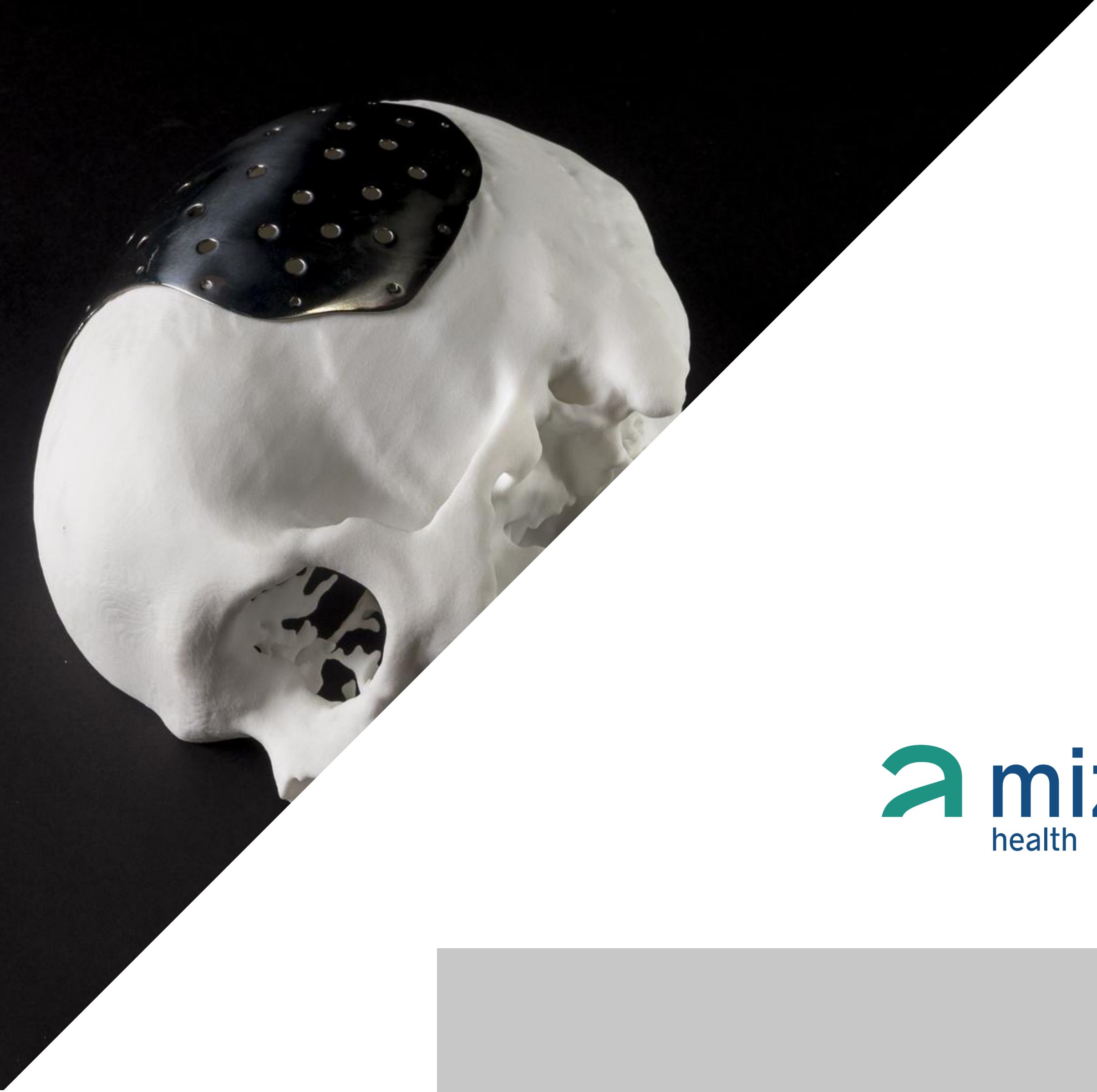
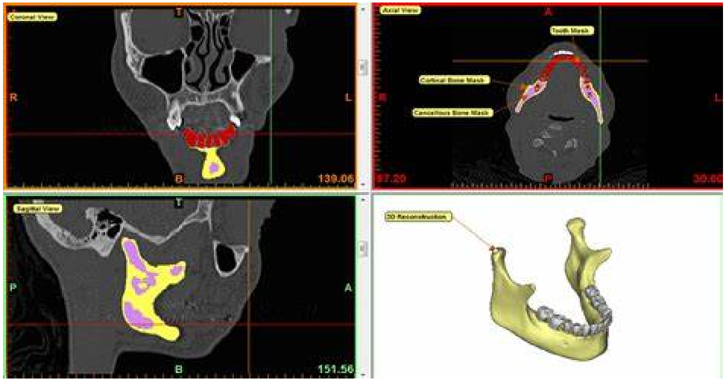
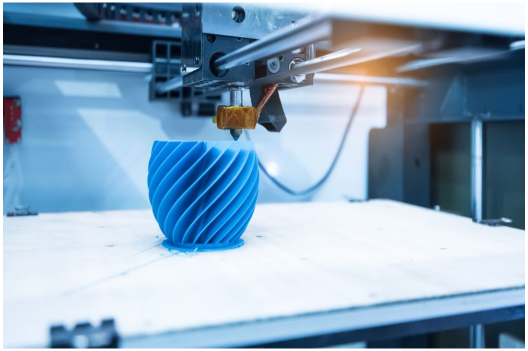


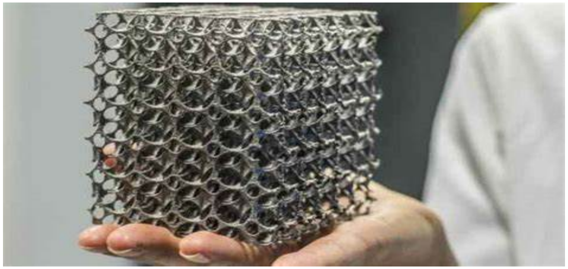
mizar health
alcor GRUPO

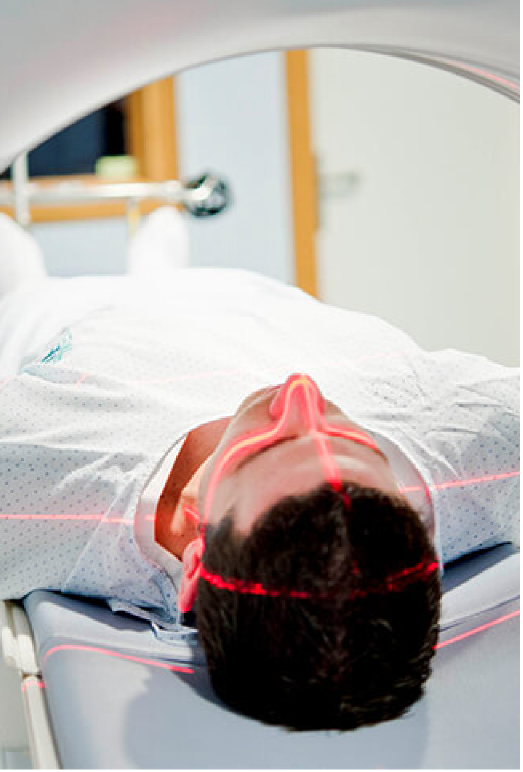
3D DESIGN AND ADDITIVE MANUFACTURING HEALTH SOLUTIONS

3D design & SW and AM







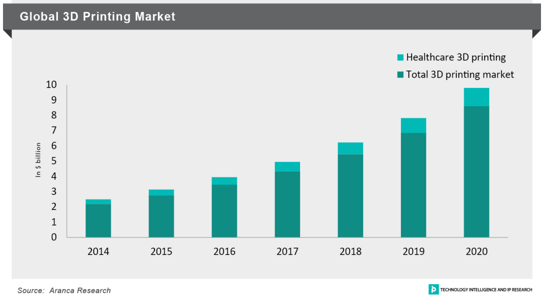


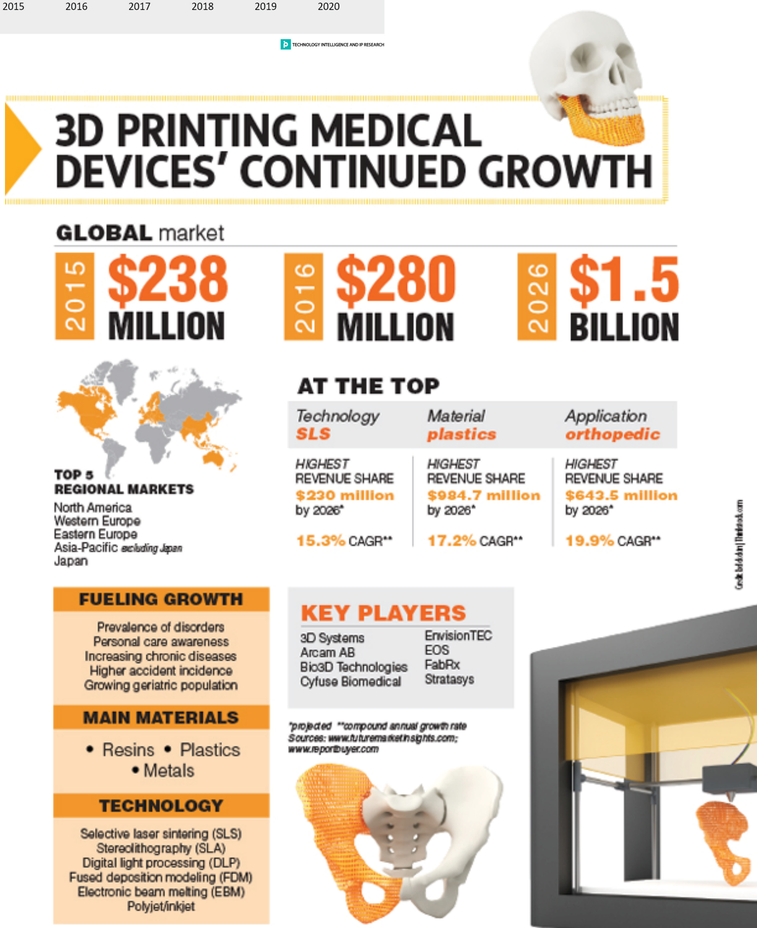
Personalized patient care is increasingly becoming reality. This is driven by technological advancements such as 3D printing and advanced image visualization techniques, which have proven effective for clinicians developing tailored surgical approaches and lead to increased patient satisfaction.

mizar health alcor GRUPO

The power of 3 printing.

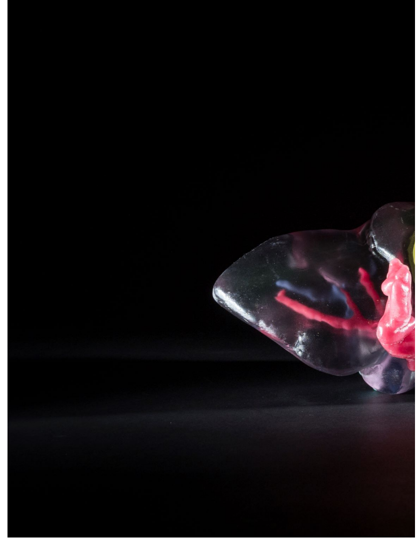
For nearly 8 years, Mizar Health has enabled medical 3D printing innovations that deliver personalized care for hundreds of patients each year. In recent years, access to the technology has increased significantly which has supported the 'decentralization' of 3D printing and resulted in increased adoption in hospitals and clinics.

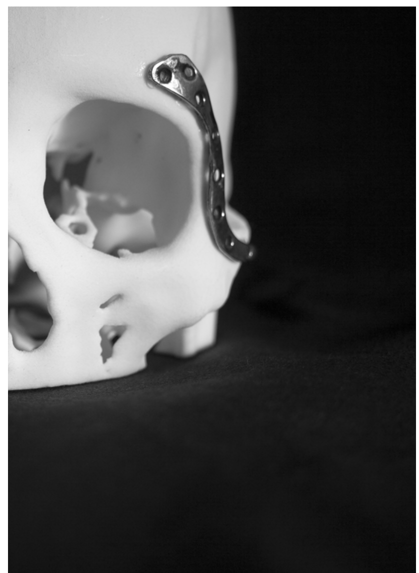




Bringing 3D printing to the point of care.

With this shift from industry Service provider to printing at the POC, new opportunities exist for physicians to deliver more personalized care and increase patient satisfaction. Having a dedicated facility in-house can cut days off the process, support innovation initiatives, and result in lower overall costs incurred by the hospital.

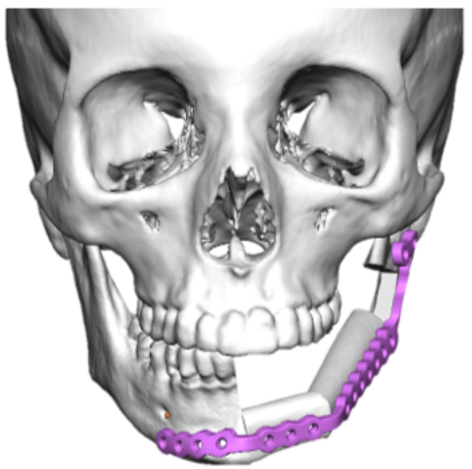


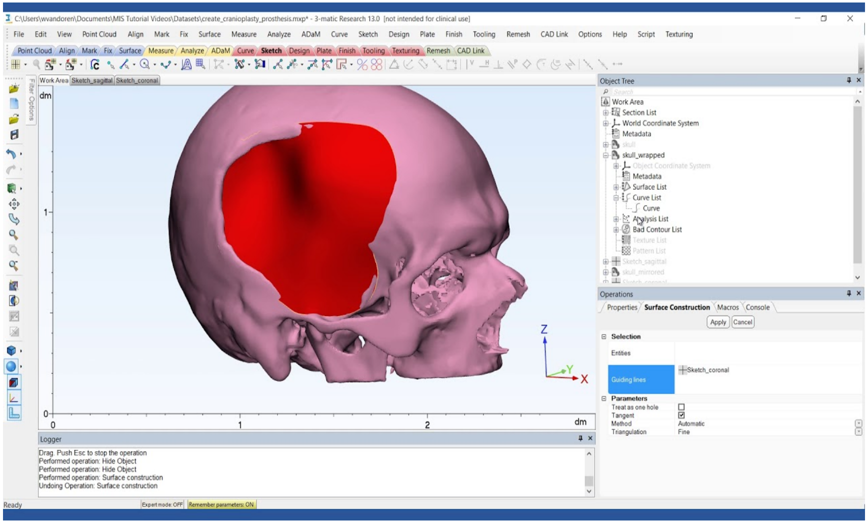


On call.
On site.

"We started 3D printing at the point of core based on a clinical need. We were able to expand because we didn't have silos. We allowed surgeons to come with their problems and use 3D printing to solve them. That is how we really grew and we continué to expand."

Dr. Jonathan Morris, Director Anatomic Modeling Lab
Department of Radiology, Mayo Clinic





Experience

Clínica Universitaria Colombia
Organización Sanitas Internacional

HM HOSPITALES

Vall d'Hebron
Barcelona Campus Hospitalari

Osakidetza

SaludMadrid
Hospital Universitario La Paz
Comunidad de Madrid

SaludMadrid
Hospital Universitario
12 de Octubre

HTVC
Hospital de Tortosa
Verge de la Cinta

Son Espases
hospital universitari

SaludMadrid
Hospital General Universitario
Gregorio Marañón
Comunidad de Madrid

Parc Taulí
Hospital Universitari

HUVM
Hospital Universitario
Virgen Macarena

Clínica Iberoamérica

vithas

BENEFITS

For Patients

Optimize patient outcomes with diagnostic 3D-printed anatomical models

For Clinicians

Enterthe operating room with greater confidence and less stress.

For Hospitals

Lower operating room costs by shortening procedure times and reducing instruments and waste.

25

published cases

+ 1000

surgeries

4

medical devices patents

"According on the literature-based fi nancioI analyses, medical 3D print- ing appears to reduce operating room costs secondary to shortening procedure times. While resource-in- tensive, 3D-printed constructs used in patients' operative core provides considerable downstream valué to health systems."
All input comes from 'Ballard et al., Medical 3D printing cost-savings in Orthopedic and Maxillo- facial Surgery, Science Direct 2019.'

PROCESS

1 **ACT**
Image aquisition

2 **PLANNING**
Segmentation and design

3 **3D PRINTING**
Additive manufacturing, post-processing and quality assurance

4 **POST-MARKET**

ALL TECHNOLOGIES IN AM. ALL MATERIALS FOR HEALTH.

ISO 13485
BUREAU VERITAS
Certification

Electron beam melting (EBM)

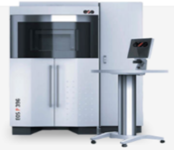
Manufacturing through electron beam melting with a ARCAM Q10.

- ✓ Measurements:
  200 x 200 x 180mm
- ✓ Materials:
  Titanium alloys Ti6Al4VELI (Grade 23)
- ✓ Other Materials:
  Ti6Al4V (Grade 5), Ti-Grade 2, Cobalt-Chromium (CoCr-ASTM F75)
- ✓ Tolerance:
  Accuracy 0.3%(min.+/-0,25)
  Minimum thickness 2 mm

Direct metal laser sintering (DMLS)

Manufacturing though metallic alloys laser sintering with a EOS M290.

- ✓ Measurements:
  250 x 250 x 300mm
- ✓ Materials:
  Nickel Base Alloys (Inconel 718)
- ✓ Other Materials:
  Ti6Al4V, AlSi10Mg, Cobalt-Chromium (MP1, SP2), MS1 Martensitic Steel, INCO625 and Ni HX
- ✓ Tolerance:
  Accuracy 0,1% (min.+/-0,2)
  Minimum thickness 0,8 mm



Selective laser sintering (SLS)

Production through polymers elective laser sintering with a EOS P396.

- ✓ Measurements:
  350 x 350 x 600mm
- ✓ Materials:
  Polyamide 12 white
- ✓ Other Materials:
  Natural or black polyamide 12
  Translucide polyamide 11
  Polystyrene
- ✓ Tolerance:
  Accuracy: 0,1% (min +/-0,1)
  Minimum thickness: 0,3 mm

Fused deposition modeling (FDM)

Manufacturing through plastics fused deposition modeling at a Fortus 400 and Fortus 900.

- ✓ Fortus 400 measurements:
  406 x 355 x 406mm
- ✓ Fortus 900 measurements:
  Nickel Base Alloys (Inconel 718)
- ✓ Materials:
  ASA, ABS (ABS i, ABS M30, ABS M30i, ESD7)
  PC, PC-ABS Y PC-ISO
  ULTEM 9085
  ULTEM 1010
  PPSF
  Nylon 12
- ✓ Tolerance:
  Accuracy: 0,1% (min+/- 0,13)
  Minimum thickness: 0,5 mm

Material jetting

We use the Objet 500 Connex3 to produce components through material jetting.

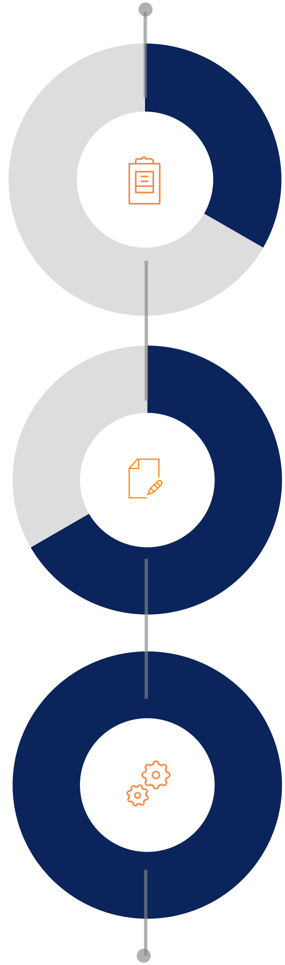
- ✓ Materials:
  Diversity of colours and transparency
  Elastomers with different thickness (27-95 ShoreA)
  PP and ABS simulation
- ✓ Measurements:
  490x390x200 mm
- ✓ Tolerance:
  Accuracy: 0,2 (min. 20µm)
  Minimum thickness: 0,5-0,8 mm

Finishing and cleaning processes

We carry out the necessary additional processes to complete the parts' manufacturing. Apart from a specific manual cleaning and decontamination we carry on validation processes to guarantee the highest quality standard which will allow our clients the component's sterilization before use.

- ✓ Finishing processes:
  Shot Peening through steel or glass bed.
  Corundum blasting.
  Polishing through various abrasives.
  Verification.
- ✓ Cleaning processes:
  Rinse and preliminary cleaning.
  Heated bathrooms through ultrasonic vibrations.
  Water baths on running or demineralized water.

OUR MODEL



3D FAB LAB

CERTIFIED DESKTOP 3D PRINTERS
BIOMEDICAL ENGINEER
CERTIFIED SW
HARDWARE

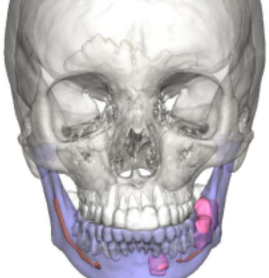
PLAN + BIOMODELS + GUIDES

OUTSOURCING

CUSTOMIZED IMPLANTS IN MIZAR HEALTH

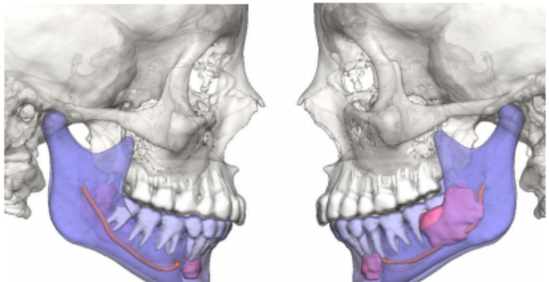
REGULATORY & I+D

HOSPITAL = MANUFACTURER
COOPERATION IN MEDICAL DEVICES DEVELOPMENT

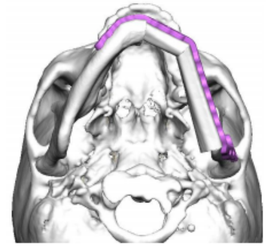


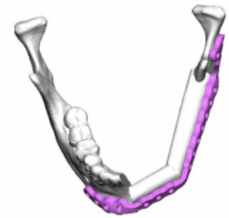
Vista Anterior

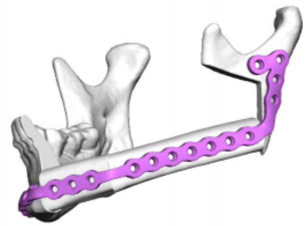
Vista Basal

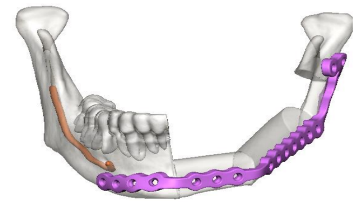


Vista Lateral

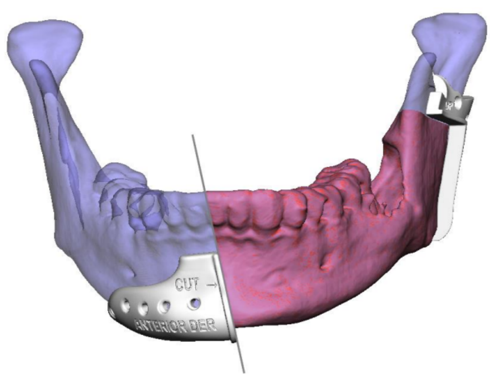






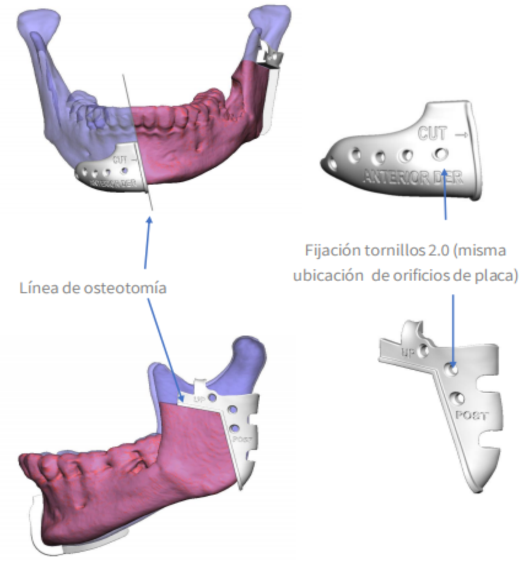


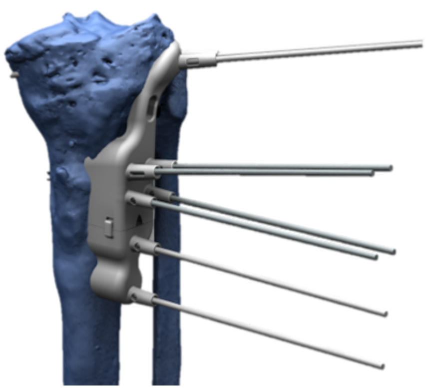
Solutions: 3D segmentation, planning and simulation



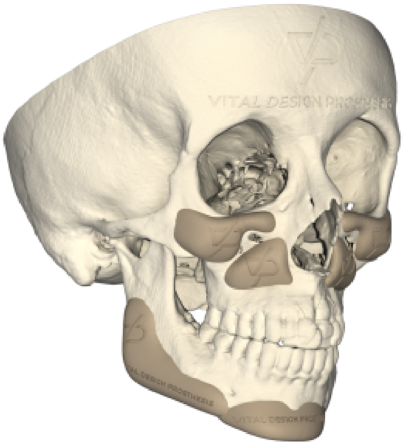
Solutions: biomodels

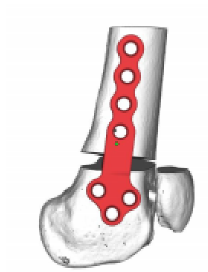
Solutions: guides and customized instrumental

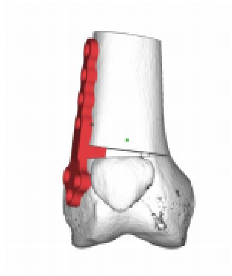




Solutions: customized implants








THANKS