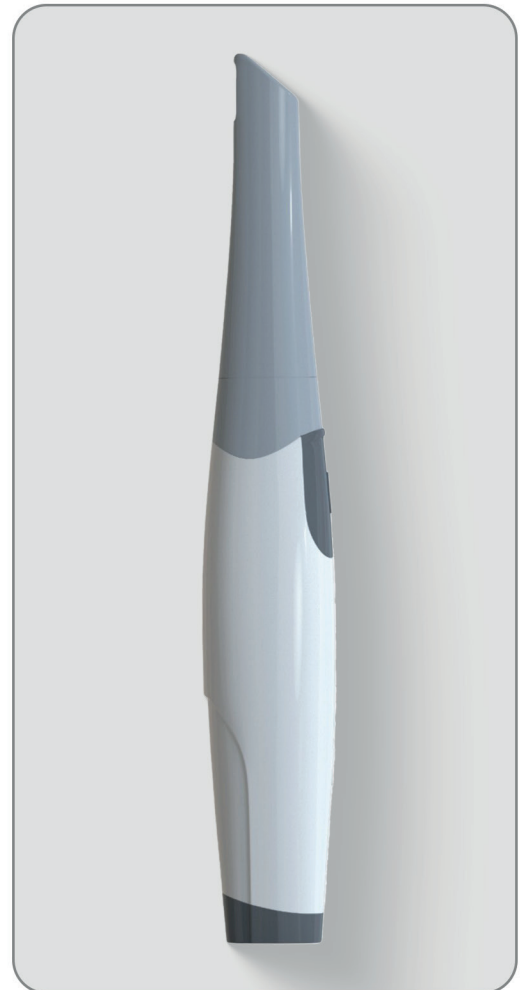


PHOTOGRAMMETRY SOLUTIONS WORKFLOW

An Integrated Fully-Digital Workflow with
the Anatomic Guide®



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Introduction to Photogrammetry: Revolutionizing Digital Dentistry

Photogrammetry is a technology with roots in aerial surveying and cartography, whereby analyzing the geometric properties of the captured images, photogrammetry software can reconstruct a 3D model of the scanned object.

The non-invasive imaging technique involves capturing detailed 3D representations of dental structures using multiple photographic images taken from different angles, providing highly accurate digital models of a patient's oral anatomy.

Dental photogrammetry serves as a valuable tool for capturing essential data about implant placement for All-on-X restorations.

Given that conventional methods of acquiring implant data for All-on-X restorations were either prone to inaccuracies or demanded significant labor and time, the adoption of dental photogrammetry systems (such as **ICam4D** by Imetric, **MicronMapper** by ClaroNav, and **PIC system** by PIC dental) emerges as a crucial advancement, facilitating the provision of predictable and efficient fully digital full-arch restorations.

The process is simple; specialized scan bodies are affixed onto the implant abutments, while a scanner records their position and orientation. By taking multiple photographic images, you get an accurate representation of the implants' positions. These images use an extra-oral receiver to capture the geometric properties of intraoral objects and their spatial locations.

The limitation of this system is that photogrammetry does not capture soft tissue details, requiring a second STL file. Photogrammetry only records the implant positioning within an XYZ axis, while an intra-oral impression or scan is performed to capture the soft tissues. The two scans are then combined to create the temporary and/or final prosthesis.

By instantly creating a digital file, this method reduces the need for multiple steps and materials, minimizing the potential for errors, saving time, lowering the number of patient visits, and almost completely eliminating discomfort associated with prolonged scanning procedures.

The future of dental photogrammetry and fully digital workflows in full-arch rehabilitation is promising. The increasing adoption of digital workflows across dental practices worldwide suggests that these technologies will become the standard of care for complex procedures like full-arch rehabilitation. And as technology continues to advance, we can expect even greater improvements in the accuracy, efficiency, and accessibility of these procedures.

Why Choose 3Sixty Fully Digital Photogrammetry Solution

The latest addition to 3Sixty's solution range takes your experience to the next level.

With our extensive history offering top-quality solutions that span diagnostics, treatment planning, surgical support, and restorative options, you can rely on our expert teams to provide you with the highest standard for temporary and final photogrammetry restorations.

Here are a few reasons why the 3Sixty fully digital photogrammetry solution is the right choice for your practice:

An Integrated Fully-Digital Workflow at Your Fingertips

We understand that the dental practice is rapidly evolving in the direction of digital dentistry, and we're ready for the transition!

Our services support your practice from the moment you upload the patient's files to our system. You can access our full array of services that make your job on surgery day simpler and more streamlined.

You can utilize our solutions starting from radiology reports, a comprehensive treatment planning service, followed by designing and fabricating the Anatomic Guide[®], an accurate PMMA temporary restoration, and a beautiful, functional final restoration. Those challenging All-on-X cases will take fewer visits with a much lower chance of errors disrupting your workflow.

A Team of Dentists with Years of Clinical Experience

What sets 3Sixty apart is that we have dentists with hands-on clinical experience working on our Dental and Prosthetics Teams.



You'll find their deep understanding of the anatomical and technical aspects of the treatment process bridges the communication gap as they understand your needs from the same side of the chair. They have worked hundreds of cases and know where the common pitfalls are.

During the treatment planning and restoration design phases, you'll have an open line of communication with the doctor working on the case to voice your concerns and adjust the designs as needed.

Also, with our immediate loading solutions, you'll have a Prosthetics Team member on standby during the surgery to do any last-minute adjustments to the design before printing and loading.

Streamlining the Photogrammetry Process, One Anatomic Guide® at a Time

Lastly and most importantly, the design of the Anatomic Guide® can help make photogrammetry easier and less invasive. Instead of using Phillips heads as reference markers, our Anatomic Guide® can serve the same purpose.

This makes capturing the landmarks for image matching a less laborious process, especially for the lower arch, where screws are much harder to affix and scan.

3Sixty Photogrammetry Workflow

Anatomic Guide® with Photogrammetry PMMA Temporary Restoration

Anatomic Guide® Workflow

1. Create an order on the 3Sixty Courier web app requesting a treatment plan, an Anatomic Guide®, and photogrammetry PMMA temporary restoration.

New order

Services

Order Info

Files

Place order

Select service

You can select one or more service from our services catalog

☐ Radiology Reports



Full report on radiological findings, diagnostic impressions, and a complete pathosis review on CT, CBCT or panoramic scans.

☐ Surgical Guide



3D design and print pilot, tooth-supported, tissue-supported or bone-supported CAD/CAM surgical guides.

☐ Anatomization



3D segmentation detailing the entirety of your patient's intraoral anatomy for case presentation purposes.

☒ Treatment Planning



Digital treatment plan for implant placement cases including virtual positioning of dental implants and their relation to anatomic structures.

☐ Case Review



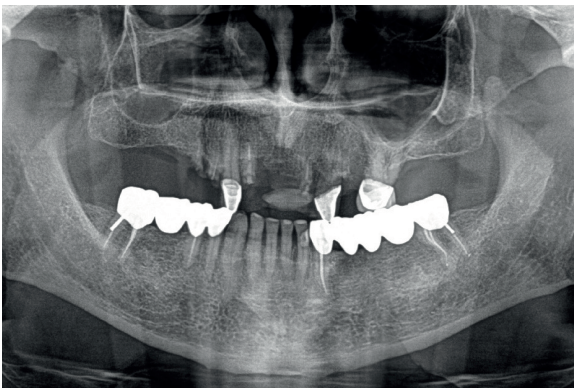
Online consultation with a 360Dentist for treatment plans you have made yourself.

Next

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2. Upload the required pre-operative files, which consist of:

- **Upper and Lower Intraoral Scan (IOS)** : A 3D image that captures the exact shape, and contours of the teeth in the form of an STL file.
- **Bite Scan** : Digital bite of the patient's occlusion capturing the relationship between the upper and lower arches.
- **Digital Smile Design (DSD) Photos** : High-resolution digital photos of the patient's face from various angles. These photographs depict the entire appearance of the face, including the lips, gums, and surrounding tissues.
- **CBCT DICOM files.**
- **Facial Scan** (optional) : Identifying and measuring facial features in an image.



CBCT scans (in DICOM format,
multiple slices)



Digital intraoral scan of the upper,
lower, and bite (in STL format, open shell)



Diagnostic/Preoperative
photos



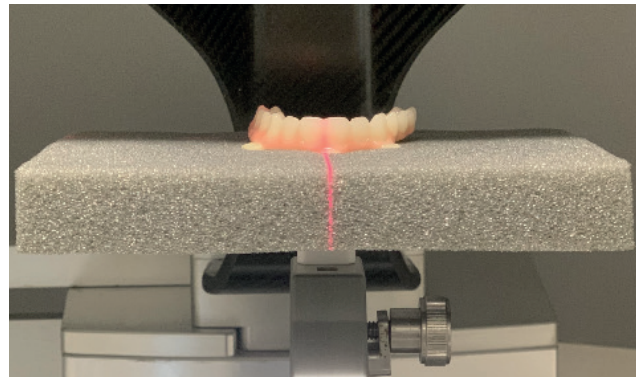
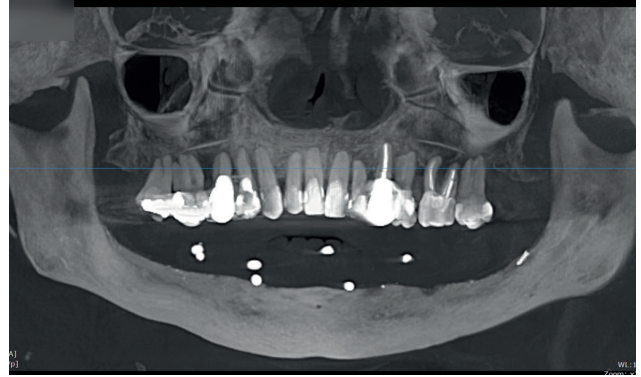
Digital Smile Design
photos

3. The 3Sixty Dental Team starts working on the case by downloading the files, importing them into the Atomica planner, and verifying the quality of the IOSs and the CBCT.

4. The 3Sixty Dental Team member matches any additional existent file to the CBCT according to the type of files submitted:

- **Dentate patients** : We match the STL file of the models to the CBCT following the agreed upon requirements between CAD team & Dental Team for accurate guide design.
- **Edentulous Patients** : We match the CBCT of the scanning appliance to the CBCT following dual scan protocol recommendation and best practices (Dual scan is with the denture/scan appliance in the patient's mouth and the denture/appliance on its own.)

Dual Scan Protocol



5. Once the files are verified by the concerned 3Sixty teams, they will email you with the request to resubmit any missing/sub-optimal files before moving on to the next step.

6. The prosthetic team will proceed with designing a wax-up using CAD/CAM software and contact you via email to verify the step.

7. The Dental Team will then proceed with the case treatment planning on the Atomica planner software.

8. You will be notified via email that the planning step has been completed. This email will also include:

- PDF Plan report.
- Any additional surgical/prosthetic recommendations in the body of the email (if applicable).
- Any request for missing requirements/details in the case.
- A confirmation of the connection type of the photogrammetry PMMA (direct on MUA or on a Ti-base).

9. If there's something that needs adjustment or changing in the plan, our team will schedule a treatment plan review meeting with a Dental Team member to go over the required adjustments before proceeding to the next step.

10. Our team will contact you to confirm the surgery date and time.

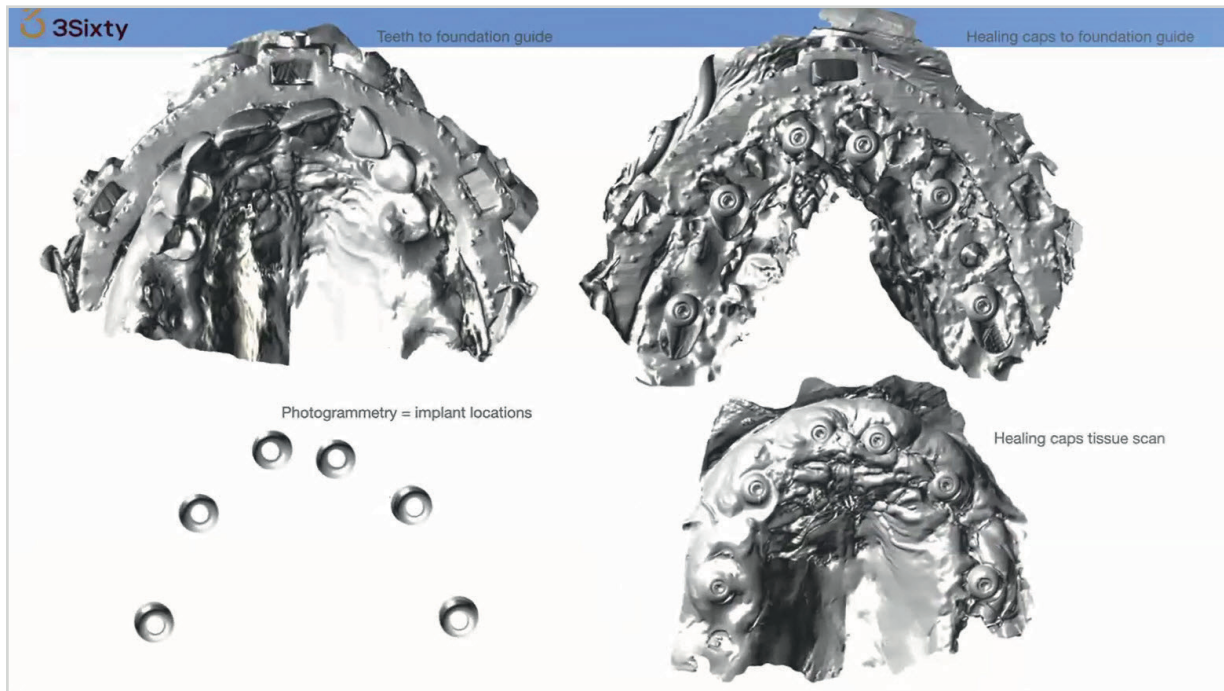
11. The CAD team will proceed with designing the Anatomic Guide®.

12. Depending on your preference, the team can either send you the finished STL file to print in-house, or print the Anatomic Guide® for you to be shipped from the 3Sixty dental laboratory.

PMMA Temporary Restoration Workflow

1. After confirming the surgery date and time, our team will book a slot for the real-time PMMA temporary restoration design by our Prosthetics Team.
2. On surgery day, you'll upload the required pre-surgical records (before flap elevation) to the 3Sixty Courier web app.
3. The Prosthetics Team will verify the records on their end and communicate if anything needs to be redone.
4. Once all the requirements have been met, the team will give you the green light to start the surgery via email or phone call.
5. Following the surgical procedure and the implant placement, you'll provide the post-surgical records and upload them on 3Sixty Courier web app, which consist of:
 - Implant position data (photogrammetry scan).
 - IOS with reference markers (Phillips screw or the Anatomic Guide®).
 - IOS with scan bodies after suturing the surgical flap.

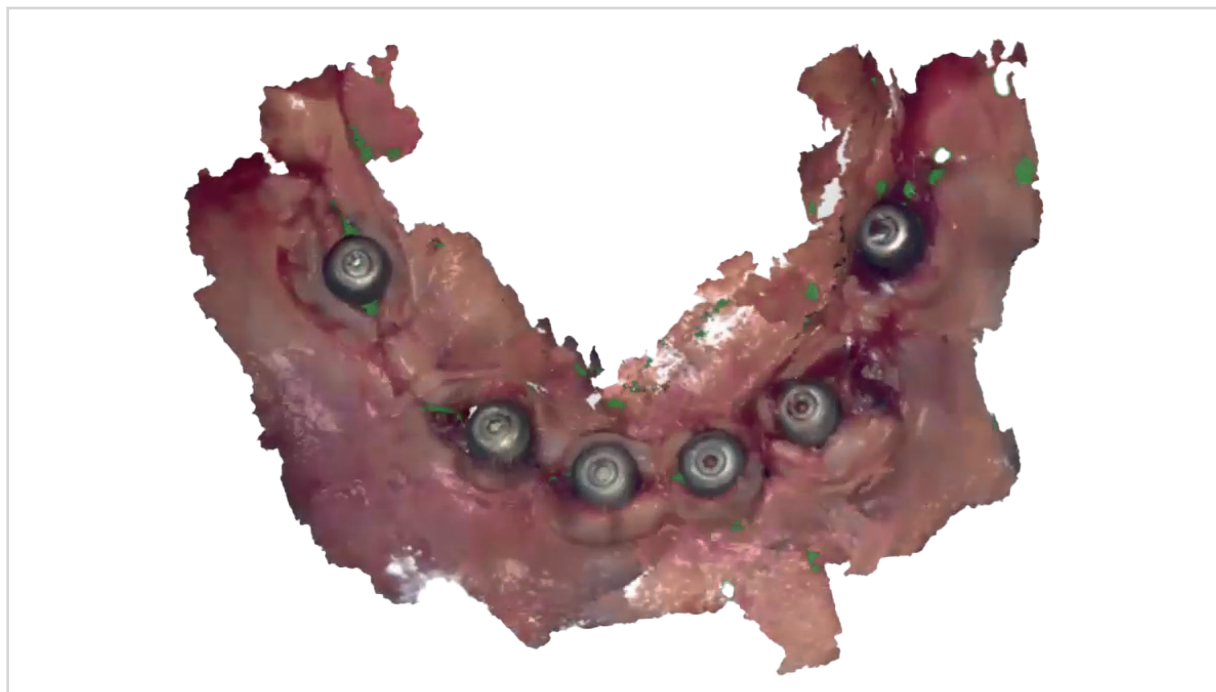
Photogrammetry Data



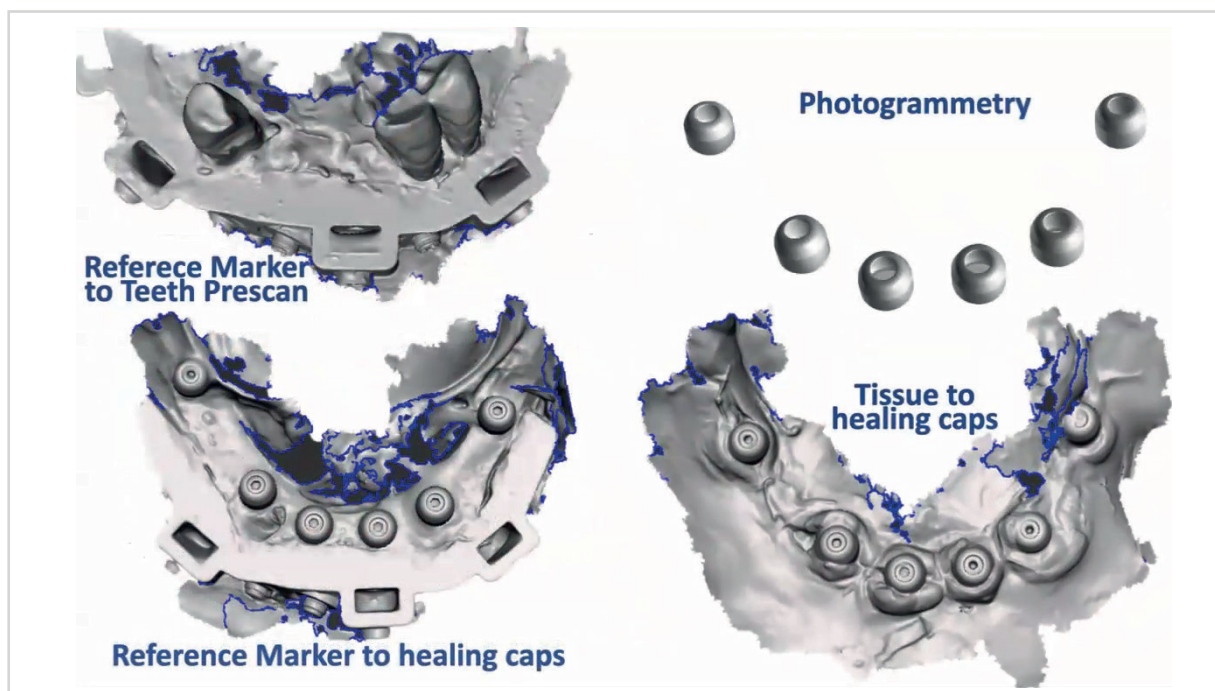
IOS with the Anatomic Guide as Reference Marker

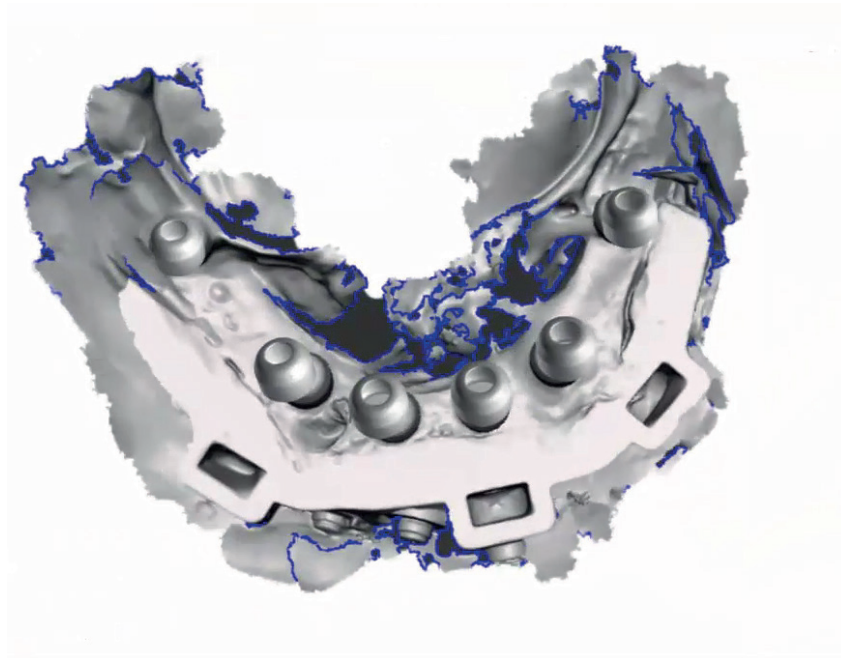


IOS of Soft Tissue with Healing Caps

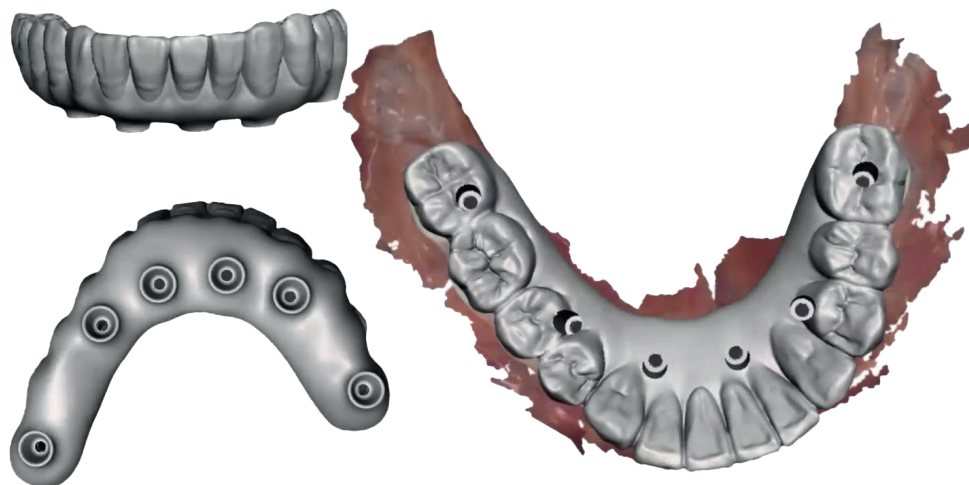


Superimposed Scans





6. The Prosthetics Team will verify the previous data, match them up with the wax-up design, and start designing the PMMA temporary restoration.



7. Depending on your preference, the Prosthetics Team can either send you the finished STL file to print in-house (for immediate loading), or print the PMMA temporary restoration for you to be shipped overnight from the 3Sixty laboratory (for delayed loading).

Photogrammetry PMMA Temporary Restoration Only Workflow

1. Create an order on the 3Sixty Courier web app requesting a photogrammetry PMMA temporary restoration.
2. Upload the required pre-operative files, which consist of:
 - **Upper and lower IOS** : A 3D image that captures the exact shape, and contours of the teeth in the form of an STL file.
 - **Bite scan** : Digital bite of the patient's occlusion capturing the relationship between the upper and lower teeth.
 - **DSD photos** : High-resolution digital photos of the patient's face from various angles. These photographs depict the entire appearance of the face, including the lips, gums, and surrounding tissues.

- **CBCT DICOM files.**
- **Facial scanning** (optional) : Identifying and measuring facial features in an image.

3. Once the files are verified by the Prosthetics Team, they will proceed with designing a wax-up using a CAD/CAM software and contact you via email to verify the step.

4. Once your verification is obtained, our team will contact you to confirm the surgery date and time.

5. The workflow here follows the same procedure as the [PMMA Temporary Restoration Workflow](#).

Photogrammetry Final Restorative Solution

1. Create a final restoration order on the 3Sixty Courier web app and upload the following files:

- Implant position data (Photogrammetry Scan)
- IOS with scan bodies
- IOS of PMMA
- IOS of opposing arch
- Bite scan of PMMA in place
- IOS of MUAs

-
2. These files will be downloaded by the 3Sixty Prosthetics Team, verified to be accurate, and then the design process of the Try-in restoration will be completed.
 3. Alignment of the Try-in on the pre- and postoperative DSD photos is performed to make sure there are no discrepancies.
 4. The Prosthetics Team email you the HTML file of the Try-in design as well as the merged DSD images.
 5. Depending on whether the design matches your expectations, you can either approve the final Try-in design or request changes to it.
 6. If the design is approved, you can either :
 - Request the STL files to fabricate the Try-in at your office, or
 - Give the 3Sixty team the greenlight to fabricate the Try-in and ship it overnight from our lab.
 7. After a successful Try-in, the team will proceed with the final restoration process.

Take Your Practice to the Next Level

Adopting new technology can be daunting. However, the precision, accuracy, and ease-of-use you get with 3Sixty Photogrammetry solutions will help you clear any obstacles you face with All-on-X cases.

Our fully-digital workflow takes the guesswork out of the equation so you can get consistently excellent results.

By Dentists, For Dentists

3Sixty has been a steadfast pioneer in the field of guided surgery since 2007. Over the years, we have endeavored to help dentists do their best work by providing them with the most advanced solutions in the market. It is this determination that keeps us at the forefront of fully-digital dentistry.



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