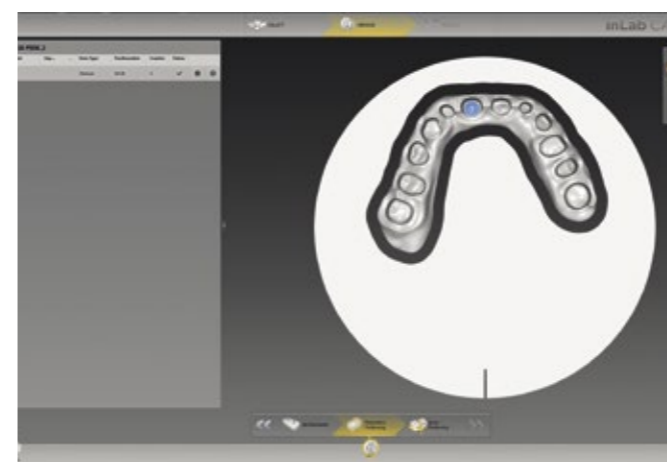
Labial and occlusal view of the bridge: The top row shows the final design with the veneering structures of the bridge. In the bottom row those bridges are visualized as semi-transparent contours in order to reveal the underlying framework preparations.



Before the design is exported to the inLab CAM software a last revision is possible in the "Export" phase of the software. Here, the three bridges are shown that later will be milled from composite and ...



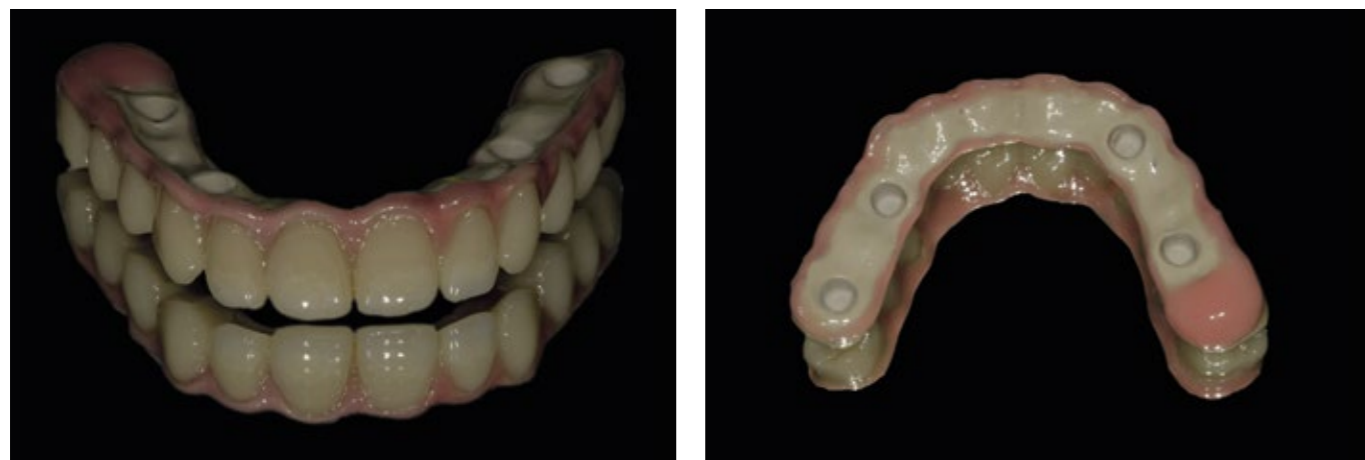
... cemented adhesively to the framework substructure made from PEEK. This allows for an extremely light, biocompatible and resistant restoration that is easy to polish, even in the basal areas.



In the inLab CAM software the substructure design is automatically positioned within the disk. The author also used the option to further optimize the extent of the undercuts in some areas.



The bridge designs are positioned into a composite disk that has already been used before. The software finds the optimal position to minimize the loss of material while allowing for the ideal milling strategy. In this step it is also possible to choose the detail level for the occlusal structure - in this case the detail level "very high" was selected.



The final restoration: After milling the PEEK framework substructure as well as the composite bridges both components are cemented adhesively and polished.



The patient's oral situation before and after incorporating the new prosthesis. The first two pictures (top row) show the upper jaw with the four Atlantis Conus Abutments and the corresponding retention caps, whereas the last two pictures (bottom row) show the final work in situ - special thanks go to Dr. Emilio Margutti for providing the clinical pictures!

Benefits for the laboratory

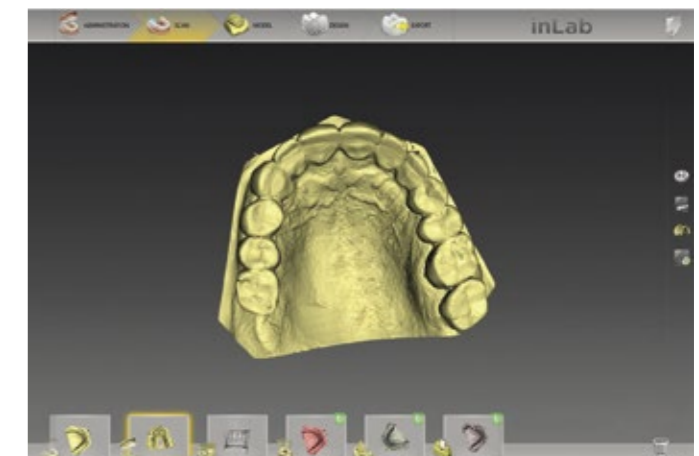
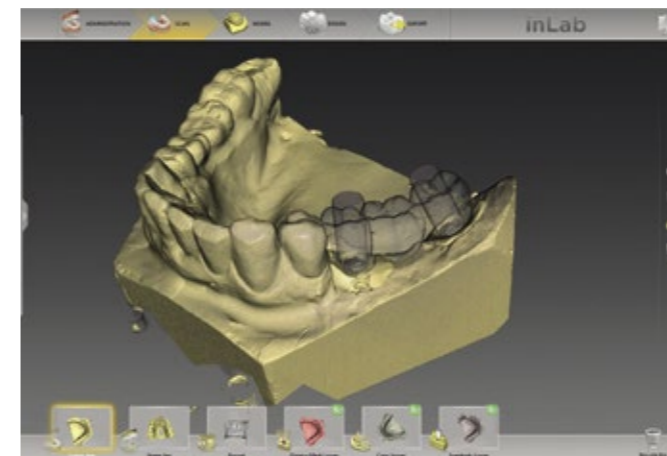
When it comes to creating a removable prosthesis as shown in this case, the inLab CAD SW provides the dental lab with a major advantage: It combines the design of the top layer restorations (crowns or bridges) and the prosthesis framework in one single project. This way, there is no need to redesign the top restorations - saving the dental technician a significant amount of time. All things considered the inLab CAD SW easily allows for obtaining a multilayer restoration and establishing the basis for an excellent milling result.

Corresponding to the original design: the 1:1 Copy Mode

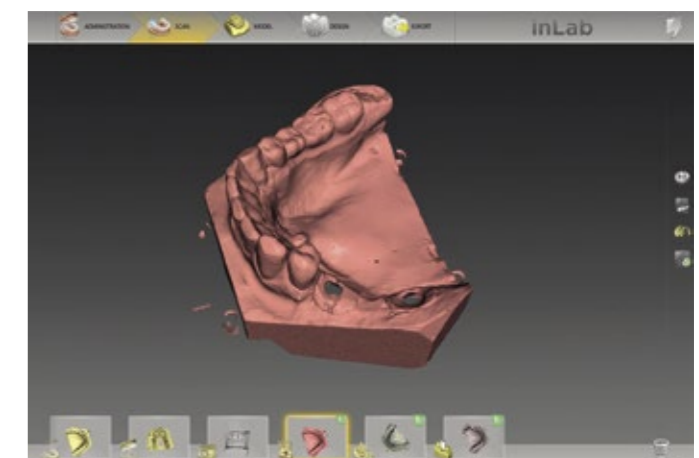
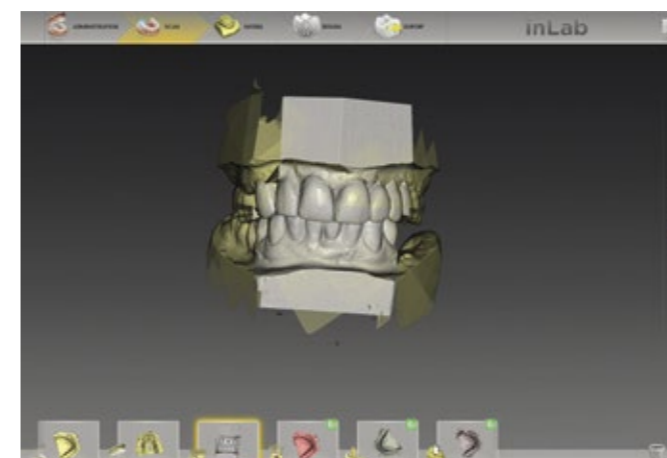
When replacing a restoration it is by no means always necessary to discard all of the previous design – on the contrary, sometimes the dental technician explicitly wants to transfer the existing design into the new restoration. The inLab CAD SW enables this approach with the 1:1 Copy Mode.



To create the case, the checkbox "1 : 1 Copy" in the "Administration" phase of the inLab CAD SW is activated.



In the phase "Scan" all of the necessary scans for the corresponding image catalogs are taken. This includes scans of the lower jaw (left) and the upper jaw (right) ...



... as well as a buccal scan (left), the gingival mask of the lower jaw (right) ...

Case report:

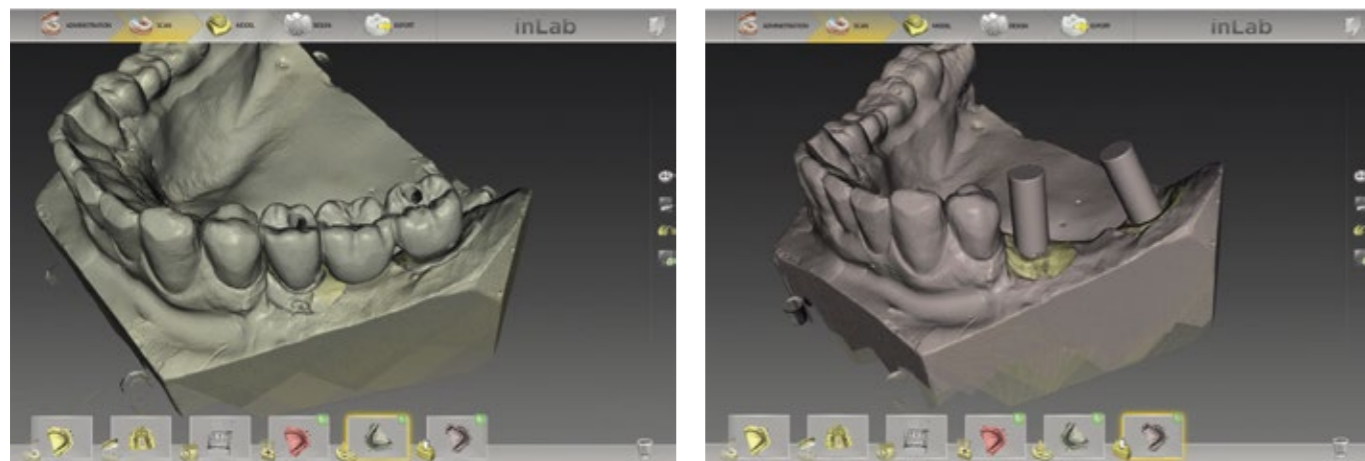
In the presented case, a patient with two implants in the lower jaw (35 and 37) is to be treated with a screw-retained three-unit bridge (35 to 37). In a doctor-patient-consultation it was agreed upon that the bridge should be milled from zirconia. Since the patient was very pleased with the anatomy of his temporary bridge already, the task was to transfer its design one to one into the final restoration. The steps leading up to the desired result using the 1:1 Copy Mode in the inLab CAD SW 18.0 are shown below.



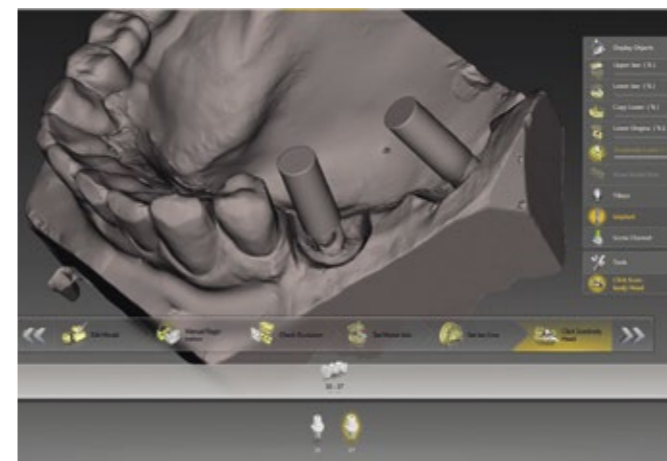
The Author

Eric Berger

Dental Technique Berger
10 Rue du 11eme d'Aviation
57155 Marly, France
E-Mail: ericberger@dental-technique-berger.fr
www.dental-technique-berger.fr
Phone: +33 38 73 61 277



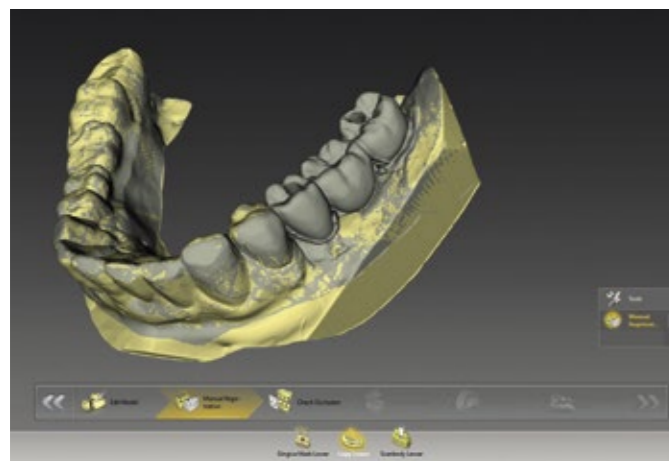
... and the scans of the provisional restoration (left) and the scan-bodies (right).



The implant position is automatically detected by the software.



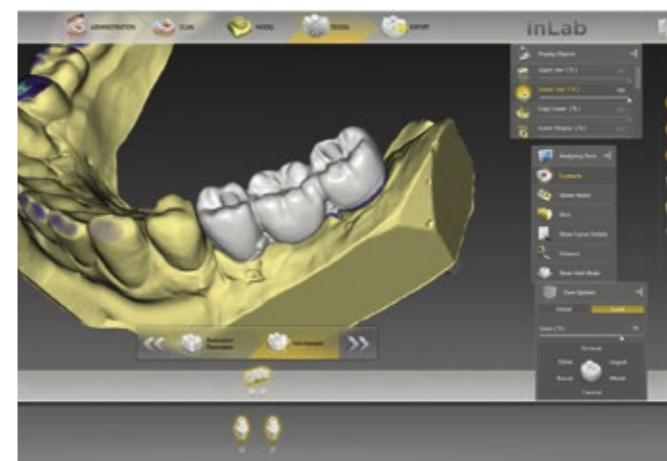
In order to achieve a good connection between the bridge and the adhesive titanium caps, it is important to specify the restoration parameters e.g. spacer, minimal radial thickness and minimal occlusal thickness.



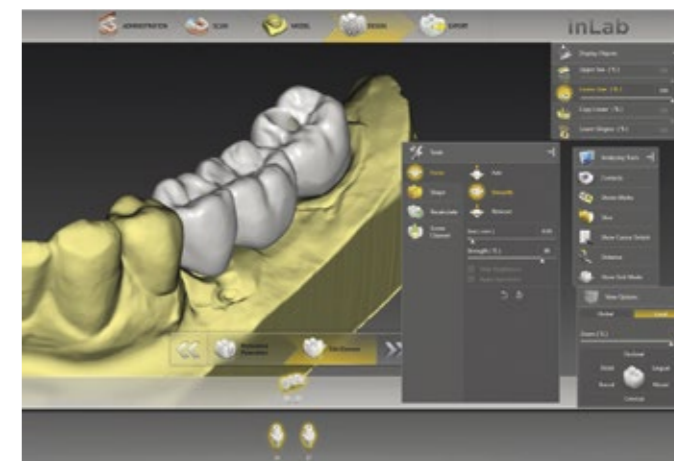
The correlation of the models is automatically carried out by the software.



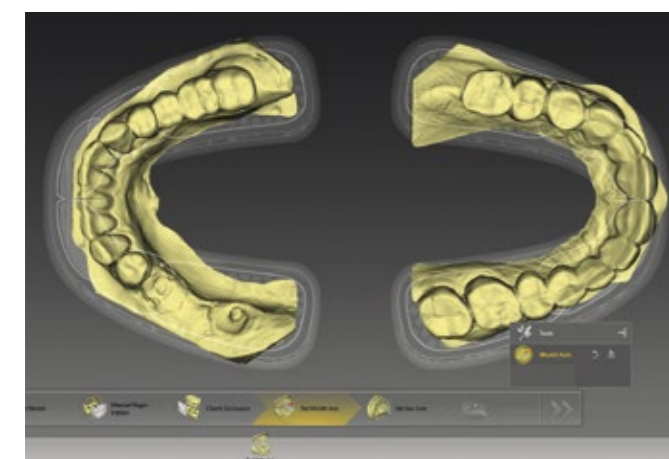
In the following step the occlusion is checked and, if needed, corrected.



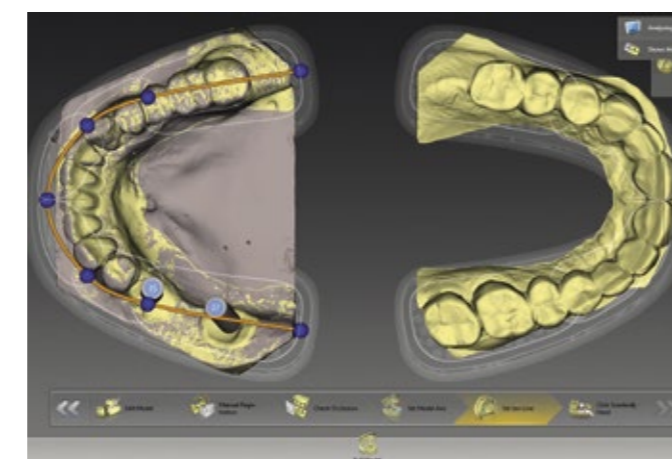
The step "Edit Element" is particularly easy to handle in this case. The 1:1 Copy mode does not require a copy line, it copies exactly what was scanned in the copy image catalog and proposes the restoration.



The software provides a perfect copy of the temporary restoration, some final editing is possible if necessary.



In the "Model Axis" step, the orientation of the model, occlusal plane und midline are set.



Then the jaw line of the lower jaw (left) is set, and the corresponding tooth numbers (35 & 37) are placed over the corresponding scan body positions.



Afterwards, the restoration is ready to be exported. In this case the inLab MC X5 milling unit (Dentsply Sirona) was used. The case can also be exported into a STL format in order to utilize other open production units.



The adhesive caps and the corresponding multi-unit abutments in detail: Later on, the adhesive caps will be permanently bonded onto the zirconia bridge.



A close look at the final restoration on the model.



Both bridges are identical in their anatomy, but the final restoration (right) is aesthetically a tremendous improved upgrade of the temporary restoration (left).



The final restoration close-up and screwed onto the model.

Benefits for the laboratory

When the design of an existing restoration, may it be a temporary one or just an older restoration, needs to be reproduced, the inLab CAD SW provides the dental laboratory with an especially advantageous tool: the 1:1 Copy Mode. Based on the original design it delivers an identical design proposal which then can be individualized in the desired way. With this function it is possible to meet the needs of patients who are looking for the exact same wearing comfort they are used to from their previous restoration or a temporary restoration. With the help of the inLab CAD SW the dental technician is able to create a restoration that corresponds exactly to the original without having to re-design it. Especially when it comes to complex cases e.g. bridges with gingiva the 1:1 Copy Mode provides restorations with the perfect morphology and dynamic occlusion in minimum amount of time.

Dentsply Sirona

Sirona Dental Systems GmbH
Fabrikstraße 31, 64625 Bensheim, Deutschland
dentsplysirona.com

