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# WORKBOOK

(English)



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## INTRODUCTION

### What is FAS®?

The Face Aligner System is the FACE response to aligner treatment. Our professor and mentor Dr. Ronald Roth used to say that orthodontic appliances are just the vehicle to achieve a therapeutic result, which is what really matters. After studying the strengths and limitations of each system on the market, we have come to the conclusion, that it was necessary to develop a new aligner system in order to achieve our FACE treatment goals.

### Why FAS®

It is universally accepted that excellent outcomes are based on an accurate diagnosis and a realistic treatment plan. The goal consists of ideal masticatory function and orthopaedic stability, both vital to obtain a long-term stable occlusal relationship.

Based on a thorough diagnostic process FAS® takes into account and creates a realistic treatment plan in the ideal vertical dimension. The management of the vertical dimension is one of the aspects of the diagnostic process that distinguishes FACE and is of utmost importance to obtain an aesthetic and functional result. FAS® diagnoses and plans on the patient's repeatable arc of closure.



## Advantages of FAS®

The great advantage of FAS® is that we give our patients a correct chewing pattern and place the teeth in harmony with their joints. This allows us to obtain our aesthetic and functional goals and at the same time stability and longevity with long-term results.

FAS® uses innovative materials adapted to each stage of treatment that optimizes tracking and reduce treatment time. From diagnosis and planning to manufacturing with the FORESTADENT seal of quality.



”For once you have tasted flight you will walk the earth with your eyes turned skywards, for there you have been and there you will long to return.“

*Leonardo da Vinci*

## THE IMPORTANCE OF DIAGNOSIS

### Even more important in Aligner / Invisible Orthodontics

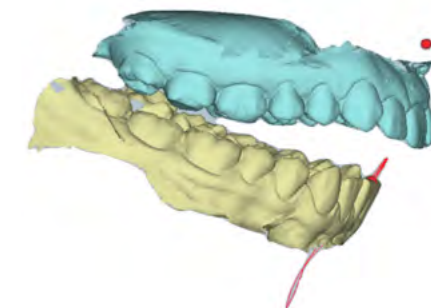
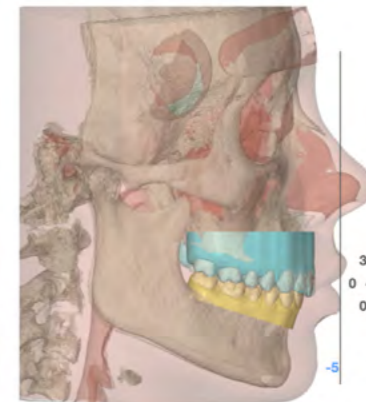
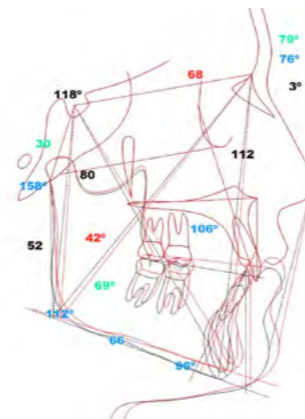
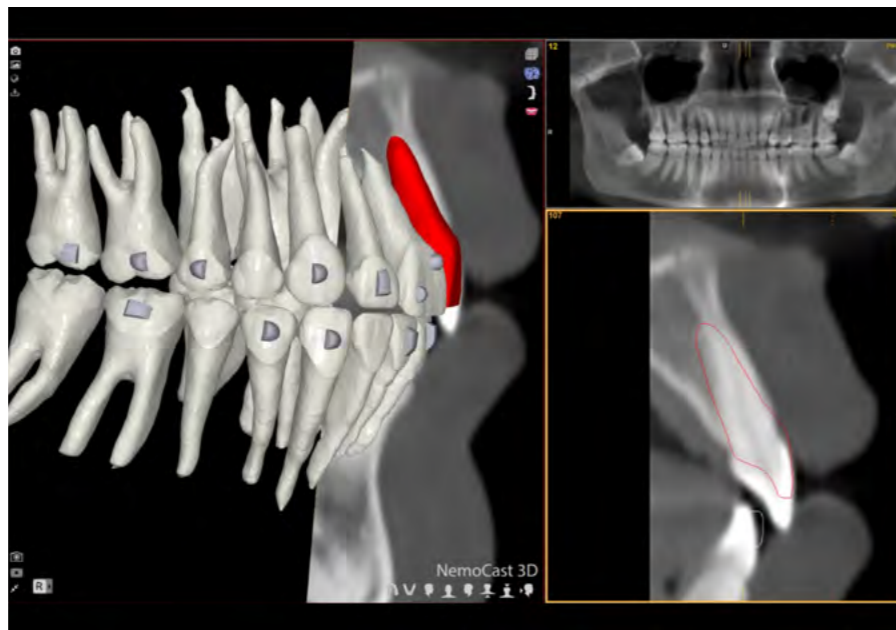
The key to a good result is based on an accurate diagnosis. The management of the vertical dimension is one of the aspects of the diagnostic process that distinguishes FACE and is of utmost importance to obtain an aesthetic and functional result. FAS® takes into account the vertical dimension.

Another important element for an accurate diagnosis is to take into account the roots of all the teeth in the three planes of space. Again, FACE differentiates itself by locating the roots in the alveolar bone in each treatment plan. This is a decisive element to obtain the objective of periodontal health, knowing the limitations of tooth movements, the efficiency of orthodontic correction and a decisive factor for the stability of the final result. FAS® takes all the details into account!

## Periodontal Aspects

Periodontal health is a major goal in the FACE treatment philosophy. FAS® offers “real” root segmentation providing the necessary information to obtain periodontal health at the end of treatment. The key factor is the relationship of the roots in alveolar bone at the end of treatment.

Another important element for an accurate diagnosis is to take into account the gingiva and FAS® also offers “real” segmentation of the gums. This is a decisive element for the efficiency of the aligners and a decisive factor for the stability of the final result. FAS® takes into account every single detail!



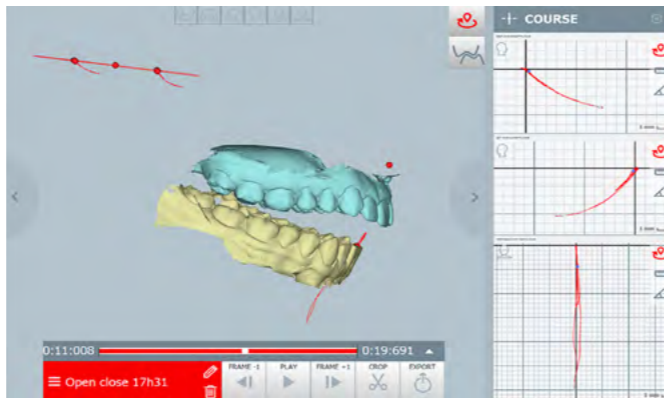
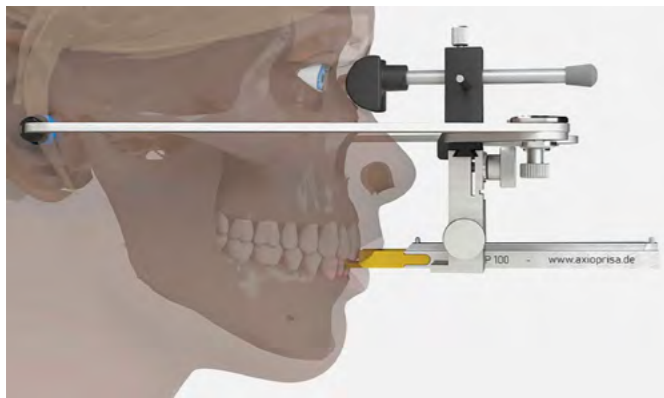
## DIAGNOSTIC ELEMENTS

FAS® is prepared to accept 2D, 3D, y 4D records for planification

Maximum precision and diagnostics was and is a hallmark of the FACE® philosophy and is the foundation on which FAS® quality is built.

The 2D diagnostic process based on a conventional lateral radiograph, cephalometric tracing and panoramic radiograph provides valuable

information for the treatment plan in the vertical and sagittal dimensions. A VTO (visual treatment objective) will be drawn to specify the desired vertical and sagittal correction of the incisors, as well as the need to increase or decrease the vertical dimension and, consequently, the anchorage requirements.

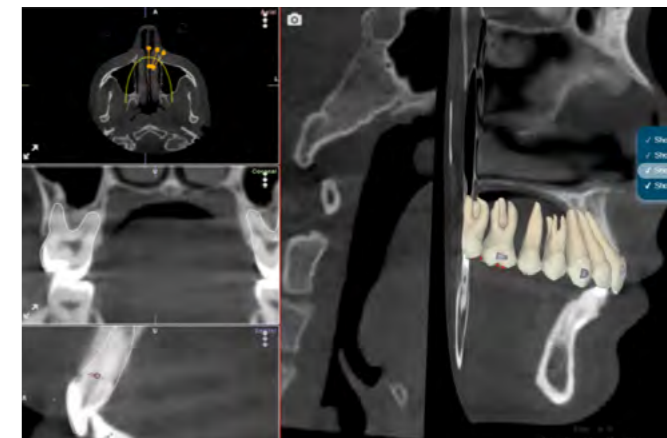


The 3D recordings through 3D radiographs and digital models from an intraoral scanner, or digitized from traditional plaster models, permits us to perform a precision setup. It enables us to give an optimized treatment result for each case. The dedicated Software offers relevant information for the predictability of the final result and the optimization of the treatment plan. FAS® is capable to receive Modjaw 4D dynamic records. The total digitization of the diagnostic process through 4D records is already a reality in many offices. It provides new information that is relevant for the diagnosis but above all allows orthodontic treatment to be planned taking into account

mandibular dynamics. FAS® is capable to receive Modjaw 4D dynamic records. The total digitization of the diagnostic process through 4D records is already a reality in many offices. It provides new information that is relevant for the diagnosis but above all allows orthodontic treatment to be planned taking into account mandibular dynamics. If you work with an intraoral model scanner, FAS® is ready to take the mandibular axis of rotation from Axioprissa® by SAM. If you work with classic mounted models in a stable relationship, FAS® is for you as well. We offer a model pick up service to digitize them and offer you maximum precision in the diagnostic process.



FAS® is designed to achieve stable orthodontic corrections over time. The root relationship with the surrounding alveolar bone tissue must maintain stability values after treatment, so the web viewer allows you to assess planned changes in dental position in the radiological context of the alveolar process and assess changes in dental position at the level of the crown and root level.



The FAS® viewer software is developed so that the clinician can access all the relevant information for the treatment plan in the diagnostic process and when planning the therapeutic solution.

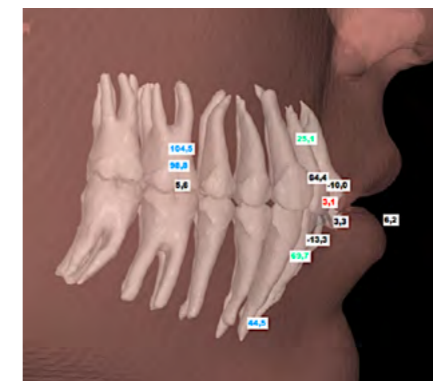
The level of virtualization offered by FAS® leaves no aspect unturned, among other details, it includes specific cuts of the temporomandibular joint from the 3D CBCT radiological volume that you can evaluate thanks to the included measurement tools.

# FAS<sup>®</sup> Wizard

FAS<sup>®</sup> Wizard is the planning tool to give treatment instructions to execute the treatment setup with maximum precision.

FAS<sup>®</sup> will help you not to omit any relevant data during the diagnostic process. FAS<sup>®</sup> provides a FAS<sup>®</sup> medical record form where you will complete vital information that should not be overlooked.

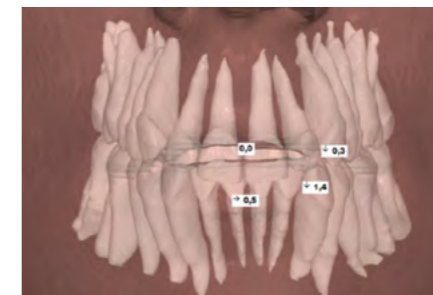
- |  |                            |
|--|----------------------------|
| <b>1</b> Vertical Dimension              | <b>5</b> Limitations       |
| <b>2</b> Transverse Dimension (Midlines) | <b>6</b> Planned anchorage |
| <b>3</b> Sagittal Dimension              | <b>7</b> Stop and Go       |
| <b>4</b> Bolton discrepancy              |                            |



## 1 – Vertical Dimension

FAS<sup>®</sup> plans autorotation on the real arc of closure of the patient to modify the occlusal plane. This unique feature is a hallmark of the FACE philosophy. In step 1 you must specify if you want to decrease, maintain or increase the vertical dimension.

Changes in the occlusal planes (Curve of Spee) of each dental arch are also defined in this step. The correction of the exposure of incisors, canines, premolars and molars and the canting of the occlusal plane, if indicated.



## 2 – Transverse Dimension (Midlines)

FAS<sup>®</sup> plans modifications in the transverse plane from the midline and the width of the arch to the torque of the posterior teeth.

### 3 – Sagittal Dimension

If at the end of steps 1 and 2 a sagittal problem persists, you must indicate in this step how you want to correct the sagittal relationship (class II or class III). Do you want to correct it by means of molar rotation? By mesialization? By distalization? And if so, which teeth? At this stage, you must also define the desired overbite and overjet you would like to achieve with the final setup.

### 4 – Bolton discrepancy

If after steps 1, 2, and 3 there is still a D.O.D. (dental osseous discrepancy), in this step, you must indicate how you want to resolve it. With IPR (interproximal reduction)? With dental reconstructions? With extractions? In which case you must indicate which teeth need to be reconstructed or extracted.

### 5 – Limitations

FAS® takes into account cases that have limitations in treatment. In many cases, there are limitations due to skeletal or dental problems, such as retrusive mandibles, asymmetries et cetera, and agenesis or anatomical variations of the teeth. Or maybe teeth that must not be moved. In this step, you must specify the limitations that exist which will compromise treatment.

### 6 – Planned anchorage

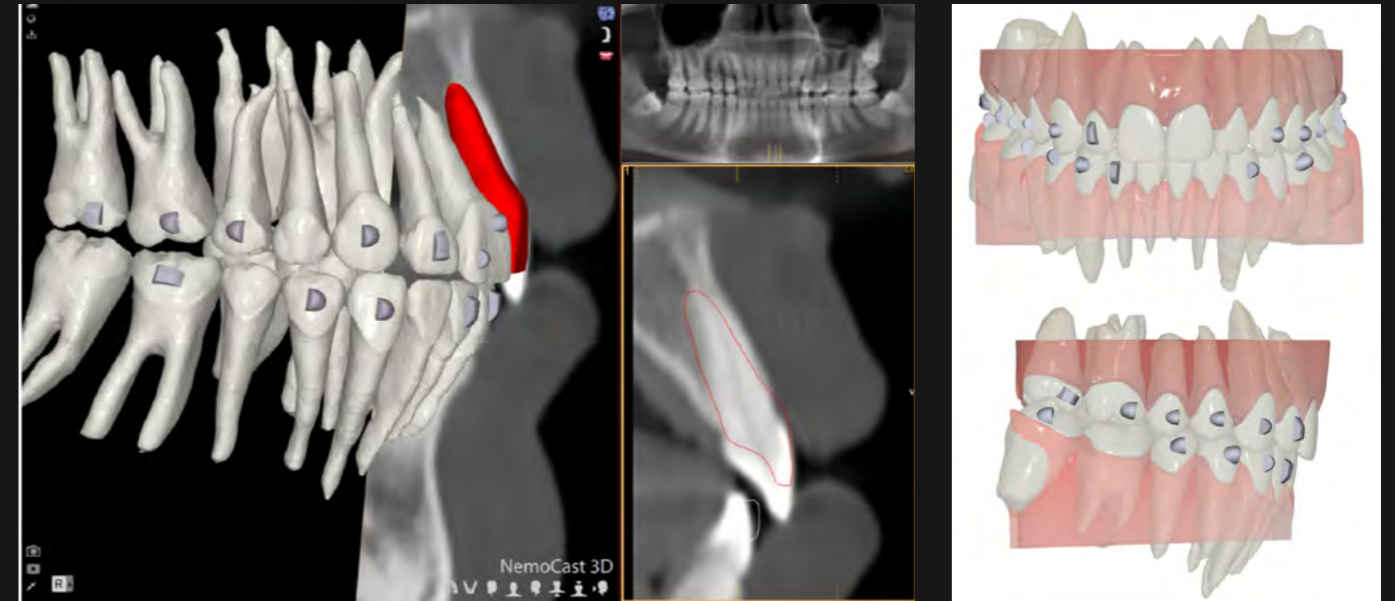
FAS® Preparation for Anchorage. In this step, we specify what type of anchorage requirements will be necessary. Mini-screws, plates etc. and where they should be placed since we need to have this information when executing the setup of the case.

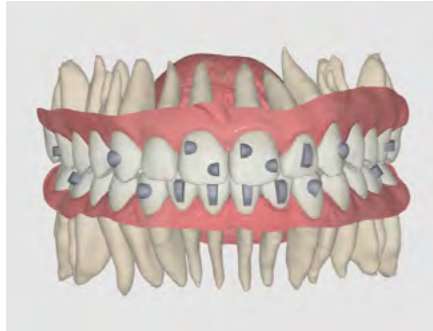
### 7 – Stop and Go

FAS® Stop and Go®. Ideally in aligner treatment, it is important to verify the progress of treatment. For this, we can define beforehand the critical stages for revision. Stop and Go® is designed to check if the planned correction is being achieved with the desired precision and to overcome poor treatment tracking and thus speed up total treatment time.

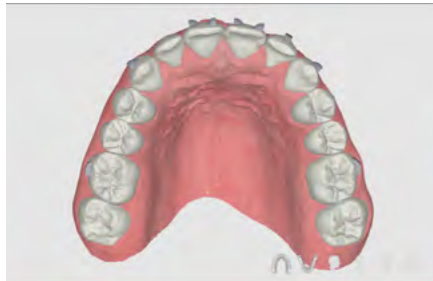
**FAS® will help you to not omit any relevant data during the diagnostic process. FAS® provides a FAS® Medical Record form where you will fill out vital information that should not be overlooked.**

## FAS® OcclusalDesign®

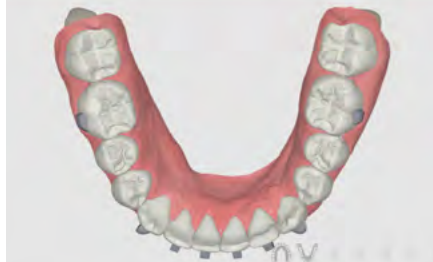




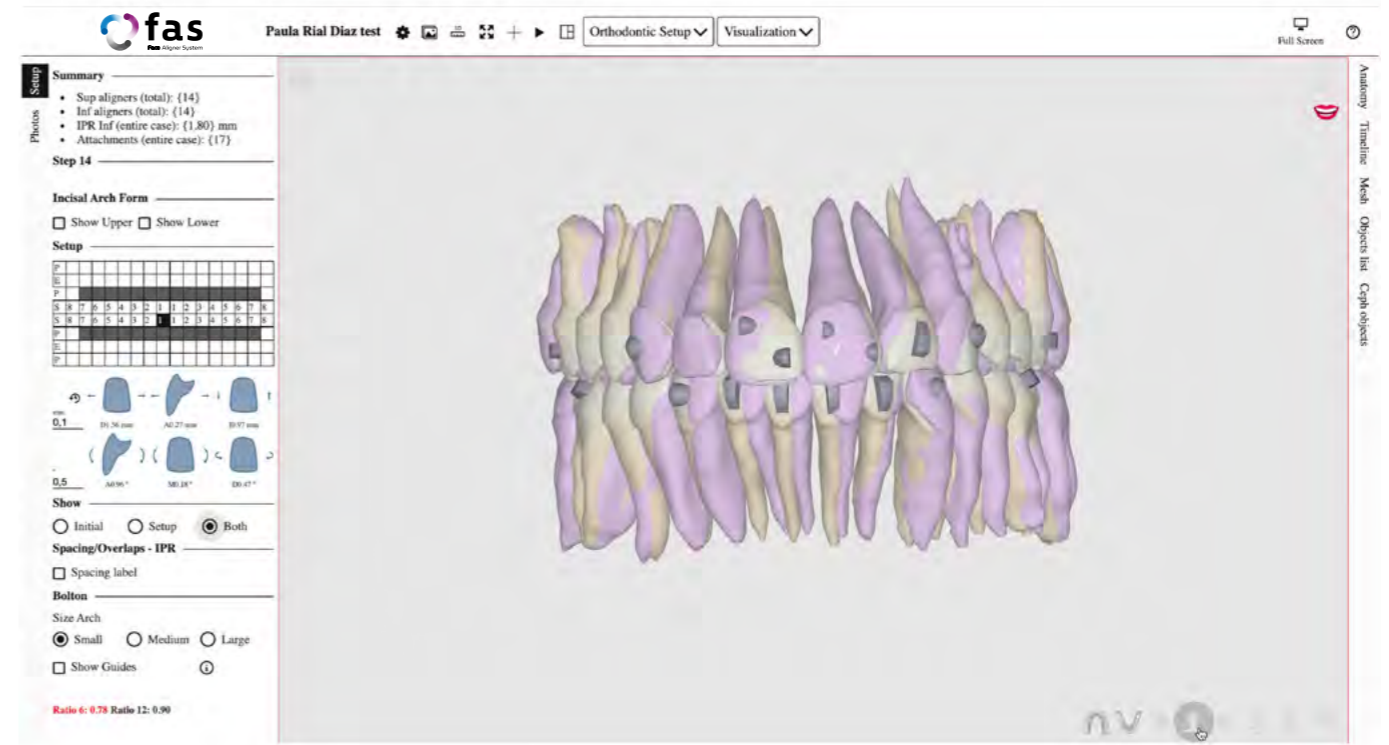
The FAS® OcclusalDesign® is the tool that will allow you to communicate with the FAS® planning centre. In this fashion, you will be able to actively participate in planning the set-up.



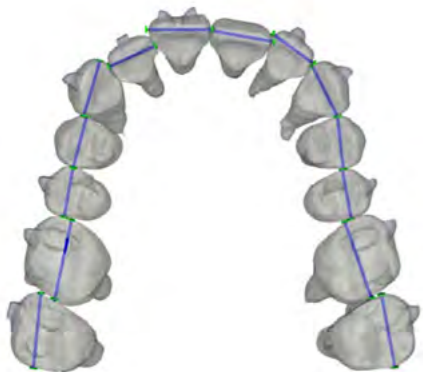
FAS® allows you to work by visualizing the real tooth roots, the crowns and real gingiva of your patients. This is one of the most significant advantages of FAS® over other aligner systems.



The segmentation of the real roots allows planning taking into account the healthy environment of the dental roots in the alveolar bone. If the correction of the tooth exceeds the position of the biological limits, you will know in advance and will be able to plan an alternative solution.







FAS® includes an Advanced Bolton Discrepancy Analysis. It is common to observe tooth size discrepancies that occur in one or more teeth in both the upper and lower arches. To finish the case with optimal dental aesthetics and stable occlusal relationships it is crucial information that must be taken into account in the planning process.

The FAS® dedicated software provides a tool that allows us to visualize discrepancies of entire arches and of individual teeth.

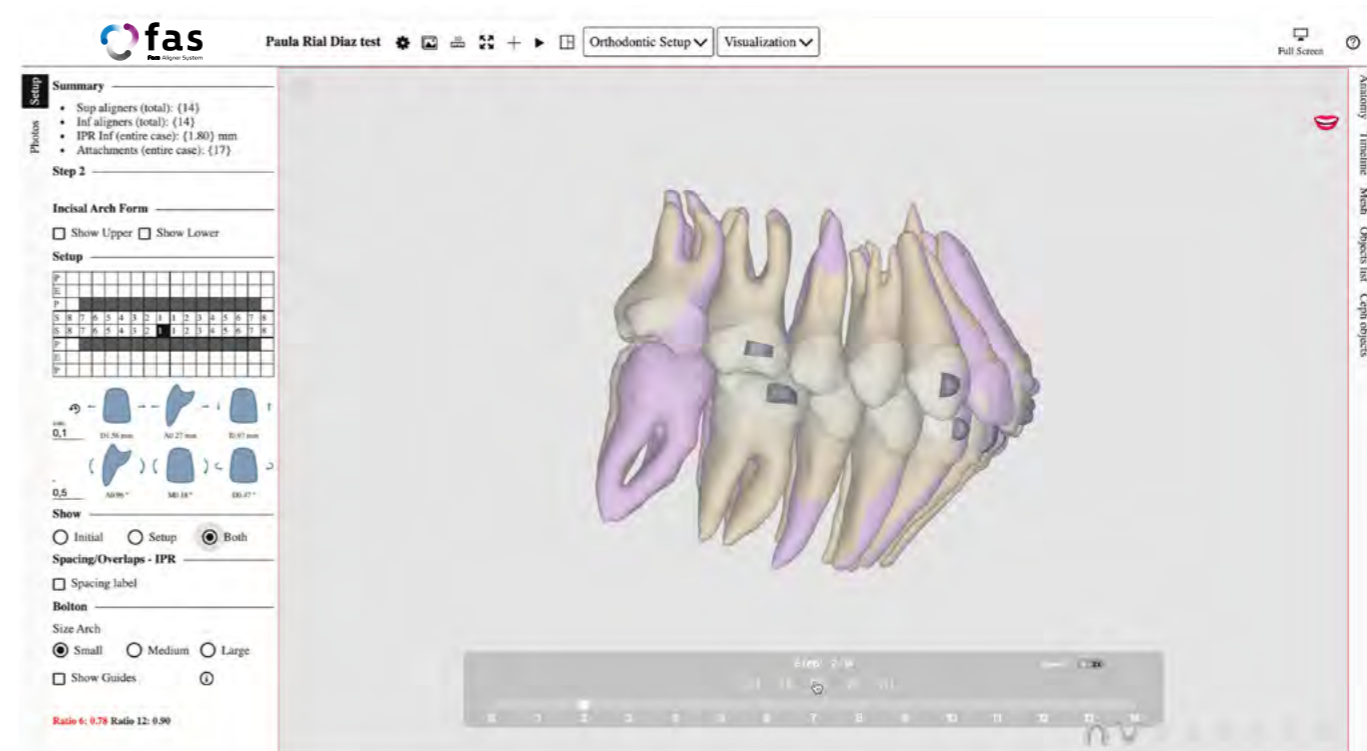
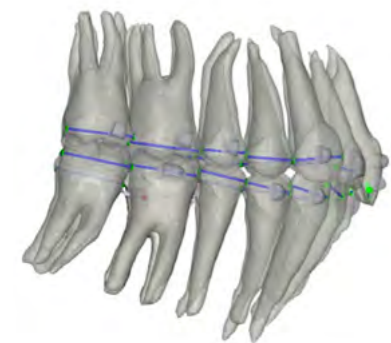
### Tooth size discrepancy

Arch width: Small

Tooth	6R	5R	4R	3R	2R	1R	Total 3 R	Total 6 R	1L	2L	3L	4L	5L	6L	Total 3 L	Total 6 L	Total 6	Total 12
Width Sup	10.7	7.5	7.5	8.0	7.3	9.2	24.4	50.1	9.3	7.5	8.1	7.7	7.2	10.5	24.9	50.3	49.3	100.4
Anc. Stand. Sup	10.5	6.6	7.0	7.5	6.6	8.7	22.8	46.9	8.7	6.6	7.5	7.0	6.6	10.5	22.8	46.9	45.6	93.8
Width Inf	11.4	7.3	7.5	6.7	6.1	6.3	19.1	45.3	6.0	6.4	6.8	7.2	7.6	11.5	19.3	45.5	38.3	90.7
Anc. Stand. Inf	11.0	7.1	6.8	6.6	5.8	5.2	17.6	42.5	5.2	5.8	6.6	6.8	7.1	11.0	17.6	42.5	35.2	85.0

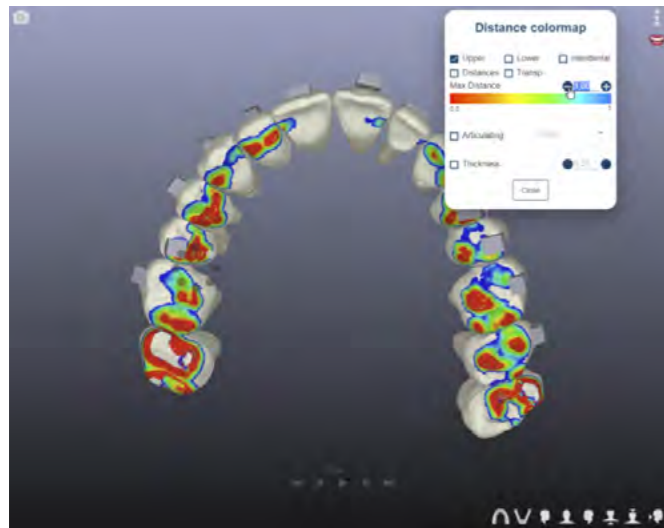
Bolton (100 \* quotient sum 6 inf / 6 Sup): 77.7

Bolton (100 \* quotient sum 12 inf / 12 Sup): 99.4

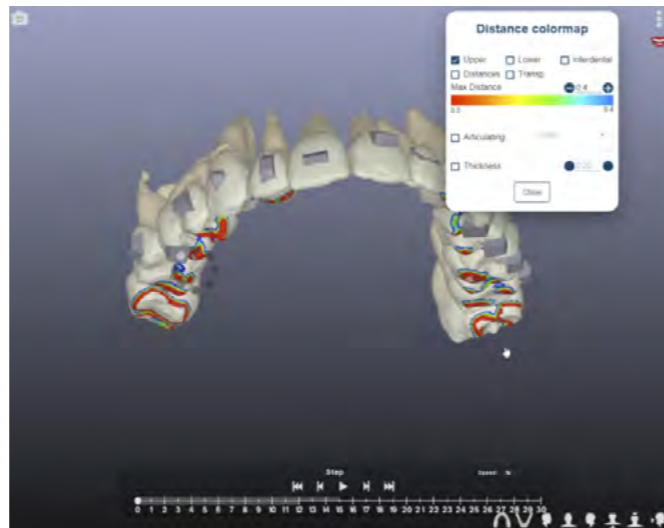


FAS® OcclusalDesign® allows you to view a before and after overlay to evaluate the planned correction and measurements can always be taken with the 2D and 3D measuring tool.

FAS® OcclusalDesign® allows a simulation of the step-by-step sequence of the movements of each stage in the timeline to be viewed on the models.

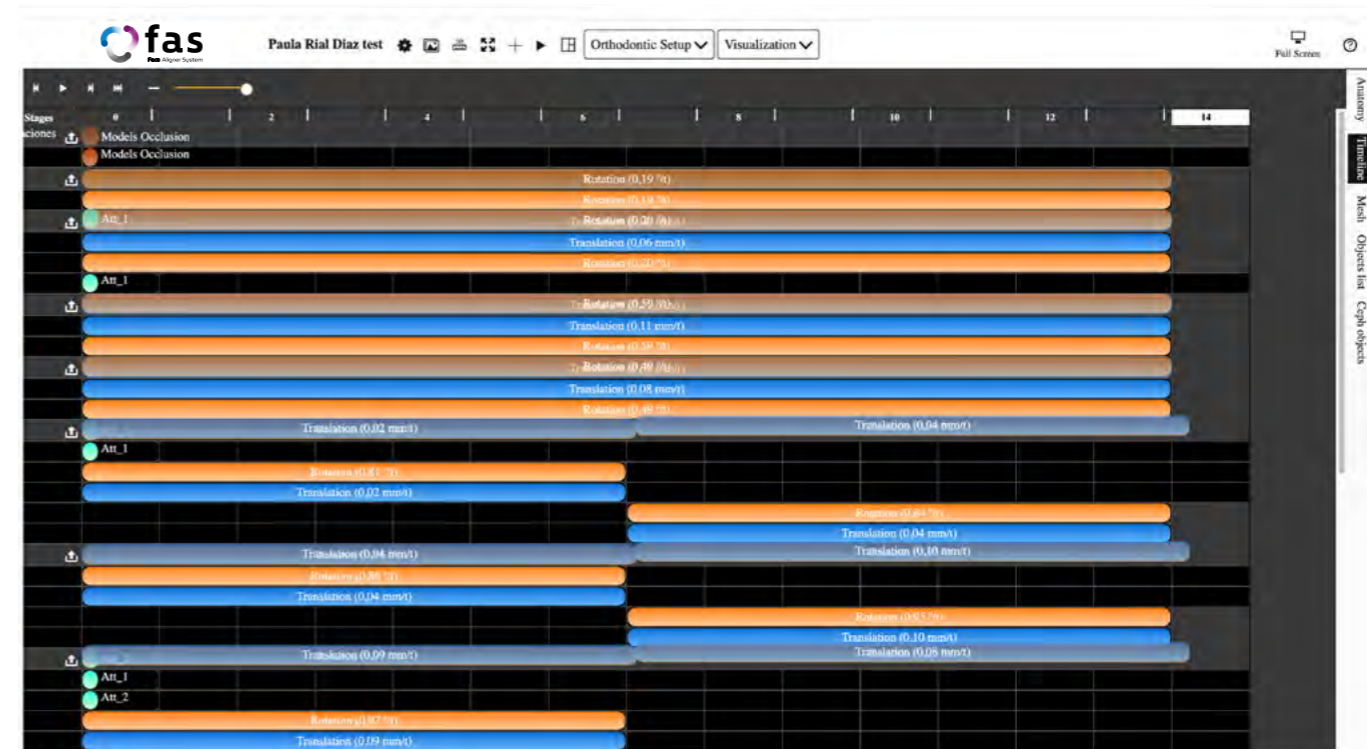


FAS® OcclusalDesign® takes occlusion into account at every stage of aligner treatment. The virtual articulator included in the online software allows the mandibular arch to be rotated according to the axis provided in the records.



The software has also included a color map that highlights the surface of the teeth according to the interocclusal distance.

This allows verification of the occlusion at each stage.



OcclusalDesign offers you a visualization tool for the stages corresponding to each segment, in which the planned translation and rotation are specified on a timeline. In the case of having to place

attachments or interproximal reduction, it is also displayed on this time scale when it is planned.

# FAS<sup>®</sup> TREATMENT MECHANICS

The FAS<sup>®</sup> treatment biomechanics has common aspects with straight wire orthodontic mechanics. It, however, has its own characteristics and differences in treatment planning.

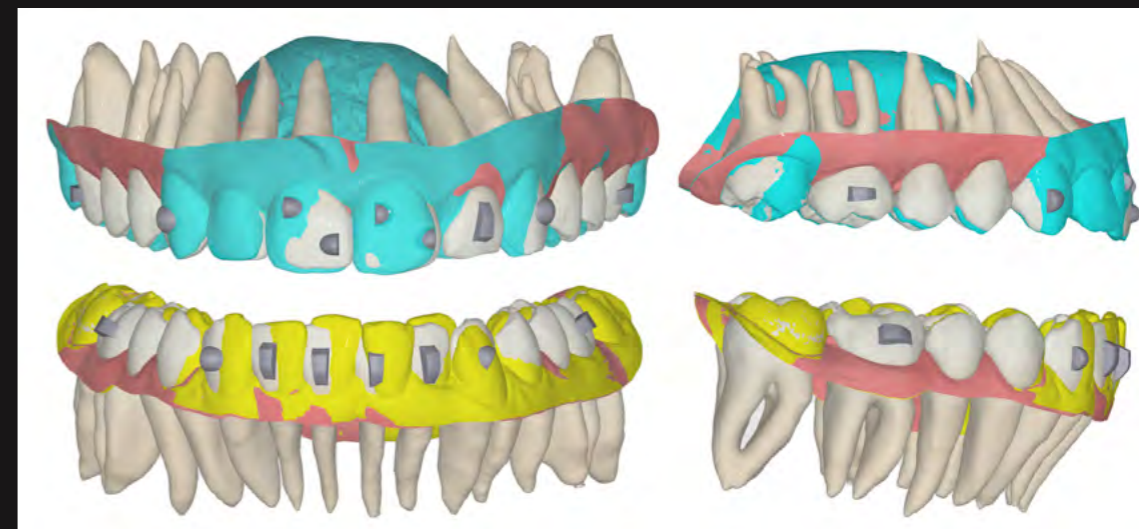
One of the main differences of FAS<sup>®</sup> is the division of treatment into two phases depending on the correction of the transverse dimension.

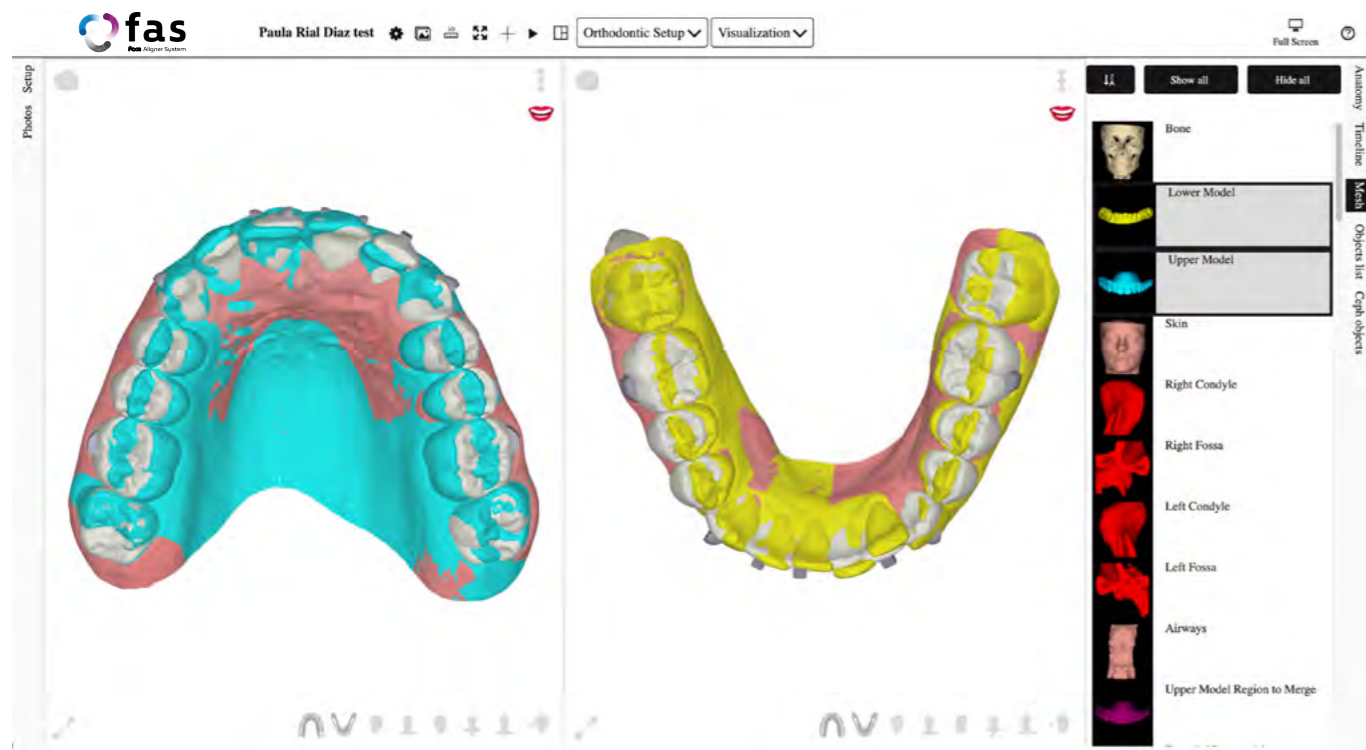
The First Phase is the initial phase of treatment. In cases where corticotomy assisted expansion will be performed, FAS<sup>®</sup> form is a specific material used to improve tracking during this stage. It will be used for a limited period of time. This is due to the R.A.P. (Rapid Acceleratory Phenomenon) effect of the surgery. Attachments in First Phase are specific for the torque control of posterior teeth during the arch expansion process.

The Second Phase is the finishing phase. Once the assisted arch expansion has been successfully completed, it is in this phase where we achieve the final tooth positions. In the second phase of treatment FAS<sup>®</sup> Track<sup>®</sup>, specific material is used to obtain the detailed position of the teeth. The material used in this treatment phase has ideal elastic properties which maximize tracking thanks to the optimized attachments.

## FAS<sup>®</sup> STOP and GO<sup>®</sup>

The effectiveness of aligner treatment depends to a great extent on the correct follow up (tracking) of the activations applied to each aligner. To maximize efficiency, STOP and GO foresee stages of verification of the evolution of the treatment. It provides as well overlaying tools to facilitate the procedure. If the treatment is efficient in the verification stage, you just have to click on finish and the second stage of corrections will arrive automatically, and if modifications have to be implemented, you will be in time to evaluate different therapeutic options to achieve the planned result in the shortest possible time.





## BIOMECHANICS AND ALIGNERS

### a) The splint design

FAS® technology is developed to overcome the limitations of other aligner systems. One of the limitations in the effectiveness of the force applied to the teeth resides in the permanent deformation of the margins of the aligners. To solve this problem, the FAS® system, in addition to the changes in the position of the teeth, takes into account the changes that will occur at the gingival level and the relationship of the aligner with the attached gingiva. The aligners are adapted to the cervical margin and reproduce the gingival contour. This characteristic provides resistance to the aligner in this critical area, which translates into a more efficient correction in treatment time and precision of the result.



b) **Plastics:** use of different plastics depending on the objective, when and why?

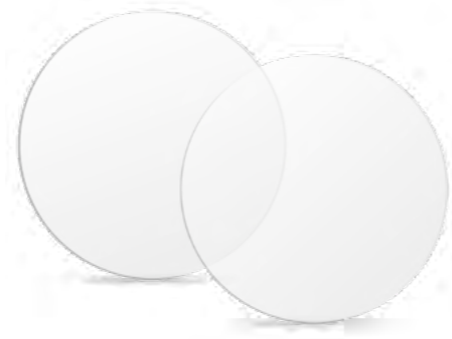
The main objective of FAS® is to offer the clinician and patient a treatment with FACE excellence, maximum predictability and in the shortest possible treatment time. FAS® orthodontic biomechanics takes into account the difficulties of the stage and type of correction and therefore has different materials for the aligners with characteristics that optimize the results to obtain predictable results.

One of the strengths in aligner mechanics is their ability to control the width and shape of the dental arch. The correction necessary to meet the functional and aesthetic goals of FACE treatment in many cases is limited by the characteristics of the alveolar process

and its relationship with the dental roots. FAS® proposes to solve this limitation by corticotomy surgery.

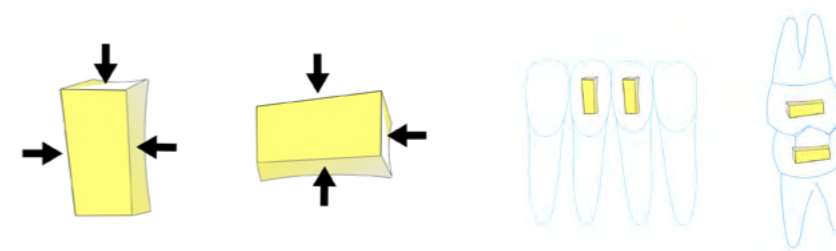
The cases with corticotomies are to modify the width of the arch and need a significant correction in a limited time since in 3-4 months the corticotomies are completely healed. For the effectiveness of the procedure and to take advantage of the RAP (regional acceleratory phenomenon) we have to make the most of 3-4 months and for that we use a harder plastic.

**FAS® First Stage** are aligners with optimized mechanical properties for the expansion of the arch with corticotomies. It is a stiffer material that achieves optimal tracking with minimum attachments and with a smaller number of steps.

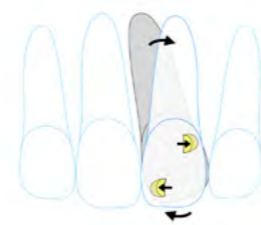


**FAS® Second Stage** is a more elastic material with optimized properties for dental corrections in which the roots are corrected within the alveolar process. Thanks to the mechanical properties of this material, the adjustment of the aligners has maximum precision both on the tooth surface and on all types of attachments.

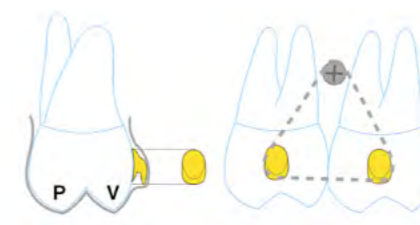
c) **The Attachments:** Generic and FAS® attachments – FAS® is allowed to use attachments from other aligner systems. There are certain orthodontic corrections that depend on the attachments placed on the tooth surface. FAS® has a wide digital library of exclusive attachments optimized for corrections according to the FACE philosophy of treatment, and also uses generic attachments common in other aligner systems.



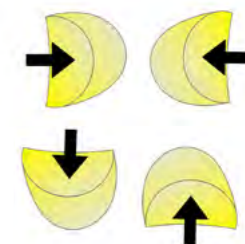
FAS® Rectangular Attachment its vertical position provides effective crown inclination control on single rooted teeth and horizontally provides retention on molars for anchorage and torque control.



Attache FAS® Hemi-Spheric X2 effective control of crown inclination on upper incisors.



FAS® Intrusion attachment effective for skeletal anchorage



FAS® Hemi-Spheric attachments for maximum grip on the buccal and lingual surfaces



## FAS<sup>®</sup> Occlusal Finisher

Finishing is one of the most complicated parts of a treatment. How and when to finish is one of the most complex aspects of aligner treatment and makes the difference between a well-finished case and one that is not. At the end of orthodontic correction, FAS<sup>®</sup> offers final aligners for detailing the dental position.

Maximum precision movements are intended for a perfect finish, which is why careful planning of the movement is carried out. This stage is complemented by the FAS<sup>®</sup> Occlusal Finisher, which consists of a device designed in the true axis of mandibular rotation to finish the occlusal adjustment, which is made of a special elastic material and is printed directly from the planning.

## EXAMPLE CASE

As an example, we present the evolution of a case of minimal complexity to expose the characteristics of FAS<sup>®</sup>. The total duration of treatment was 7 months.

### Treatment begins



Before the first stage of correction we place the attachments using the provided template.

### 2 month evolution



It is of vital importance for the correct evolution of the treatment that the patient follows the instructions and complies with the recommended hours of use.

### 3 month evolution



The aligners, unlike conventional appliances, have more predictable anchorage and do not overcorrect the dental position in any case.

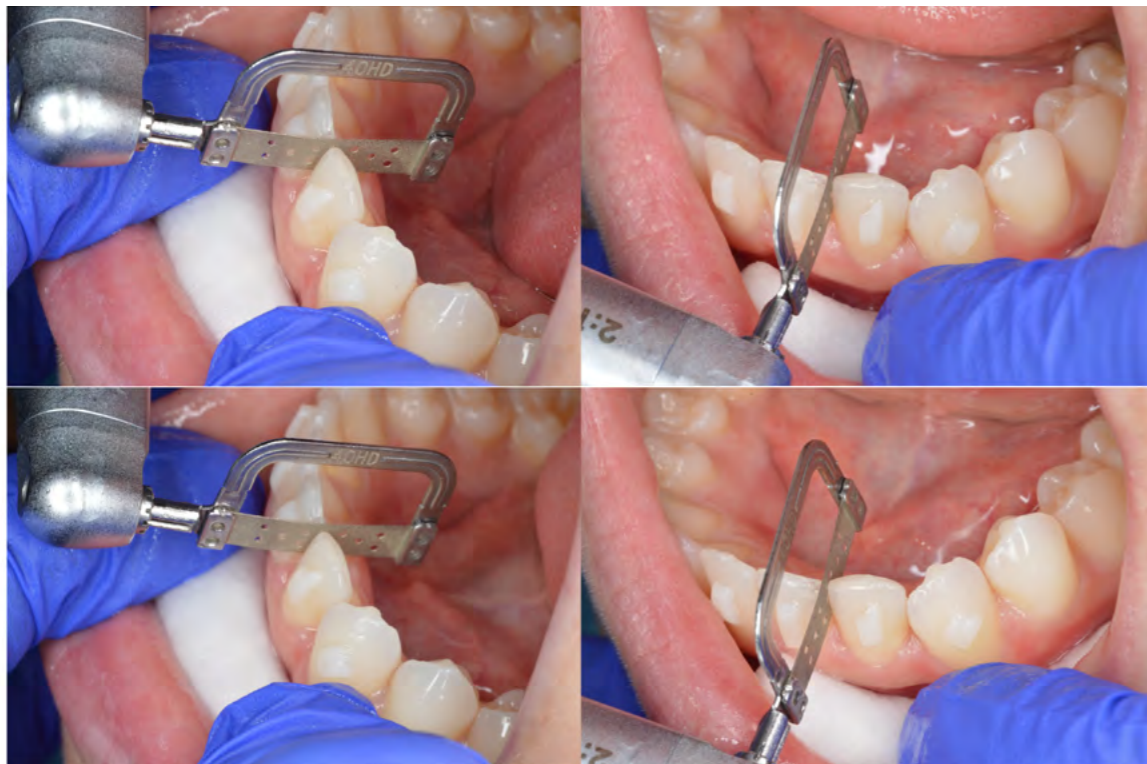
### 4 month evolution



Optimized attachments allow the appliance to have an improved gripping surface.



## I P R -OcclusalDesign®



In case of dental discrepancy in size or shape, in many cases, we will use interproximal reduction calibrated according to OcclusalDesign®.

## Lower 3-3 activation



If necessary, it is possible to activate the pressure exerted by the aligner by activating it through pressure zones that, at the clinician's discretion, will put more force in the selected areas.

## Upper +3 activation

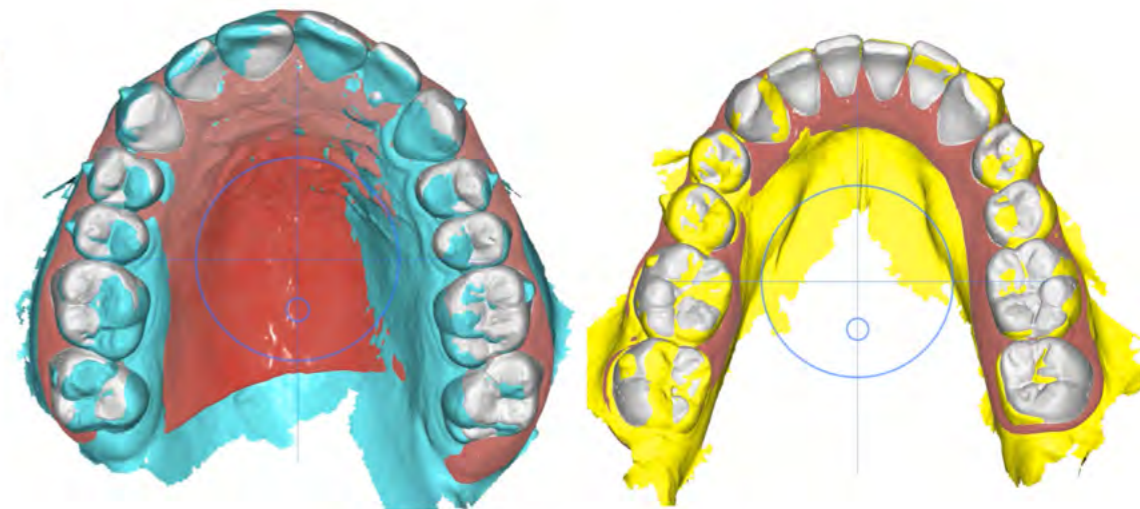
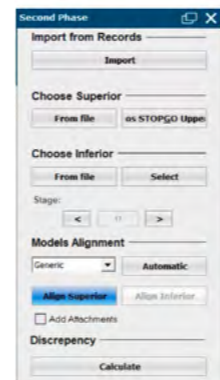


## 4 month evolution



FAS® materials are optimized for precise orthodontic correction and aligner trimming can be maximized according to the mechanical needs of each case.

## STOP and GO®



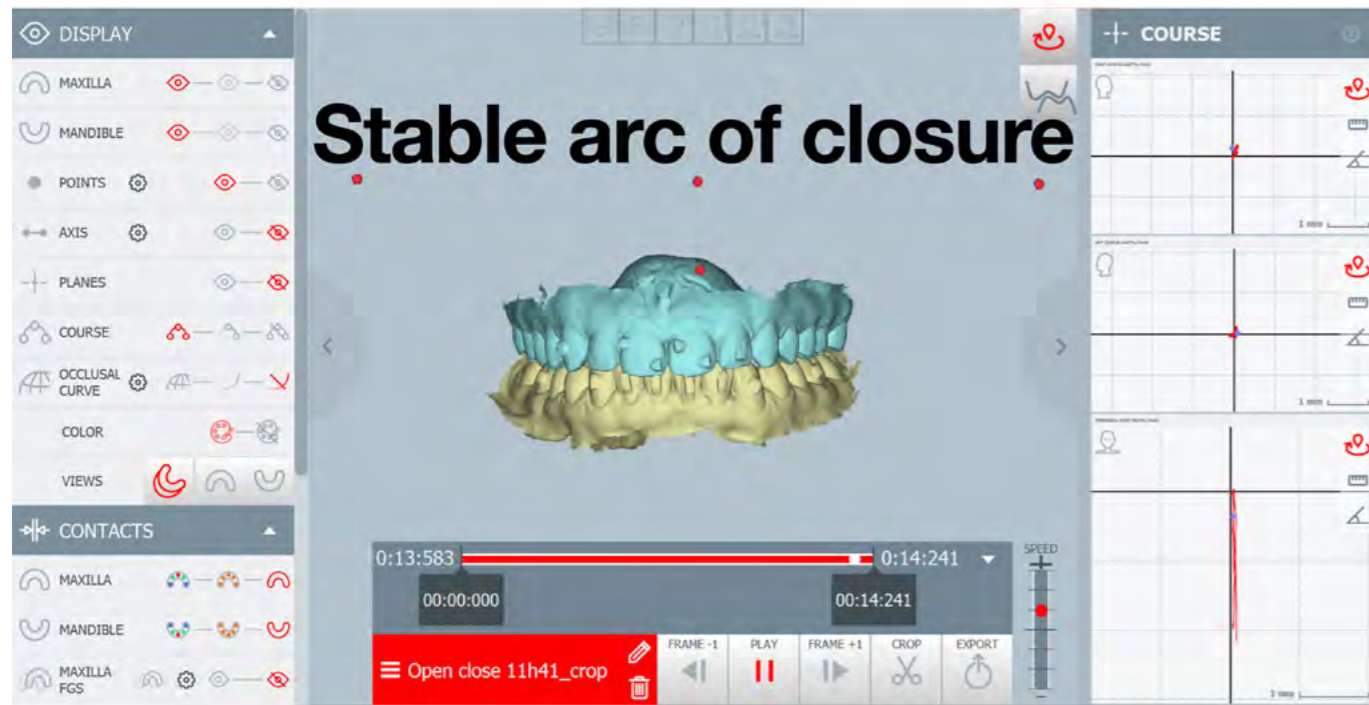
With FAS Compact® and FAS Pro®, at predetermined stages with the planner's team, it is possible to re-evaluate the evolution of the treatment with STOP and GO®.

### 6 month evolution

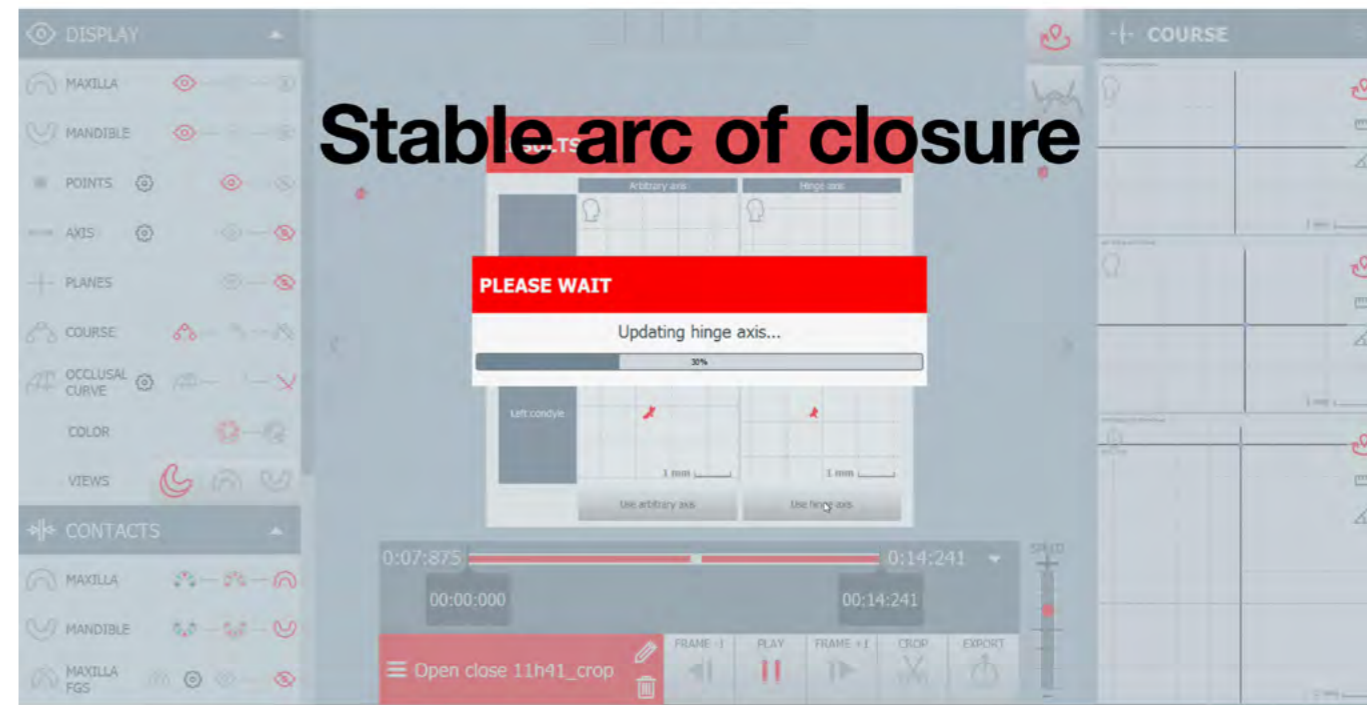


When the evolution of the case does not require replanning, the order to send the remaining aligners can be given directly, but if replanning is necessary, this process provides maximum efficiency and minimizes treatment stages.

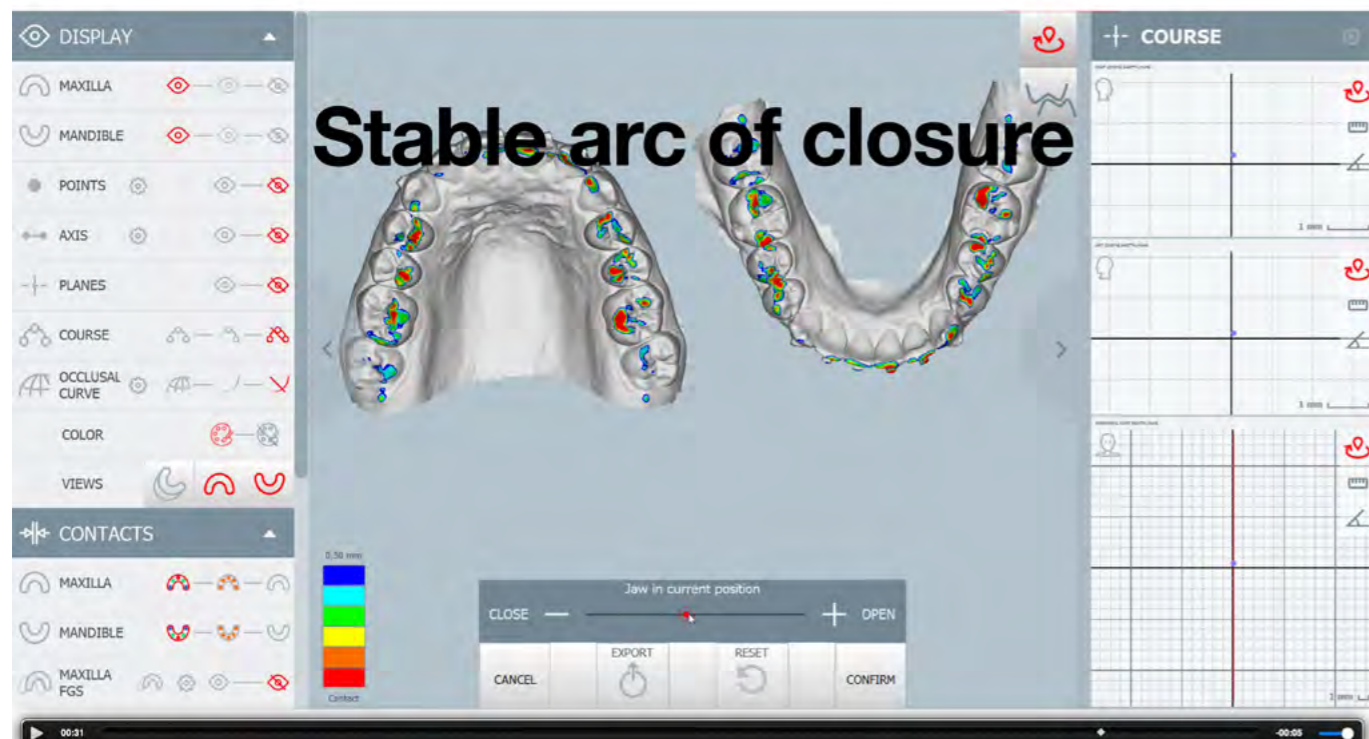




FAS® is prepared to work with dynamic occlusion records to offer functionality and aesthetics with the minimum number of aligners. Before proceeding with the treatment to the final stages, we check whether the functionality of the planned dental contacts corresponds to that of the patient.



Dynamic records allow you to work with aligners in the actual hinge axis of the patient.



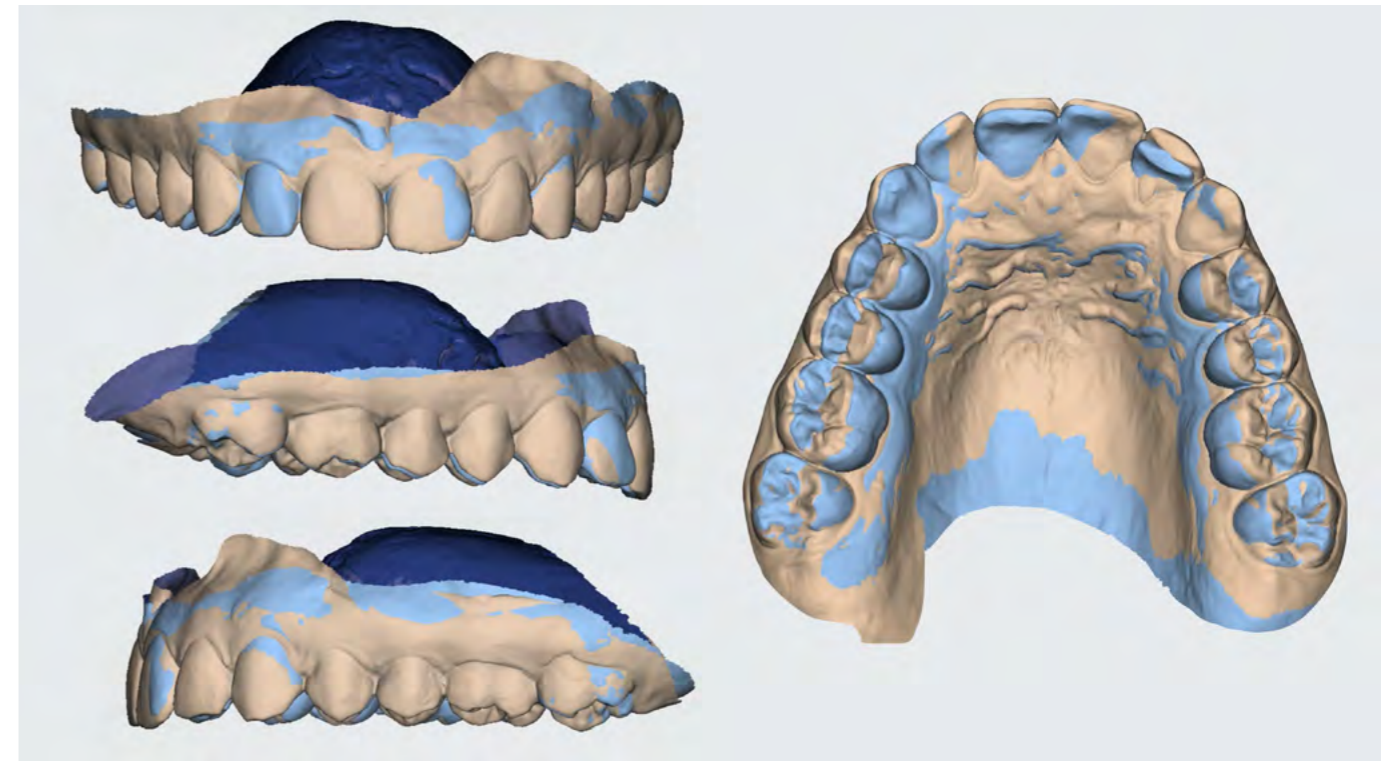
We check that the occlusal contacts planned with OcclusalDesign® are the same ones obtained with the treatment.



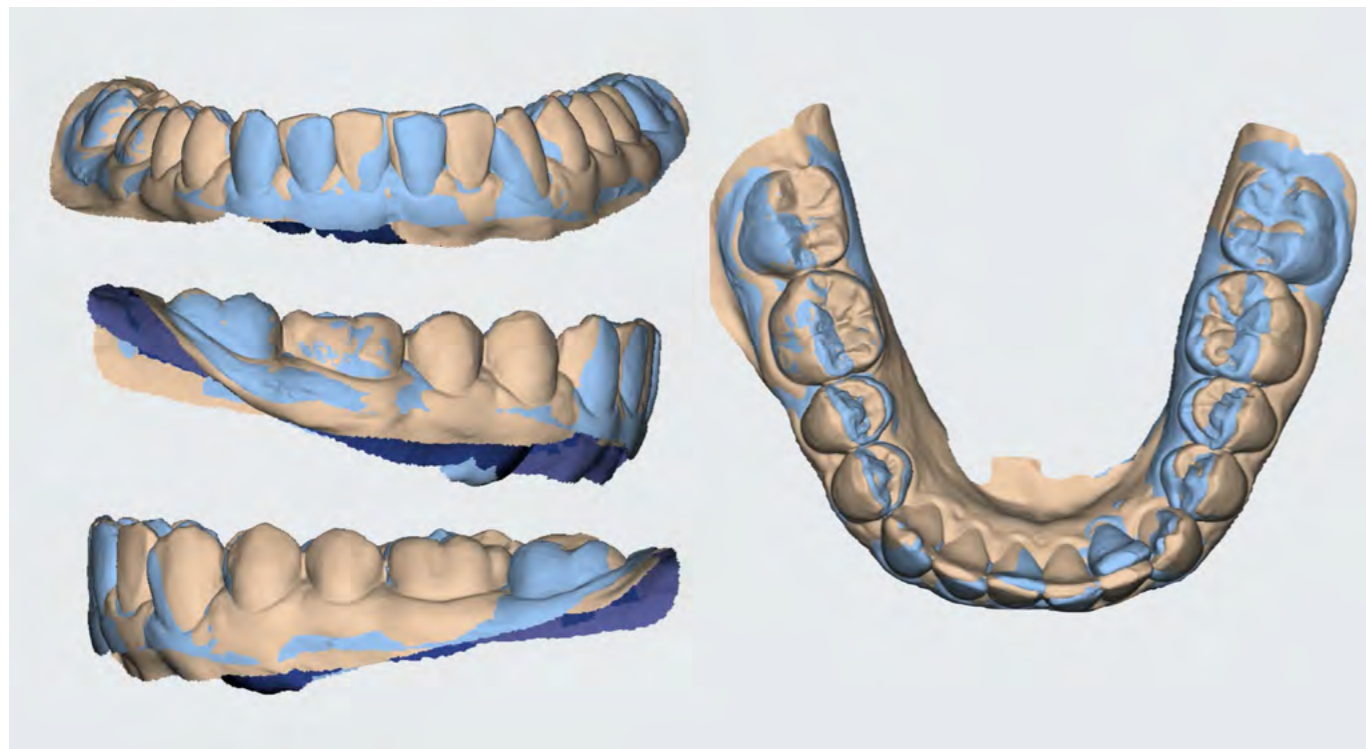
### 7 month evolution



The precision of the FAS® system allows functional and aesthetic results in the minimum treatment time.



Pre-post treatment superimposition.



Pre-post treatment superimposition.





## Forestadent Planning Center

To undertake the launch of a precision product like FAS®, FORESTADENT has developed a Planning and Production Center with high technological and manufacturing capabilities.

But that alone is not enough, the real engine of this system is the team of Occlusal Designers, all orthodontists who have been trained during the last two years in the FAS® concept, under the guidance of Doctors Martín and Canábez.

## The Service

One of the hallmarks of FORESTADENT is service and those who have already enjoyed it can confirm this.

With the launch of FAS® we want to go further. Our mission is to collaborate in the digitalization of clinics through service. To this end, we not only place emphasis on the accessibility of the portal and product deliveries in a more reasonable time.

Our purpose is to facilitate access to digitization for those who do not have the knowledge or the means to meet the challenges of the present and the future.

To this end, we offer a consulting service for case and product selection (case feasibility service) or a model collection and digitization service.

If you are starting from scratch, we offer training courses from the basics to get you started in the digital world, to expert courses where you can modify the proposed Occlusal Design yourself.

The range of products of our digital offer, will allow you to access with a single click to different complementary products through a single scan and a single supplier, such as guides for indirect cementation, guides for micro-screws, or guides for injected veneers through smile design.

# THE FAS® PRODUCT RANGE

The FAS® product range is oriented to the treatment of medium, complex and very complex cases.  
For the simplest cases, we offer our Accusmile® line of aligners.



## FAS® Pro

It is suitable for all types of cases and can be combined with the use of auxiliary elements and/or corticotomies. FAS® PRO includes the initial Occlusal Design and up to three working stages, with two Stop and Go if necessary and up to three replanning depending on the evolution of the case.

FAS® Pro accredited doctors will be able to make modifications to the Occlusal Design online.



## FAS® Compact

Designed for medium and complex cases, the FAS® compact includes Occlusal Design, two working steps if necessary and a finishing replanning.

Occlusal Design + Phase I (25 sets) + Phase II (15 sets)+ Replanning + 5 sets

Options: With root segmentation (CBCT required) or without root segmentation



## Accusmile

Treatment for simple cases, including treatment proposal, printing data, models, aligners and one refinement.



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