



CAD/CAM CHAIRSIDE SYSTEM IN DENTAL PRACTICE (CEREC)

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DEPARTMENT OF CONSERVATIVE DENTISTRY

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CAD/CAM

COMPUTER AIDED
DESIGN – COMPUTER
AIDED MANUFACTURING



CEREC

CHAIRSIDE ECONOMICAL
RESTORATION OF ESTHETIC
CERAMICS



DENTAL CAD/CAM SYSTEMS

LAB

CHAIRSIDE

CAD/CAM

COMPUTER AIDED
DESIGN –

COMPUTER AIDED
MANUFACTURING

- In Lab;
- In Eos;
- Everest;
- Wol-Ceram;
- Cercon;
- Celay;
- Procera;
- Lava;

- CEREC
- E4D Dentist
- Galaxy Biomill



CEREC EVOLUTION

1987



1994



2000



Prof. Werner H. Mörmann; Dr. Marco Brandestini

CEREC

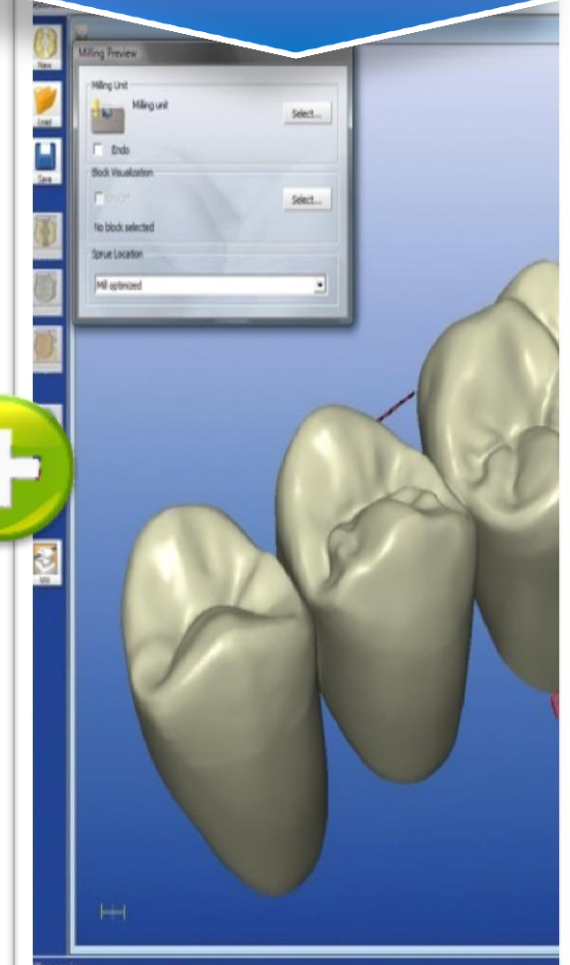
ACQUISITION CENTER



MILLING UNIT



3D SOFTWARE



CEREC

Digital Impressioning

APOLLO DI



\$19,750 or
\$399 per month

CEREC® AC CONNECT
WITH BLUECAM



\$25,995 or
\$526 per month

CEREC® AC CONNECT
WITH OMNICAM



\$49,995 or
\$1,012 per month

Chairside Solutions

CEREC® AC WITH
BLUECAM + CEREC MC



\$79,995
or \$1,620 per month

CEREC® AC WITH
OMNICAM + CEREC MC



\$109,995
or \$2,175 per month

CEREC® AC WITH
OMNICAM + CEREC MC X



\$129,995
or \$2,570 per month



HOW DOES IT WORK?

CEREC – work phases



Diagnosis and treatment plan



Preparation



Digital impression



Designing

Anatomical aspects

Constructional aspects

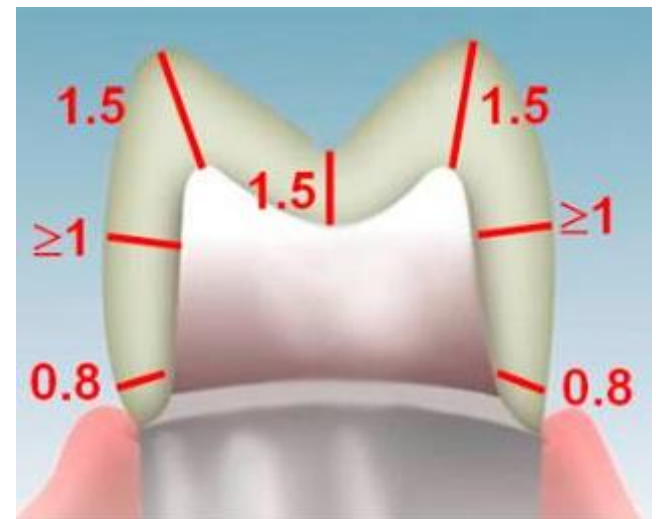
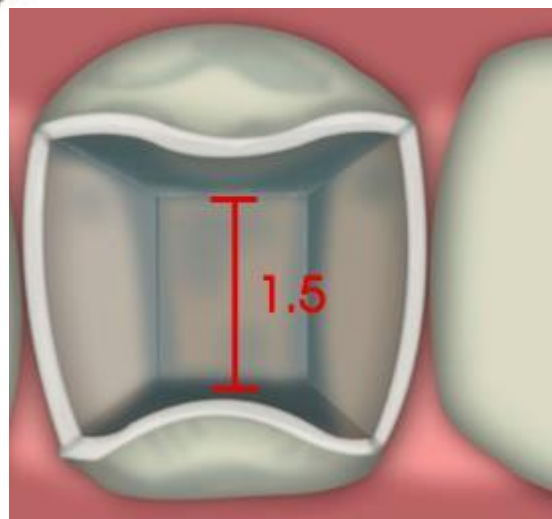
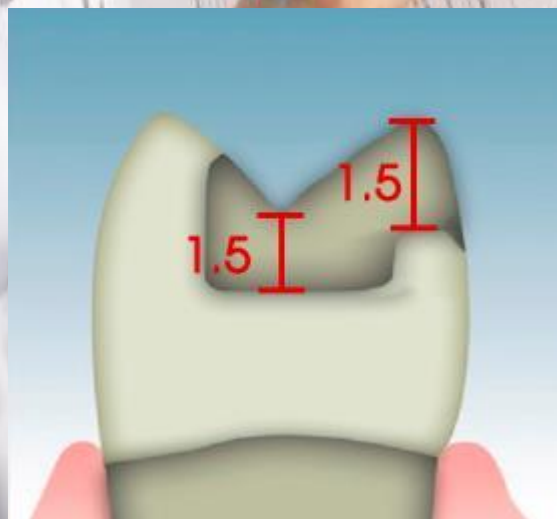
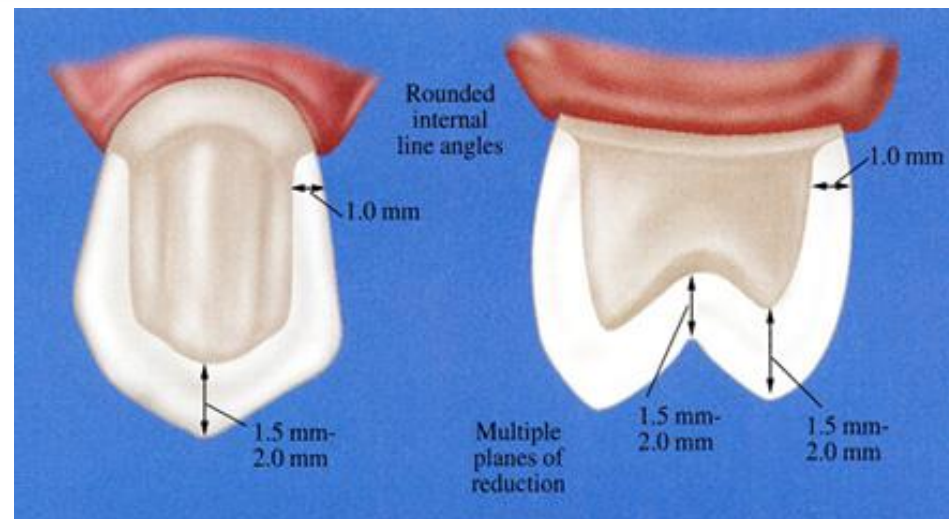
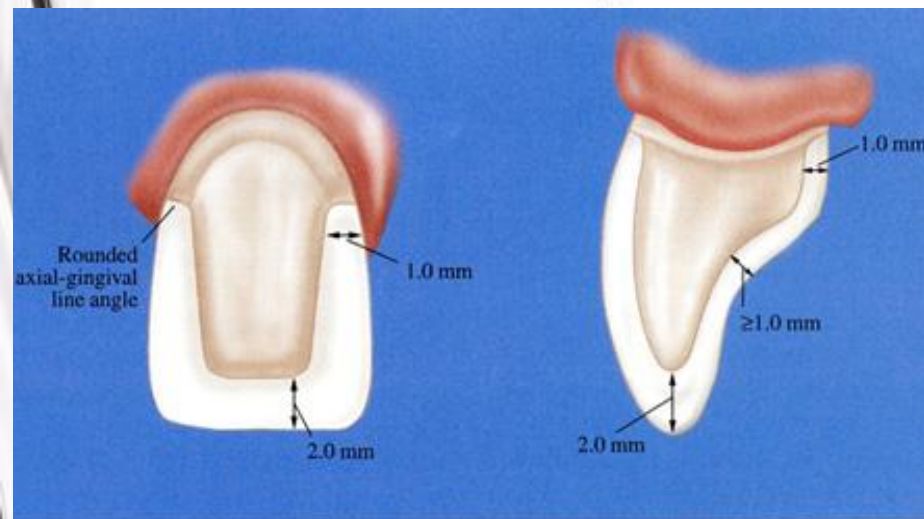


Milling



Cementation

CEREC - preparation





**Digital
impression**



Designing



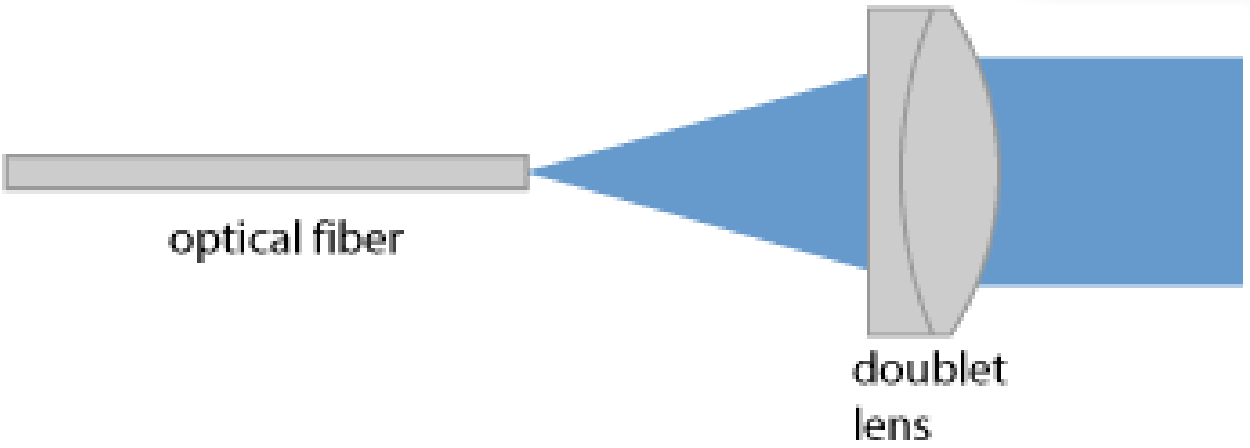
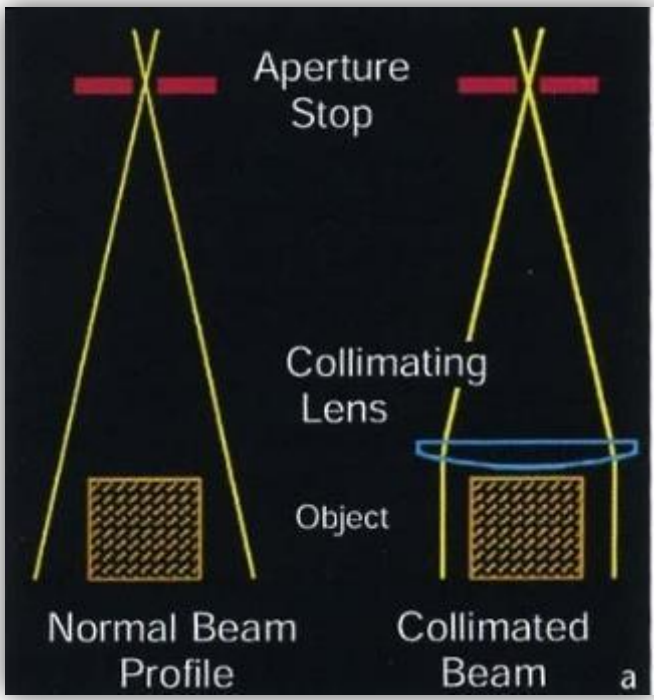
Milling



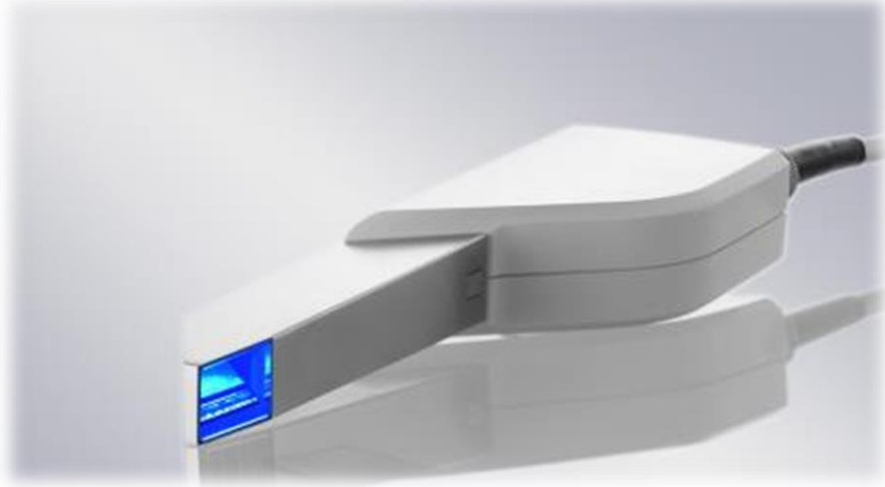
A close-up photograph of a dental procedure. A dentist wearing blue gloves is using a dental instrument on a patient's teeth. A large red octagonal sign with the word "STOP" in white capital letters is overlaid in the center of the image. The background shows the patient's face and the dental clinic environment.

STOP

Digital impression



CEREC ACQUISITION

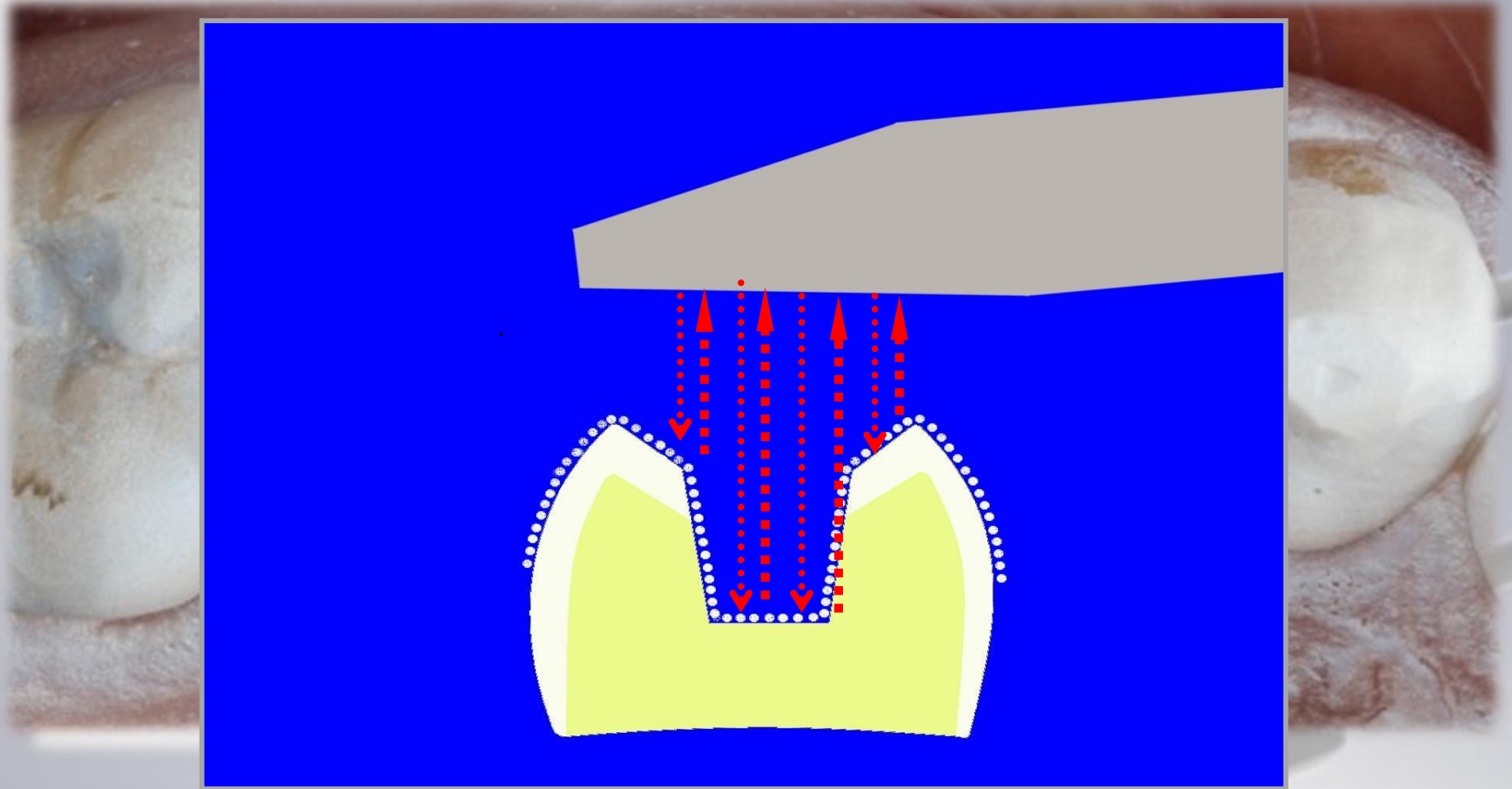
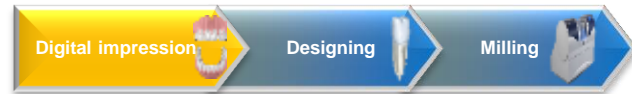


BLUECAM

OMNICAM



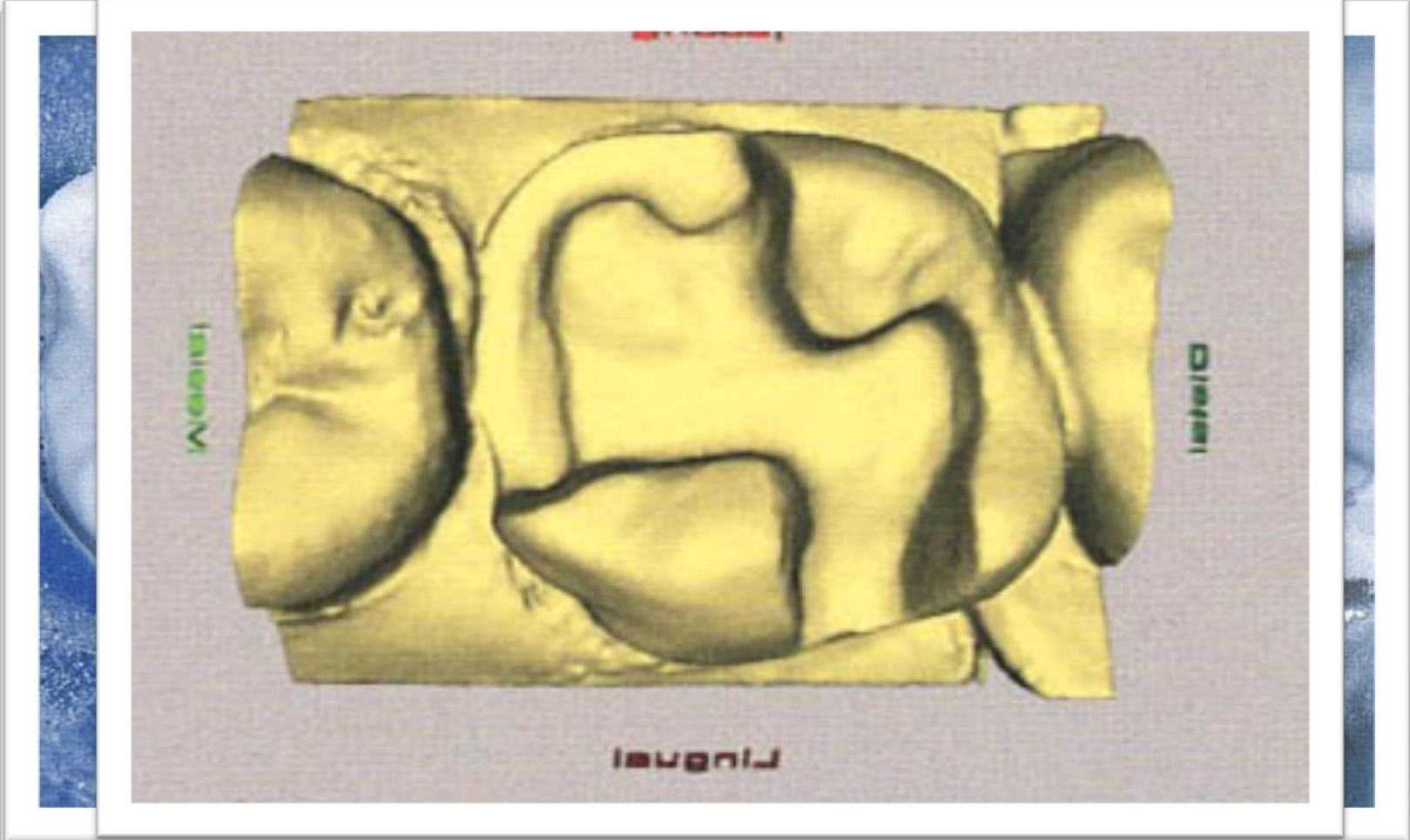
CEREC BLUECAM



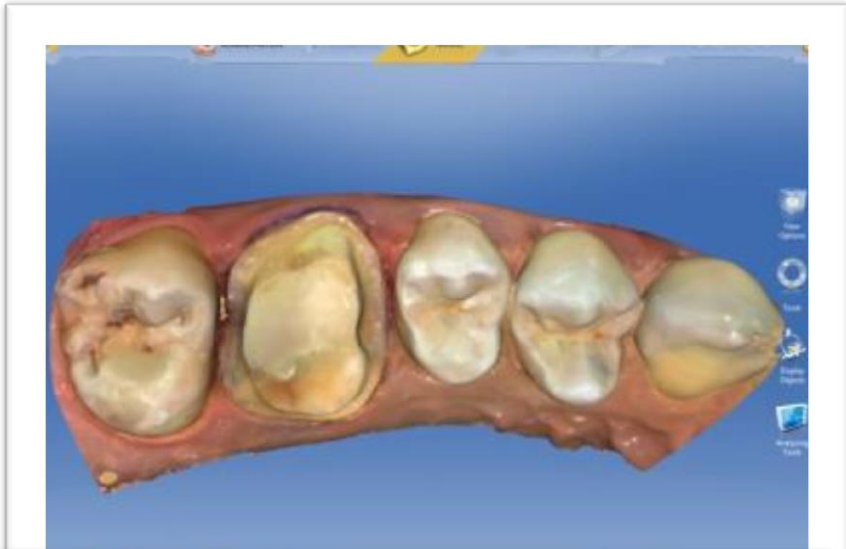
CEREC BLUECAM



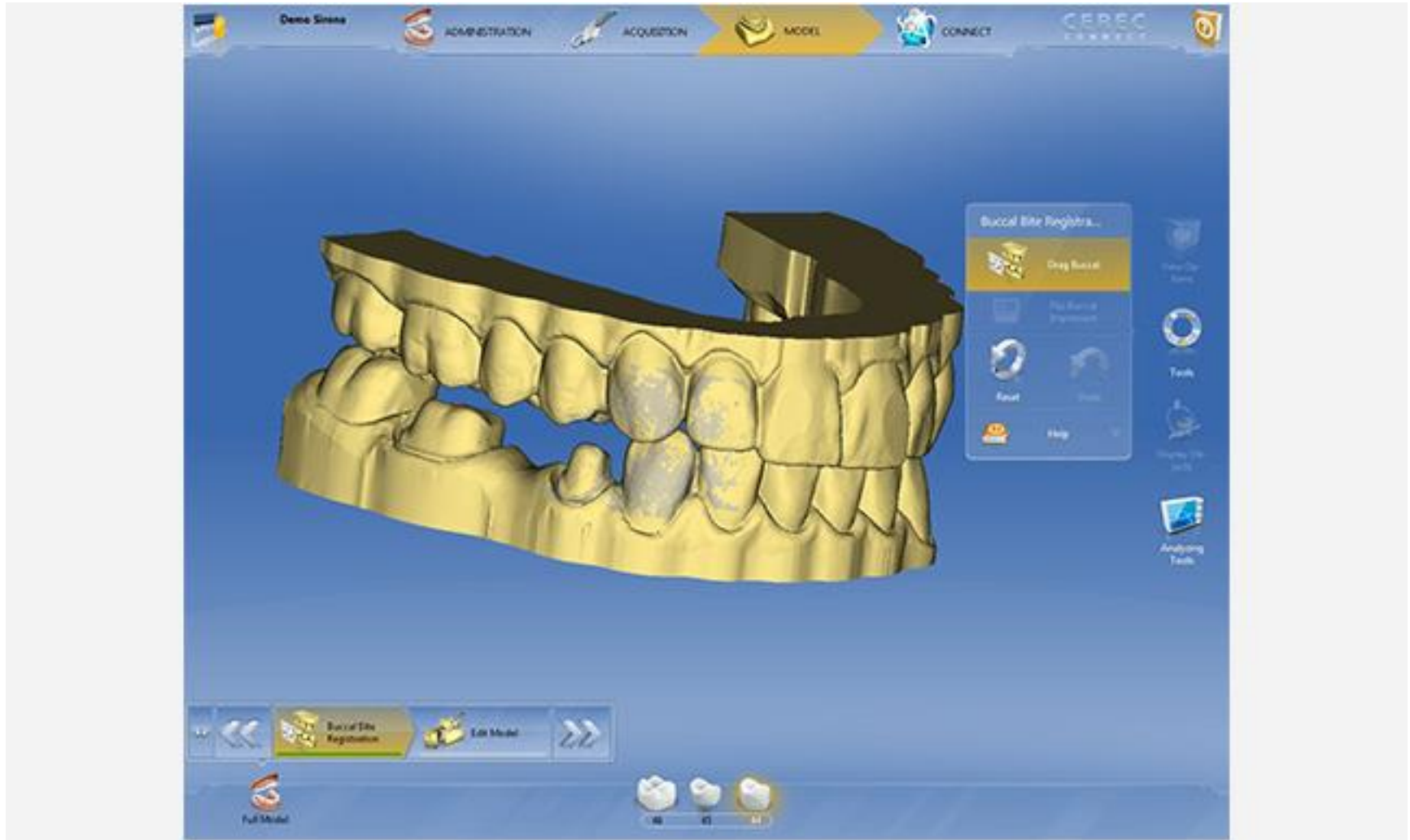
CEREC BLUECAM



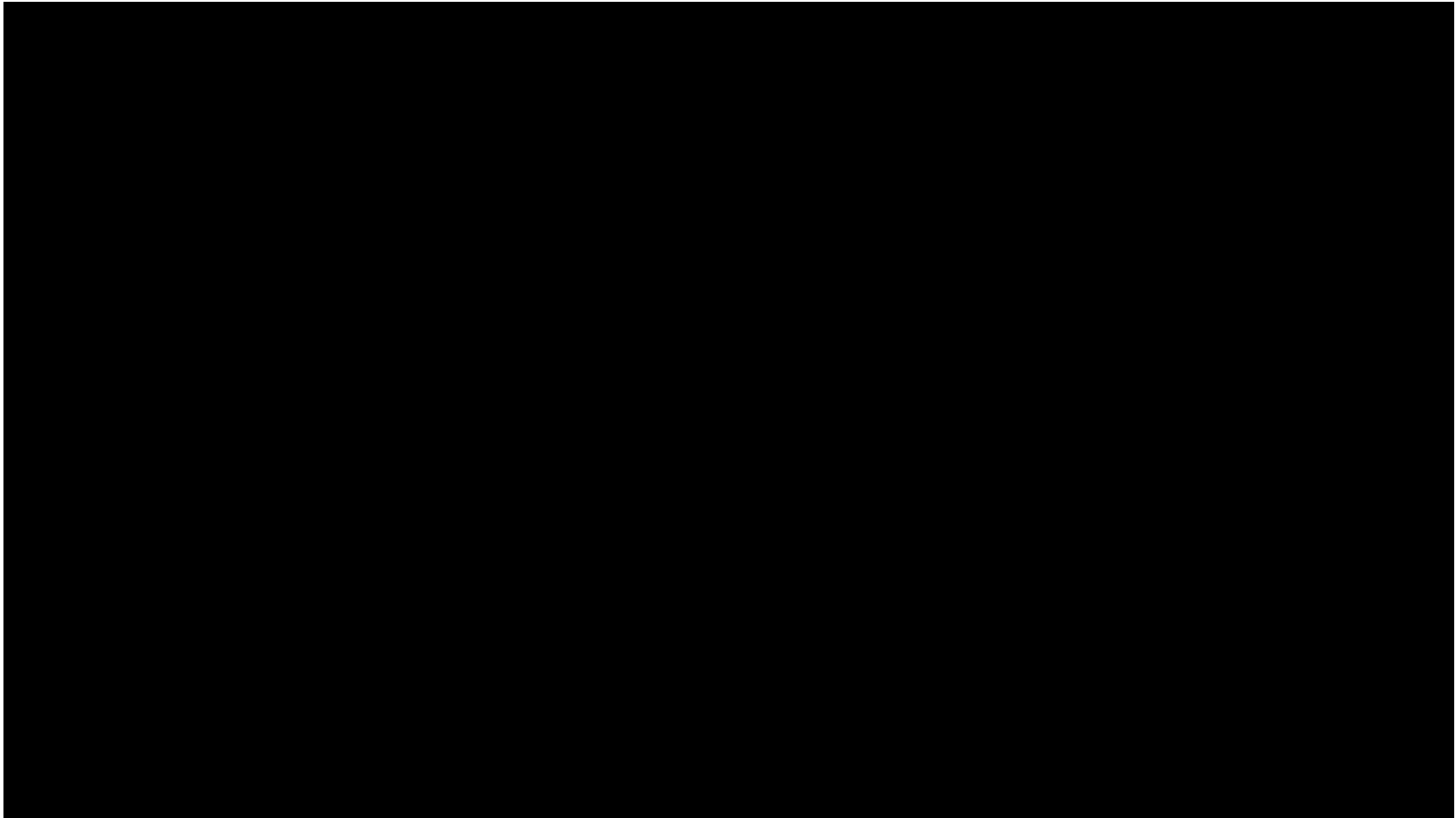
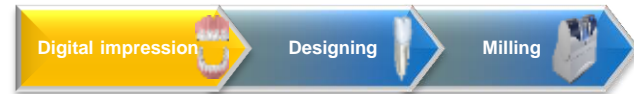
CEREC OMNICAM



BUCCAL SCAN



CEREC VIDEO

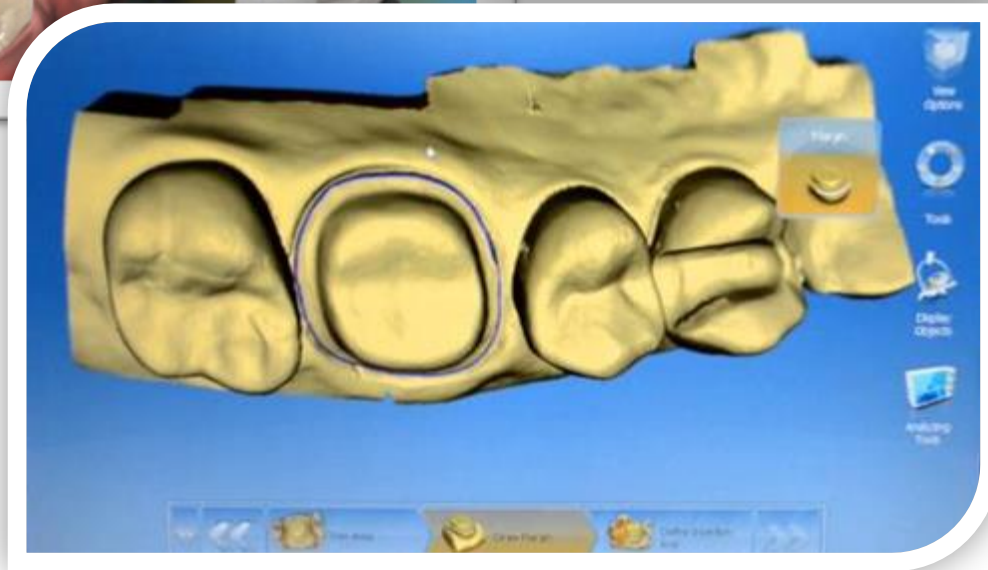


Dentistry has just become easier...

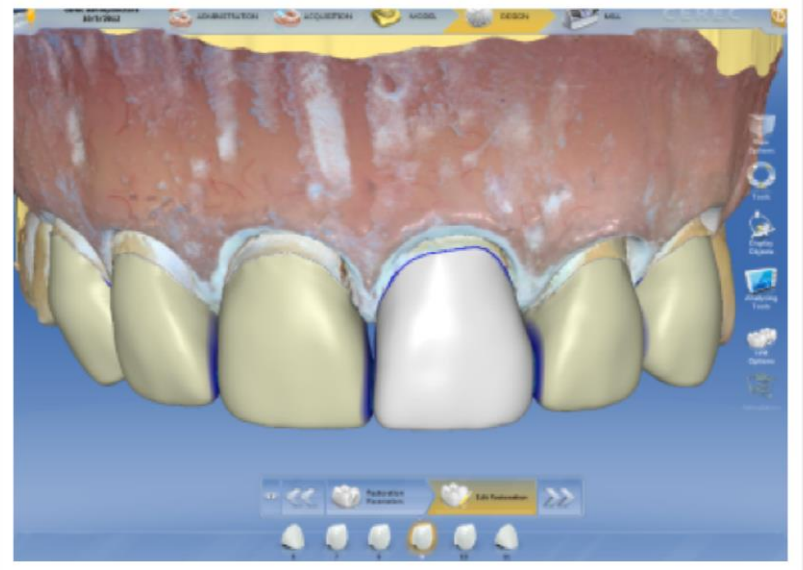
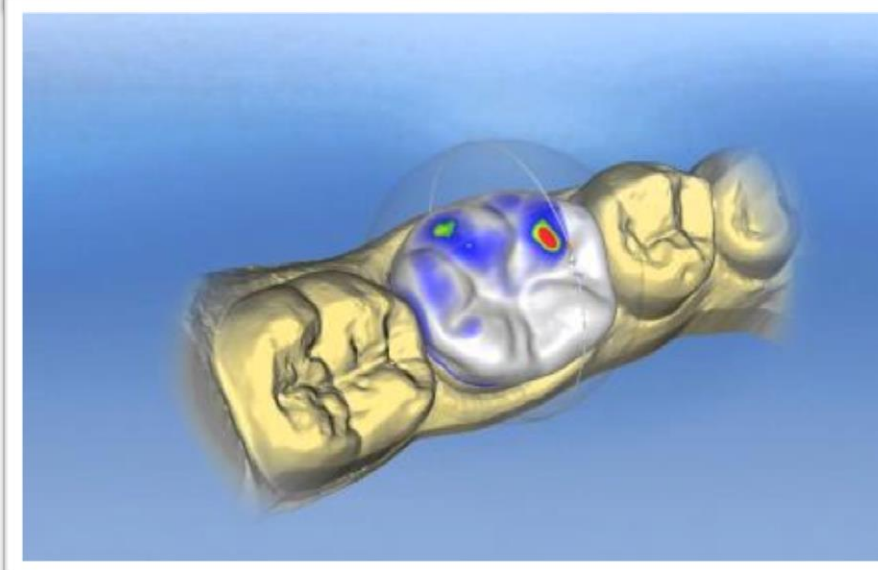
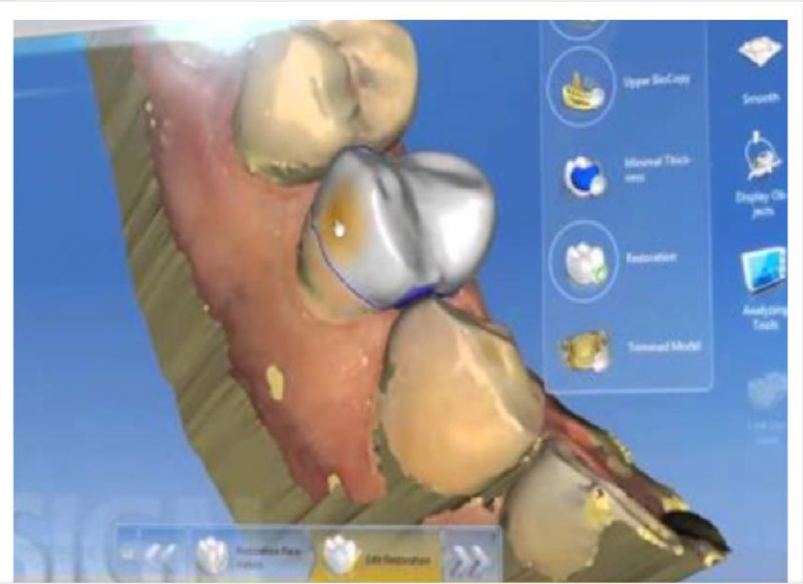
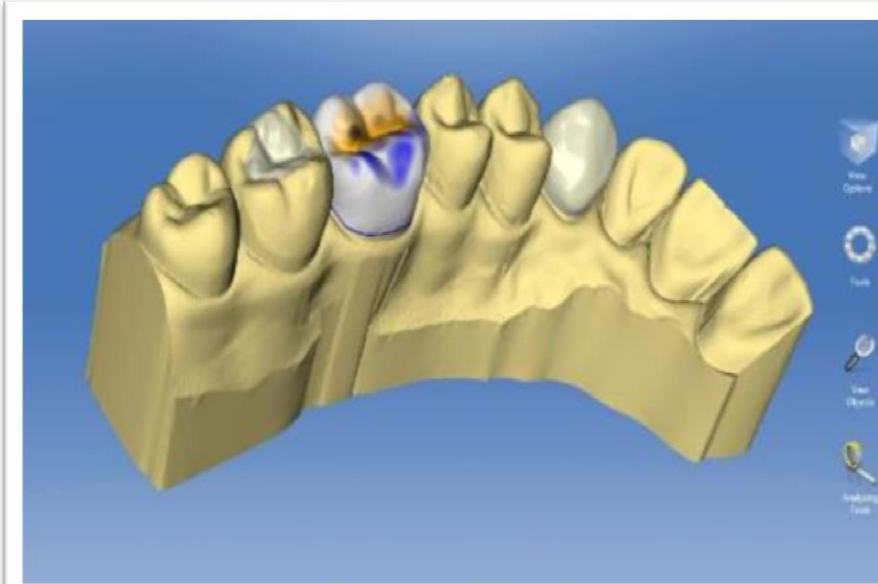




DESIGNING



Designing



World's fastest ceramic restoration



How is it possible?

- New procedure developed
- In cooperation: Prof. Kordass (U. Greifswald);
- Mimicking nature;
- The software is able to restore the occlusal surface

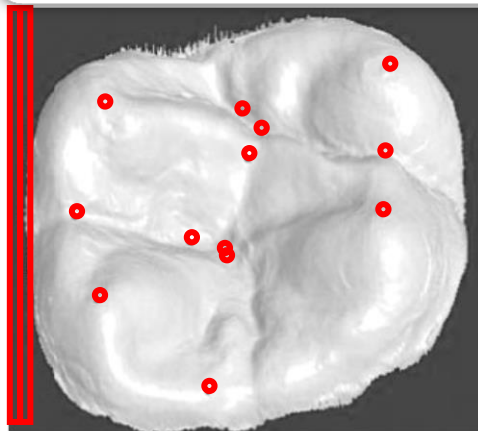


Biomimetic Computation of The Occlusal Surface

RESEARCH OF MEHL & BLANZ

200 to 300 caries-free specimens of each tooth type were 3-dimensionally measured & analyzed to construct a model of the

BIOGENERIC TOOTH



- The teeth were scanned and measured
- 40 characteristic features were defined.

RESEARCH OF MEHL & BLANZ

These features provided the basis for computing an average tooth embodying the median characteristics of all naturally occurring teeth

VALUED FEATURES

Size of the tooth



Existence of a fifth cusp



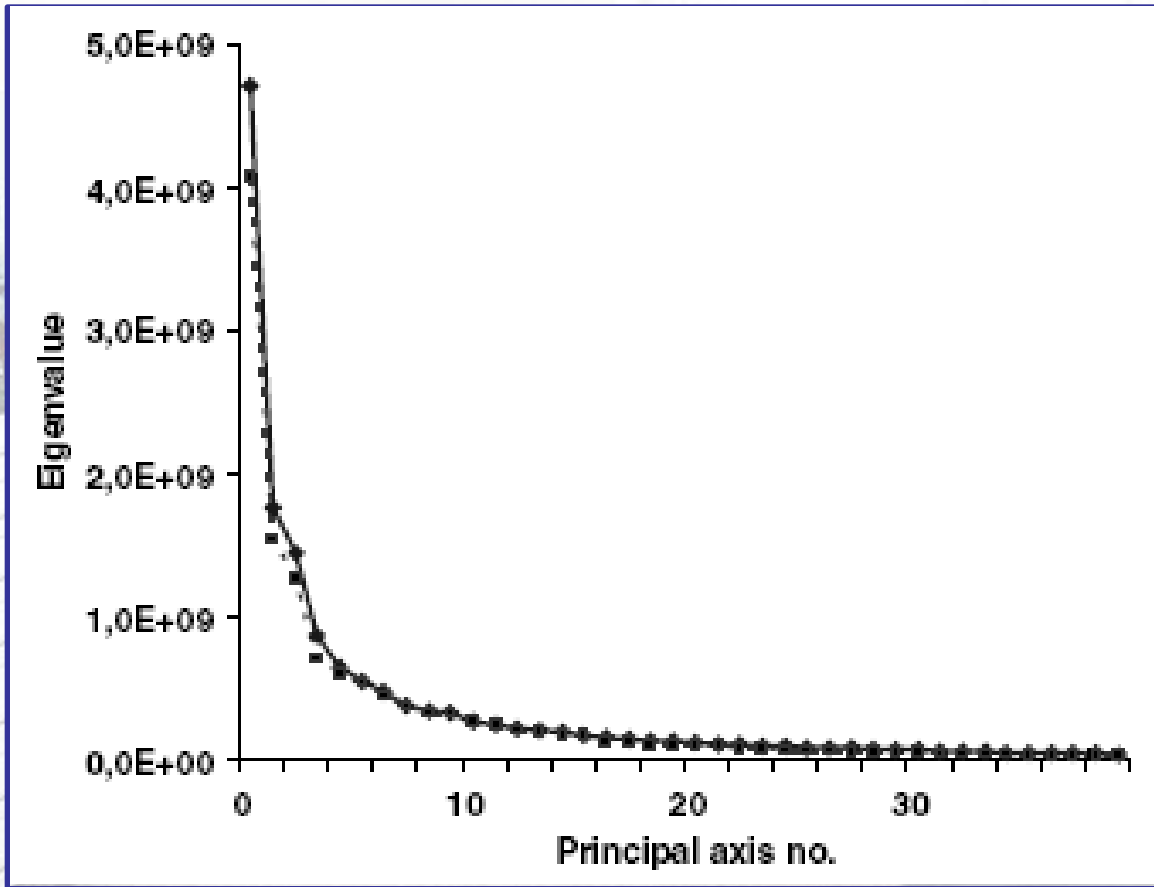
Shape of cusps

Shape of occlusal fissures



RESEARCH OF MEHL & BLANZ

Thorough probability analysis showed the influence of each characteristic feature



- 5 → 52%
- 10 → 72%
- 20 → 85%
- 40 → 92%

RESEARCH OF MEHL & BLANZ

This analysis suggests that only a few criteria are sufficient to describe any natural tooth quite closely.

MATHEMATICAL APPROACH

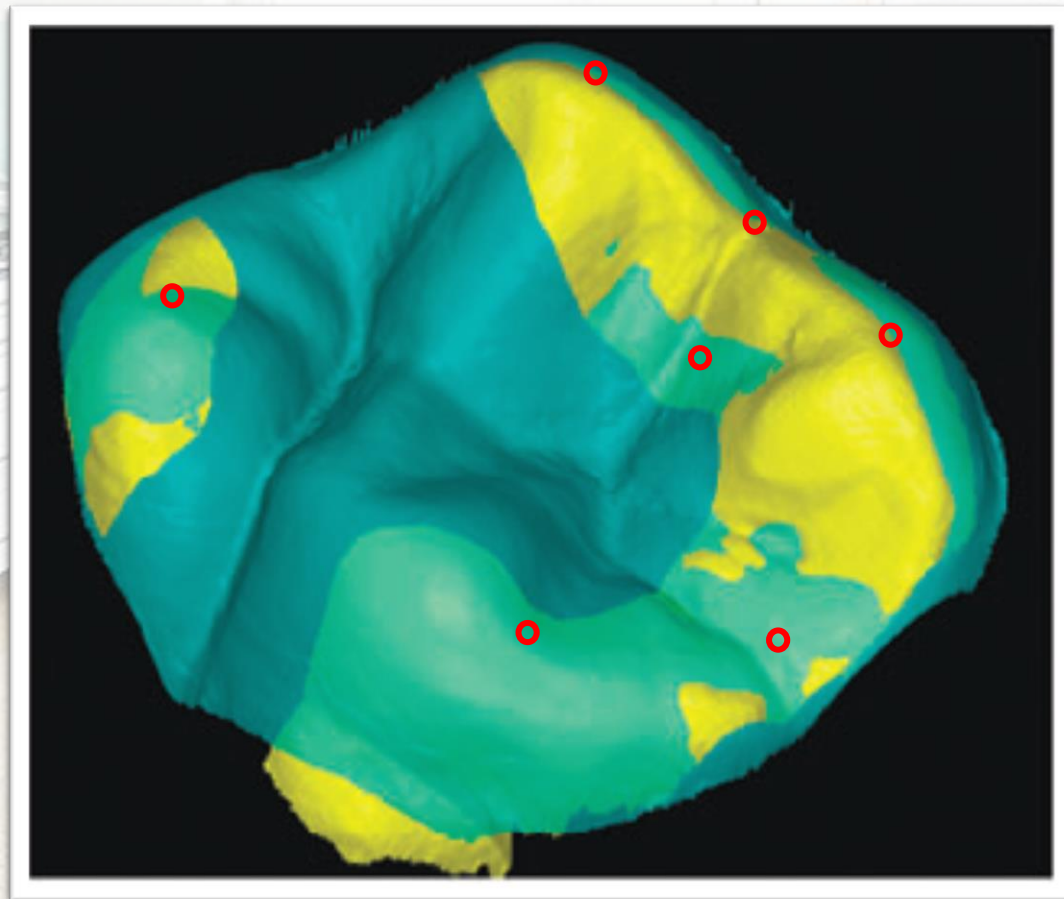
20

selected feature points on the occlusal tooth surface suffice to reproduce the very same occlusal tooth surface with

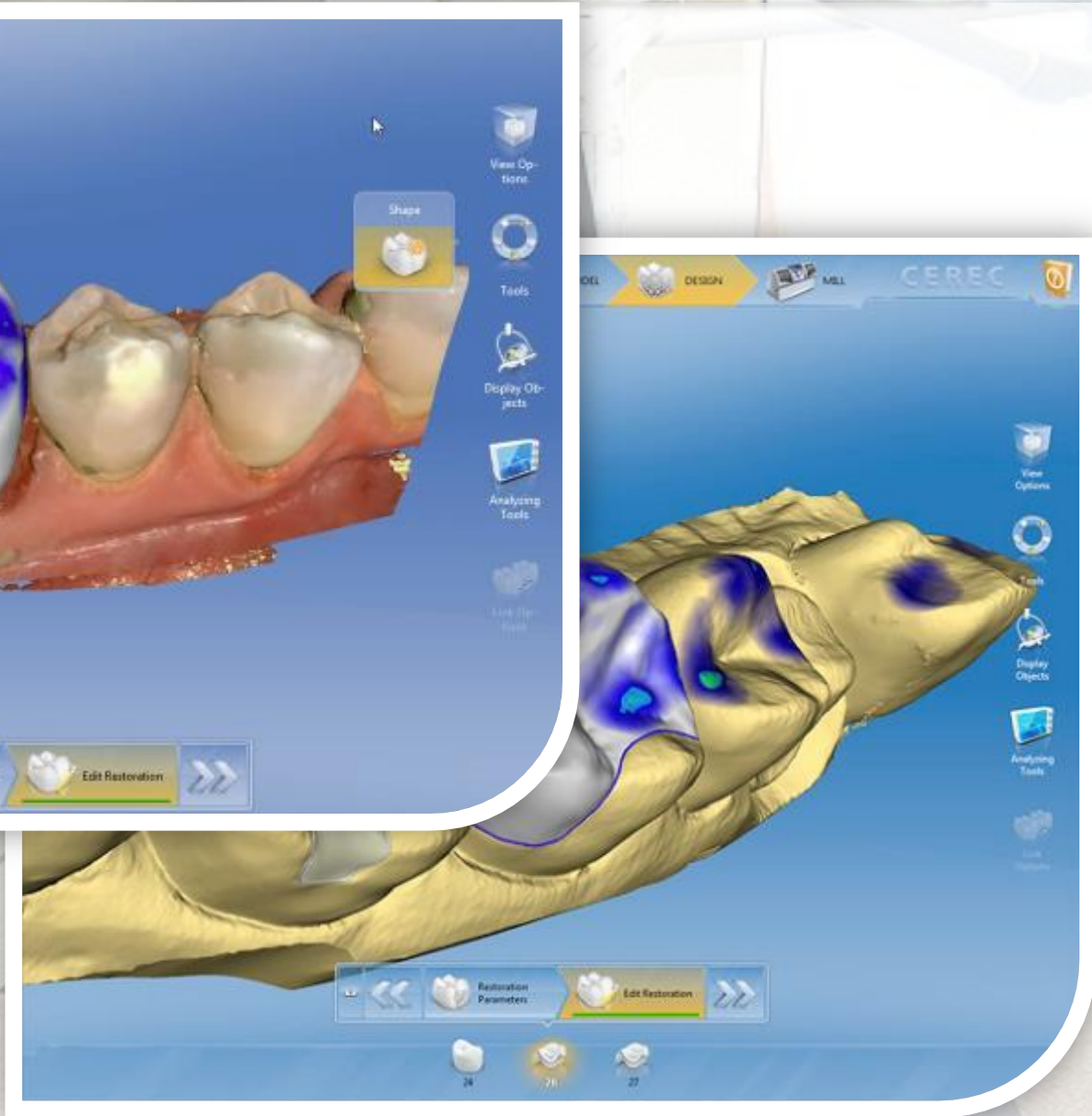
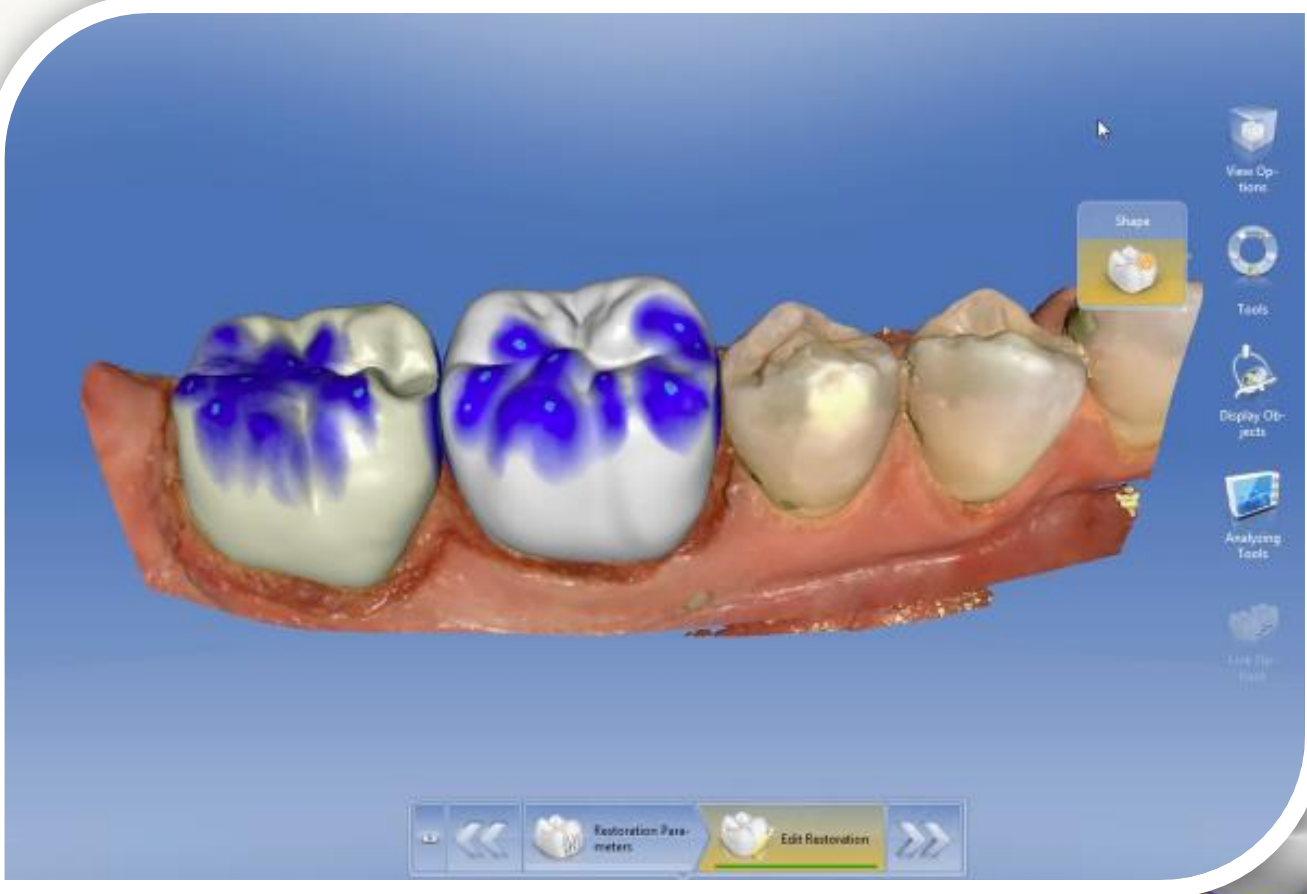
50µm

Accuracy

If there is enough tooth substance left to extract a minimum number of feature points, the computer is able to reconstruct the occlusal surface naturally!



OCCLUSAL VARIATIONS



Smile design



before biogeneric

after incisal variation

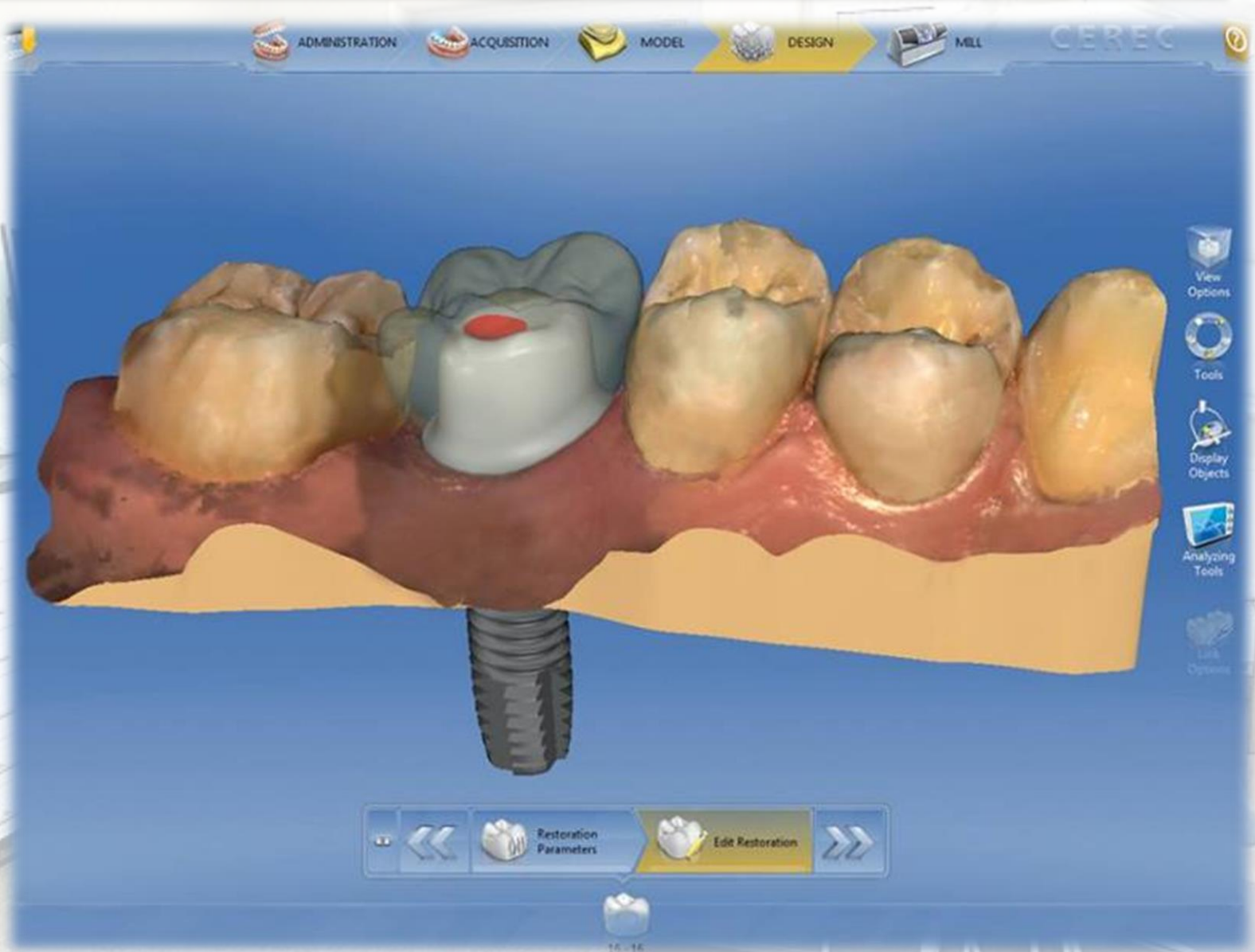
CEREC
Prepress Veneers

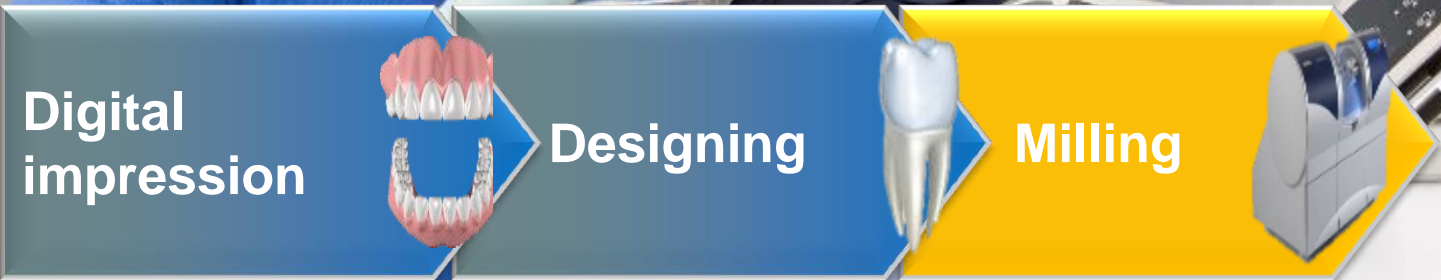
Smile Design
Biogeneric
Incisal Variation
Grid Mode

Todd Ehrlich, DDS



Fixed prosthetics for implants





Milling

CEREC® MC



CEREC® MC XL
PRACTICE LAB



CEREC® MC X



CEREC BLOCKS

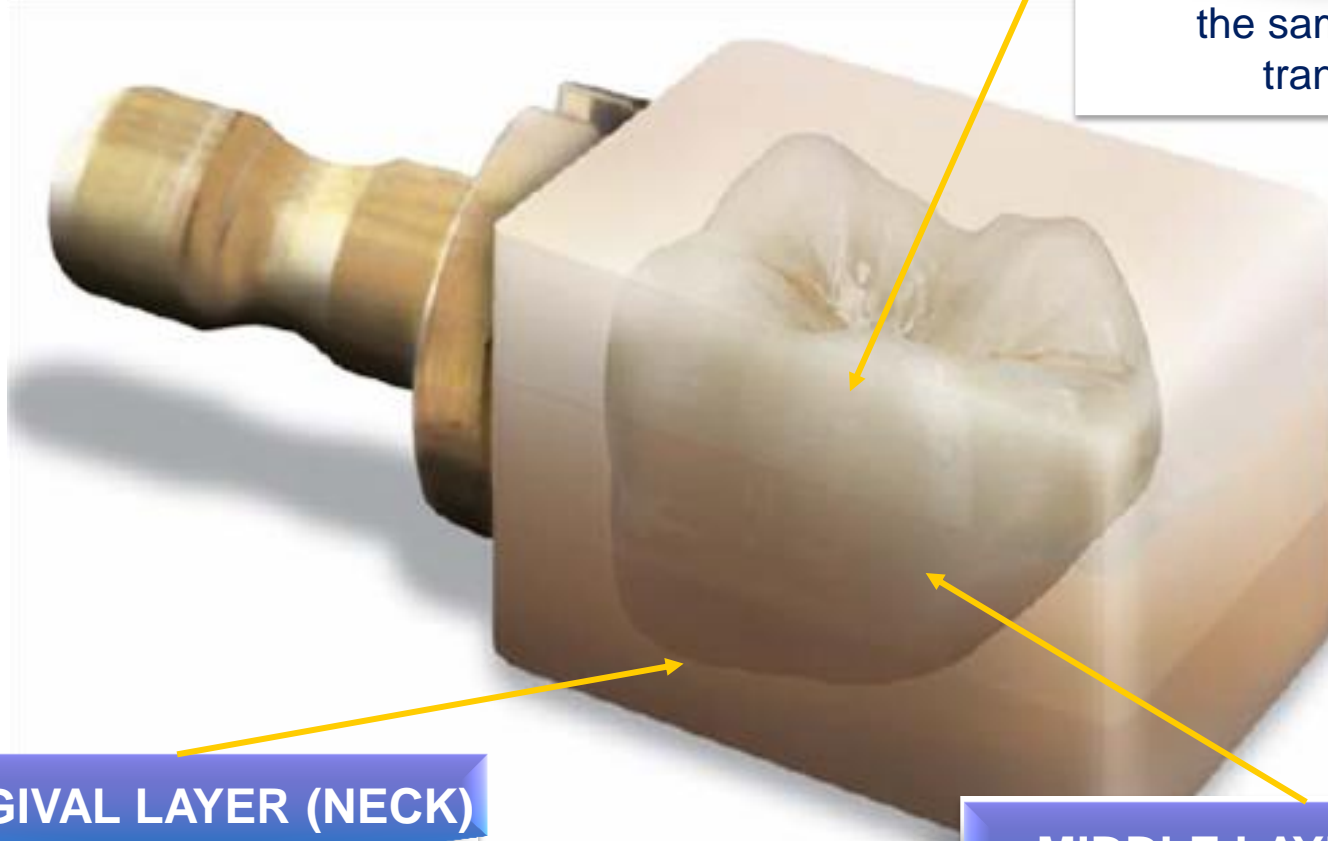


SHADE SELECTION



VITABLOCS® TRILUXE FOR CEREC

THREE INDIVIDUAL LAYERS



TOP LAYER (ENAMEL)

shade intensive and at the same time more translucent.

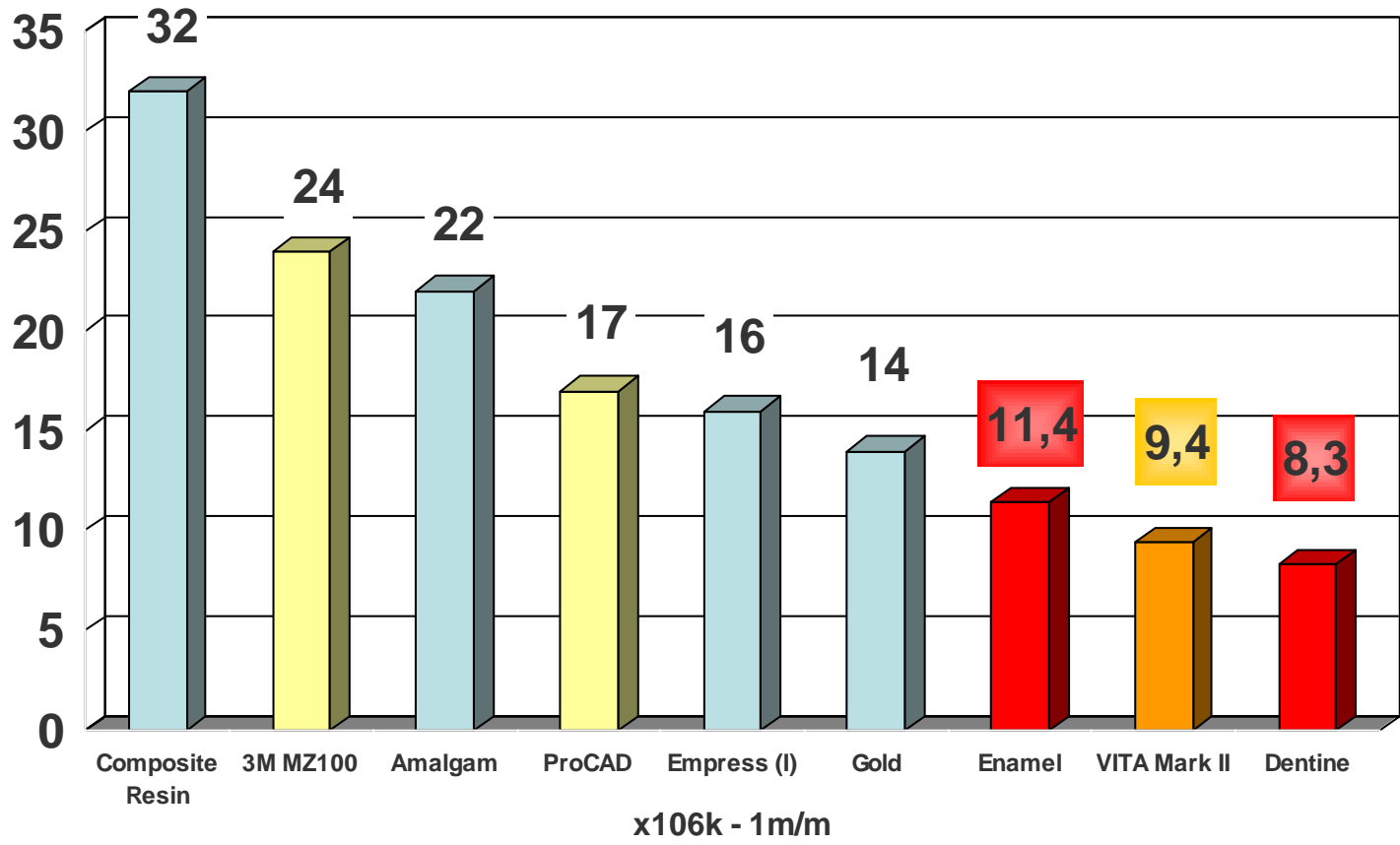
GINGIVAL LAYER (NECK)

most highly pigmented and the least translucent.

MIDDLE LAYER (BODY)

corresponds to a normal degree of translucency

Coefficient of Thermal Expansion



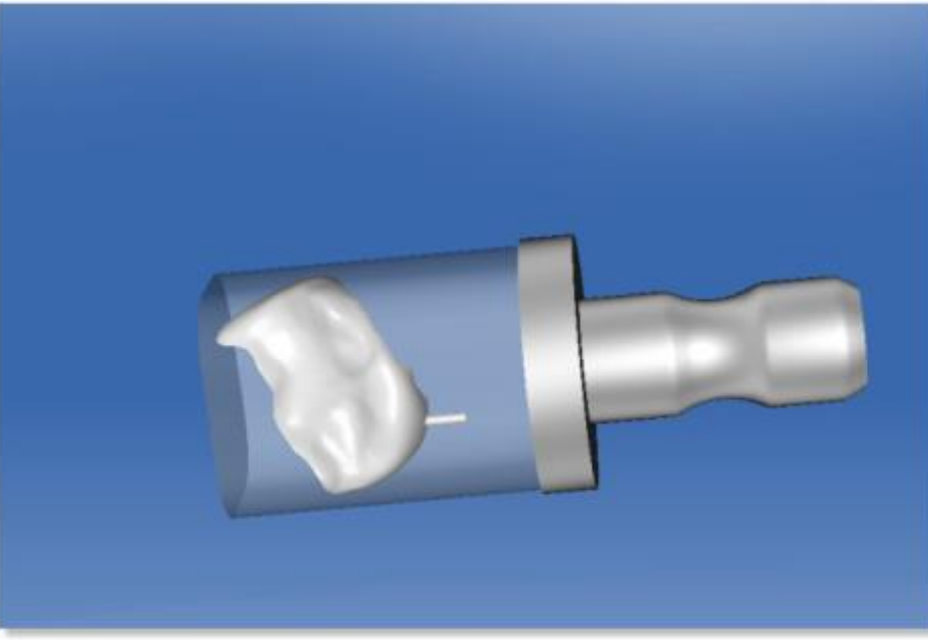
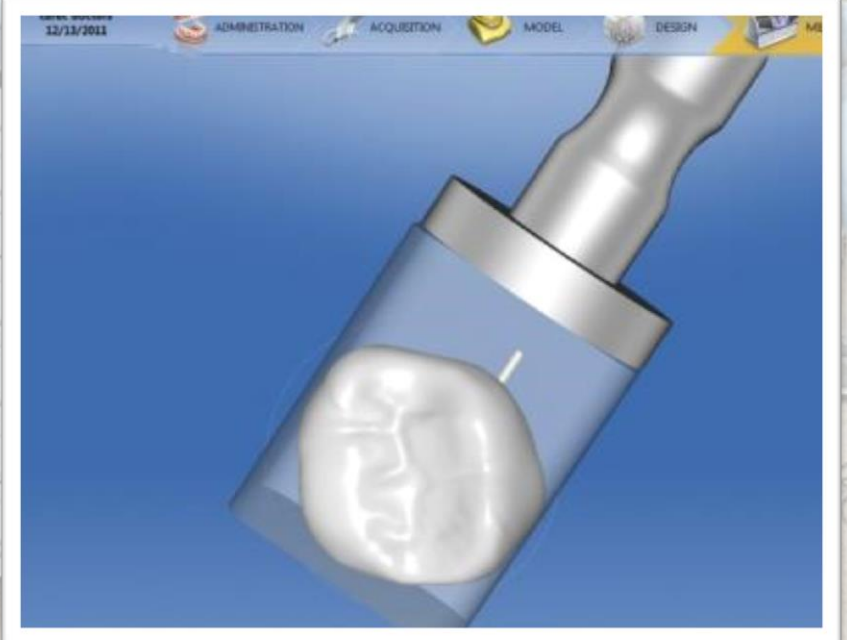
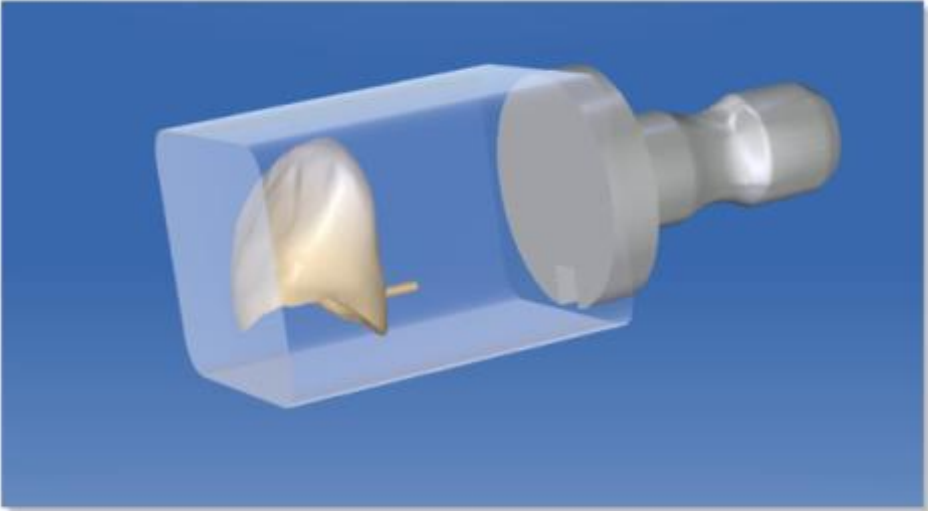
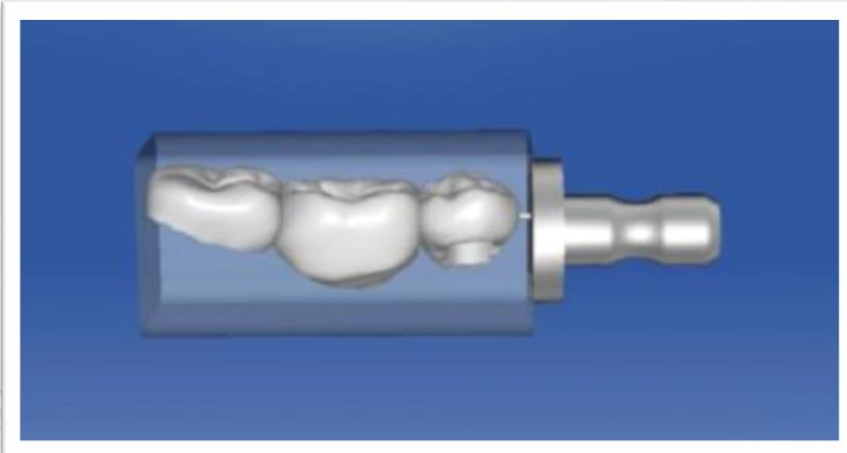
Source: Biomaterials Properties Database, University of Michigan



IPS e.max CAD



CEREC BLOCKS



MIL

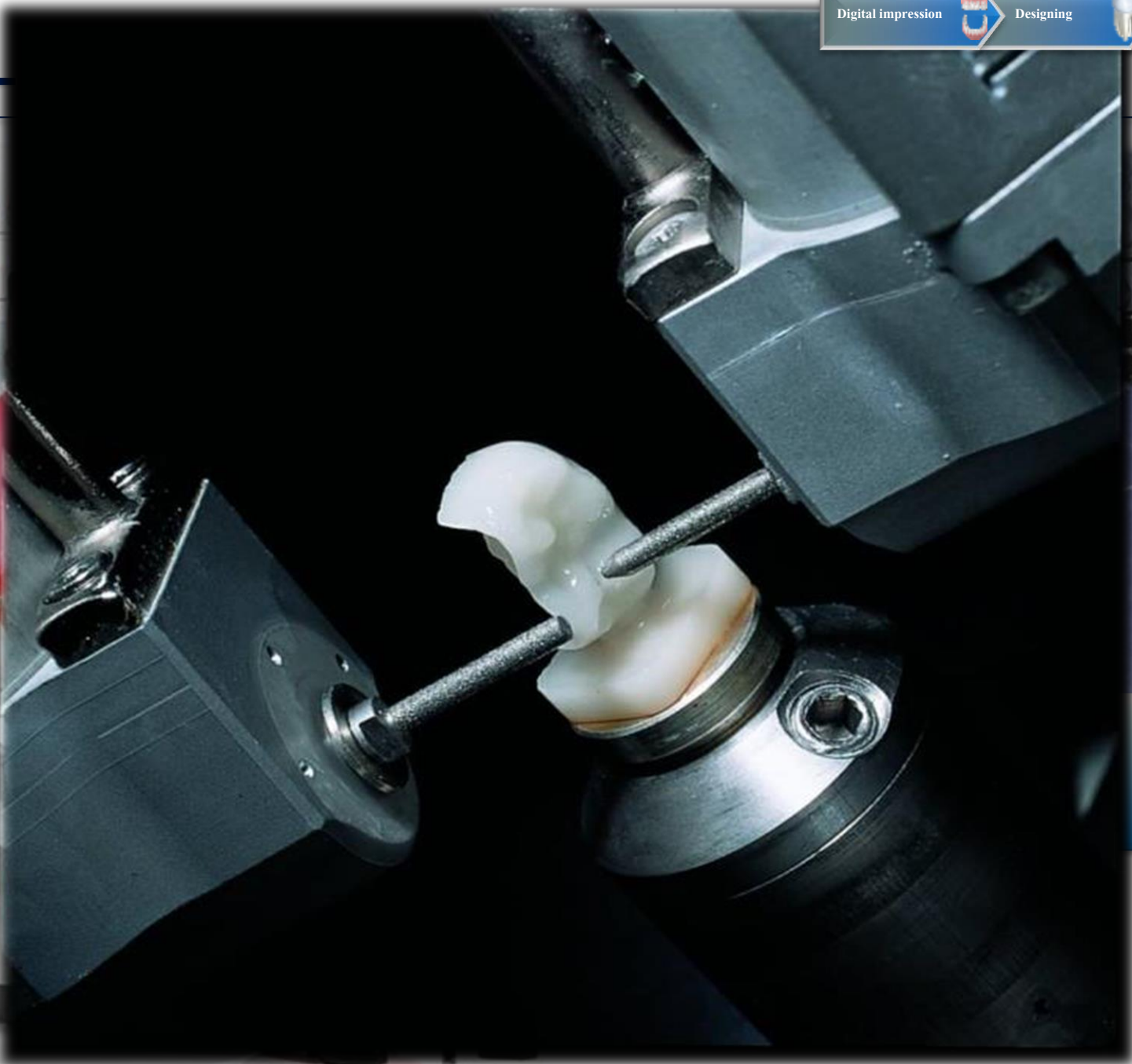
Digital Impression



Designing



Milling



ADVANTAGES OF CEREC

ADVANTAGES FOR THE PATIENT

- Metal free
- Esthetic
- Digital impression
- No temporary
- Minimalinvasive preparation
- Long lasting result





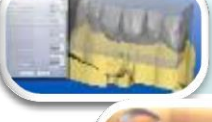


ADVANTAGES FOR THE DENTIST

- Lab free
- No temporary needed
- Quick digital impression
- No material for impression
- Working with the best material
- Complete contol of the restoration

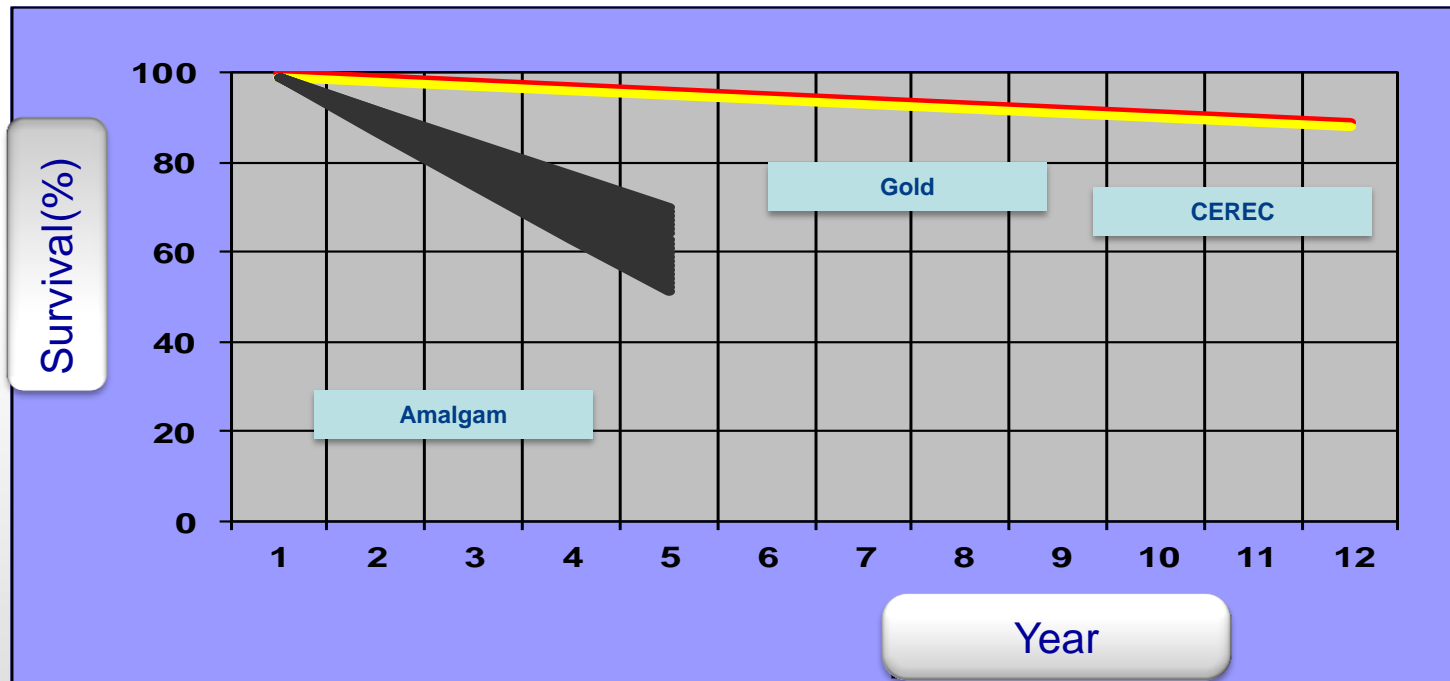
ONE VISIT ONLY



THE WORLD'S FASTEST RESTORATION

WORK PHASES- CHAIRSIDE		MIN
 Preparation		15
 Digital impression		7
 Designing		15
 Milling		10
 Try in and occlusal ad.		3
 Polishing/cristallizing		0
 Cementation		10
TOTAL		60

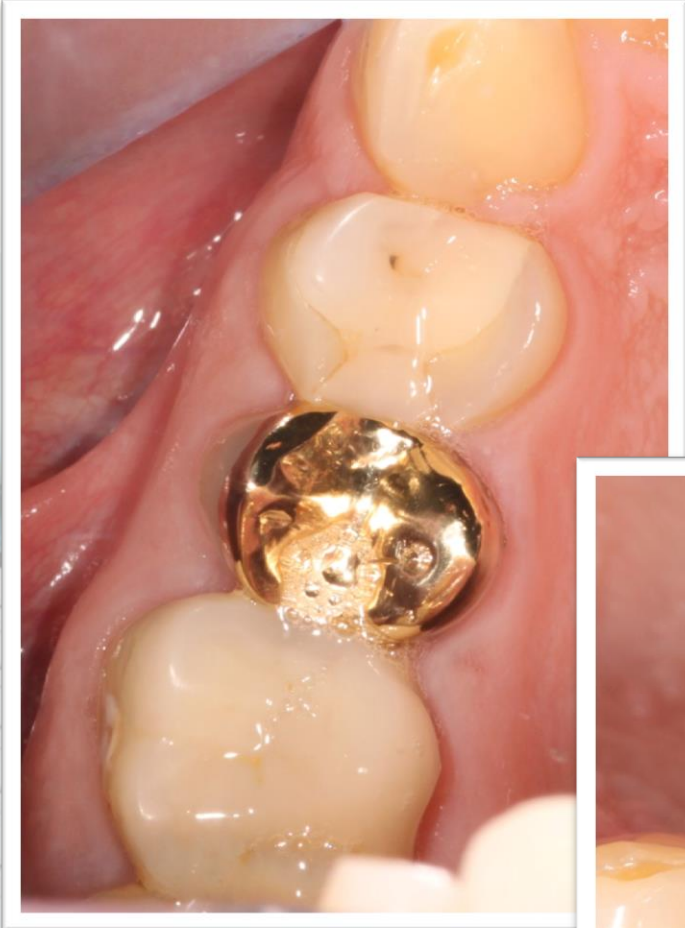
CLINICAL STUDY



**WORLD'S MOST FAMOUS CHAIRSIDE CAD/CAM SYSTEM,
MORE THAN 10 MILLION RESTORATIONS.**



CEREC



CEREC



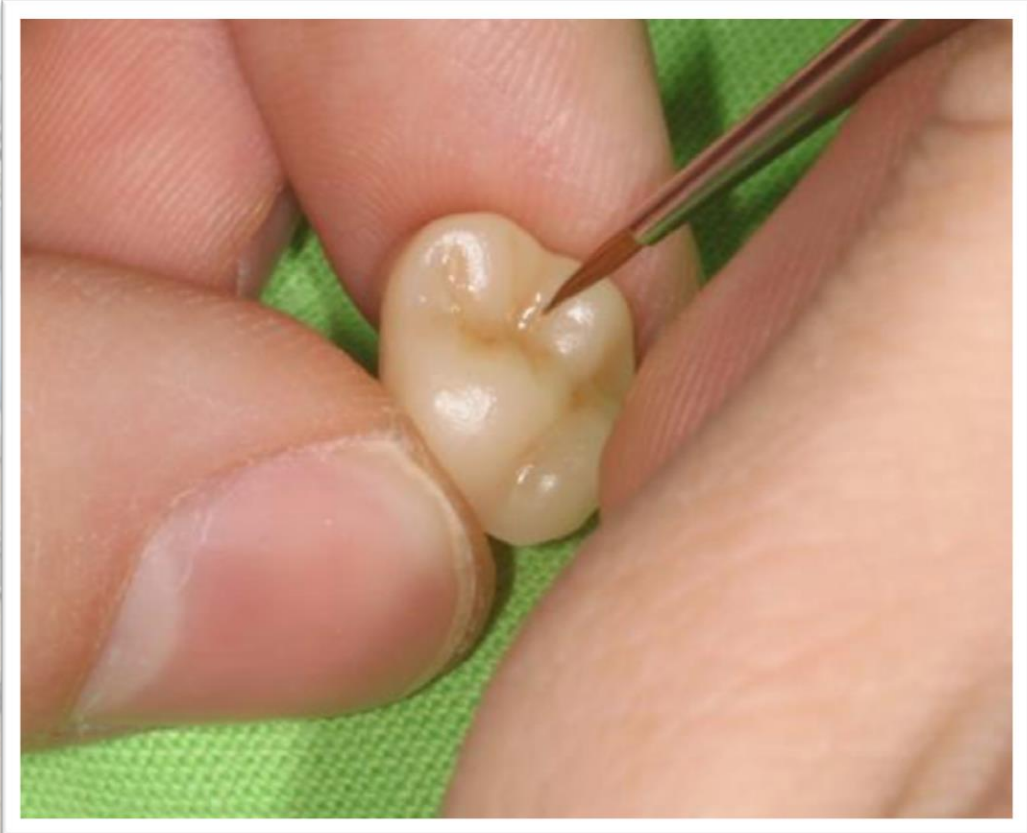
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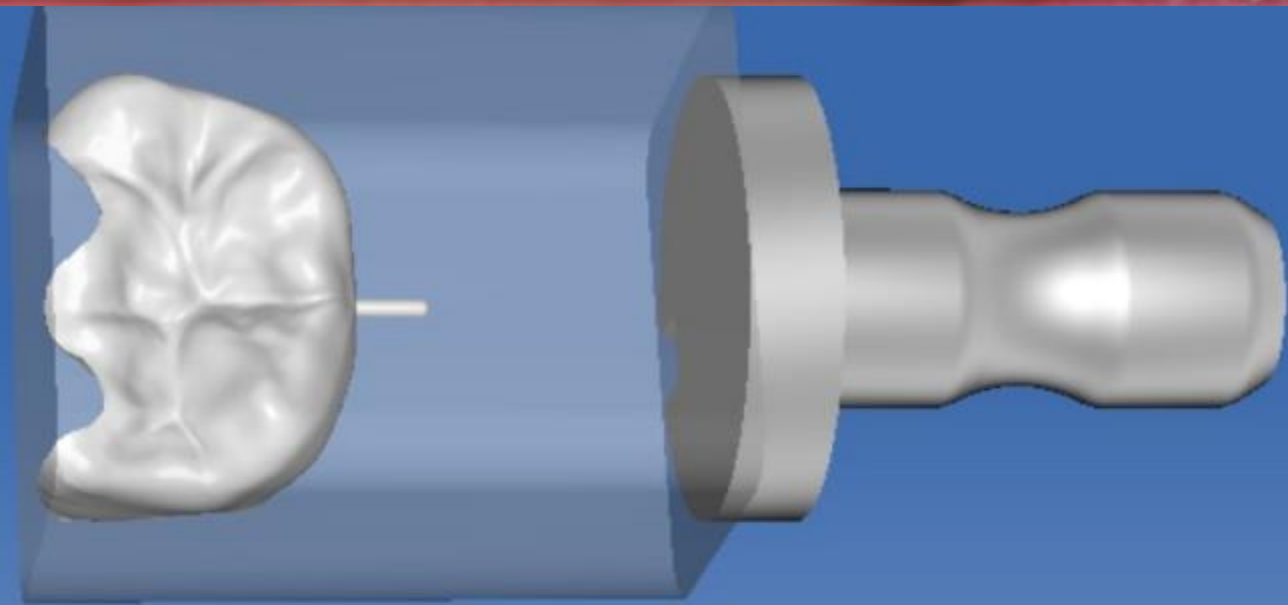
A screenshot of the inLab CAD software interface. The main window displays a 3D model of the restored teeth, with the restoration areas highlighted in yellow. The interface includes a top navigation bar with 'DESIGN' and 'MILL' tabs, a left sidebar with icons for 'Upper Jaw', 'Lower Jaw', 'Upper BioCopy', and 'Download Model', and a right sidebar with 'View Options', 'Tools', 'Display Objects', and 'Analyzing Tools'. At the bottom, there are buttons for 'Restoration Parameters' and 'Edit Restoration'. The Windows taskbar at the very bottom shows the system clock as 9/27/2012 and the user name 'borman david'.

borman david
9/27/2012

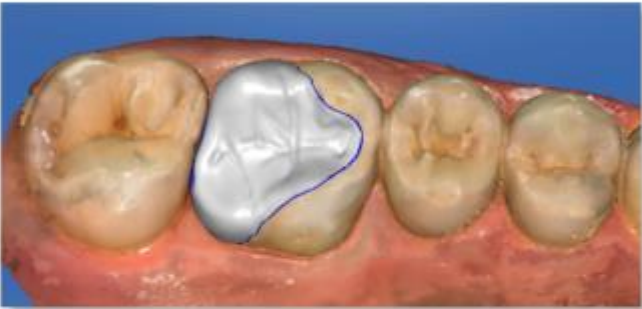
Software navigation controls including a 'Scan Back' button and a 'Camera' icon.

Restoration Parameters Edit Restoration

Windows taskbar showing system icons for BioCopy Upper, Add Catalog, and Recycle Bin.



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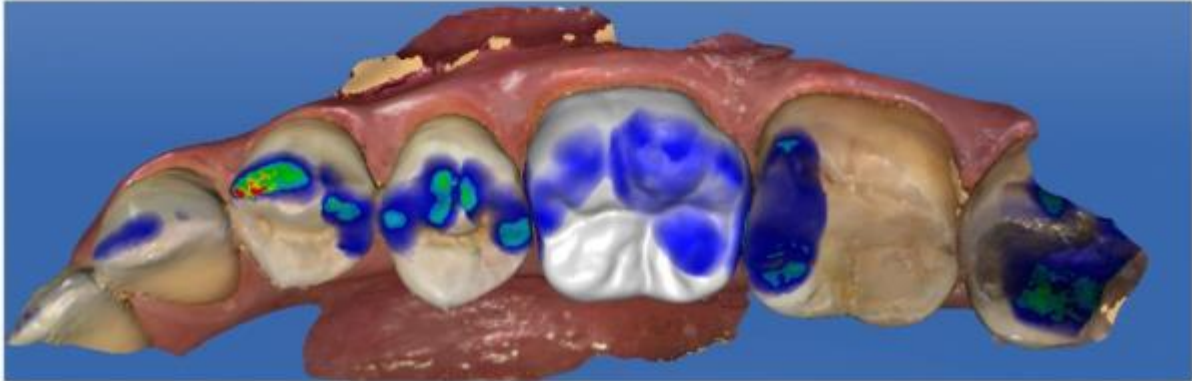
Todd Ehrlich, DDS



CEREC



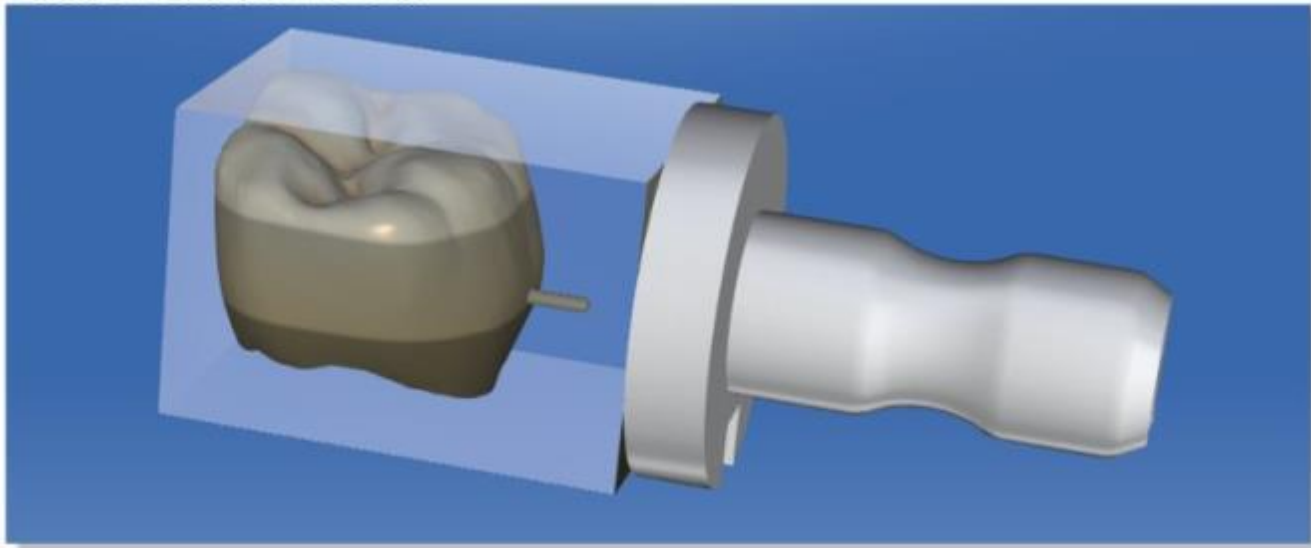
Copyright © JAVIER ANDRADE DDS



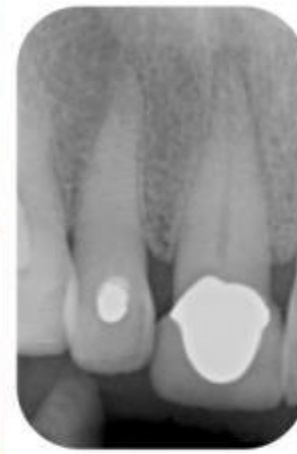
CEREC



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**THANK YOU FOR YOUR
ATTENTION!**