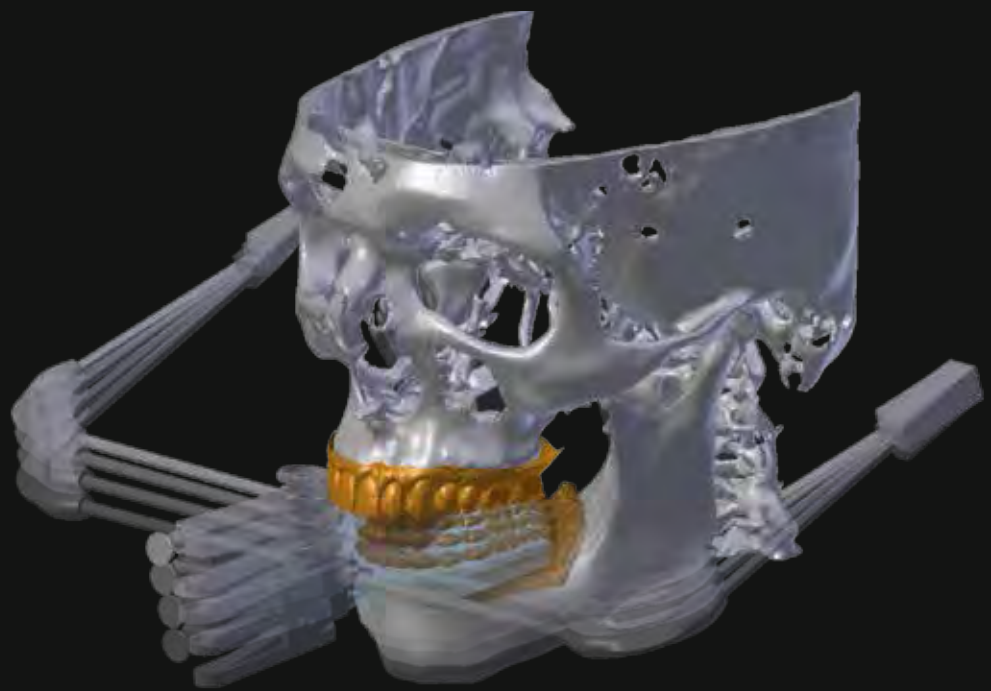


# dentflow™ - workflow the way it should be

efficient - flexible - combinable - economical



## **dentflow™ – the open consistent digital workflow**

### **Benefits by digital data fusion and allowing for dynamics**

Many processes in odontology and dental technology are based on analog data that are digitized secondarily. Unavailable, closed, or faulty interfaces furthermore prevent consistent process flows.

dentflow™ adds value for users and patients alike by focusing primarily on digital data acquisition and consolidation of the digital data.

Such a consistent workflow (dentflow™) was developed jointly by the sister companies orangedental GmbH & Co. KG and Dental Innovation GmbH. Together they have the experience and all the necessary key technologies optimized for dentflow™ with respect to their interfaces.

The workflow is open and allows for the consolidation of DICOM, XML, and STL data by means of standardized interfaces. The integration of individual jaw movements, joint spaces, and occlusal contacts on DICOM and/or CAD level makes findings easier to understand and tangible, facilitates the diagnostic work of the doctor and improves the patient compliance.

- >> All key technologies
- >> Generated added values
- >> Potential end products
- >> Fields of application

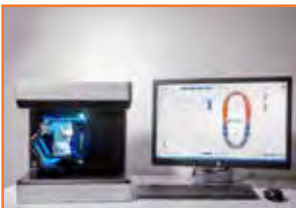
of dentflow™ will be explained in detail on the following pages.

**See dentflow™ in person** – For further information and appointments, please call 0800-dentflow\* or visit our home pages [www.ddi-group.de](http://www.ddi-group.de) and [www.orangedental.de](http://www.orangedental.de).

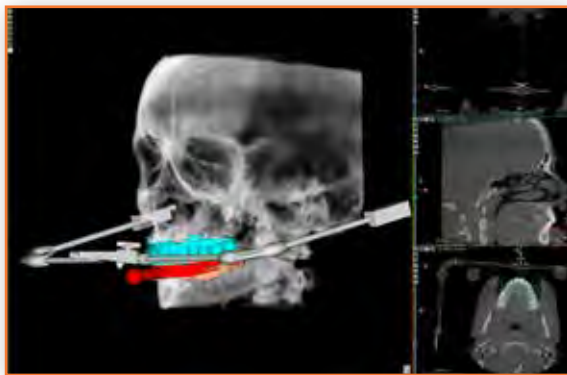




**3D X-RAY**  
>> orangedental 3D X-ray systems facilitate the diagnosis as well as planning therapies and enhance the patient compliance thanks to their great geometric precision and the open DICOM interface.



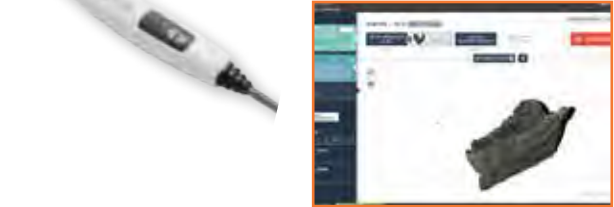
**3D MODEL SCAN**  
>> freeSCAN<sup>Pro</sup> is an optical model scanner and enables the transfer of the anatomically correct dental occlusion into the 3D software in the form of STL data thanks to the open interface.



**byzz<sup>®</sup>nxt3D**  
>> The open interfaces of byzz<sup>®</sup>nxt3D enable the fusion of DICOM, STL, and other data as well as the export to open CAD/CAM systems and 3D printers.



**MOTION CAPTURE**  
>> Freeorder<sup>®</sup>BlueFox is able to digitally capture individual movement and position data of the lower jaw as well as the 3D geometry of joint spaces. The XML data can then be exported via an open interface.



**INTRAORAL SCANNER**  
>> The Condor intraoral scanner provides multi-colored powder-free and precise data of dental surfaces as the basis of dental diagnostics and therapy. The STL data can be consolidated with other data via the open interface.



**CUSTOM-FIT PRODUCTS**  
>> Paraocclusal clamps  
>> CMD splints  
>> Orthodontic splints  
>> Drill templates  
>> Dental prostheses  
>> Anti-snoring splints



**VISUALIZATION**  
>> Occlusion  
>> Condyle positions  
>> Dynamic occlusion contacts  
>> Static occlusion contacts

**OPEN INTERFACES**  
>> CAD/CAM  
>> 3D print  
>> Laser sintering  
>> Milling  
>> Stereolithography



**Failure transparency**  
>> The consolidation of extra-oral or intra-oral scan data (STL) and 3D X-ray data (DICOM) for the jaws facilitates the early recognition of failures in conventional or digital impressions. The overall precision of the consolidated data is improved considerably by combining locally and geometrically precise data.

**Visualization**  
>> The integration of motion data provided by Freeorder<sup>®</sup>BlueFox (XML) into the visualization of intra-oral and intra-oral mandibular scan data (STL) for the first time enables the representation of dynamic occlusion as well as of individual static and dynamic occlusion contacts. In case of the optional consolidation with 3D X-ray data (DICOM), individual condyle movement of patients can be visualized as well – sufficient X-ray volume provided.

**Patient compliance**  
>> The visualization of individual mandibular movements, in particular the visibility of occlusion contacts and condyle movements, lead to the better understanding of the stomatognathic system and considerably improved patient compliance.

**Predictable results**  
>> The direct digital acquisition and subsequent consolidation of data avoids interface failures and provides for greater insight with regard to diagnostics and therapy. The further digital processing of the consolidated data increases the precision and predictability of the results.

**Repeatability**  
>> Within the bounds of the fully digital workflow, the consolidation of XML, STL, and optionally DICOM data as well as their further processing in CAD/CAM systems lead to repeatable results thanks to the drastic minimization of tolerances, compared to the conventional working method.

**Greater safety**  
>> The gained insight with regard to anatomy, physiology, and dynamic occlusion as well as predictability and repeatability of the results lead to greater safety in diagnostics and therapy.

**Increase in sales**  
>> The enhanced diagnostic and therapeutic range based on consolidated data lead to an increase in sales because of the greater liquidation proceeds from statutory health insurance and/or private medical services.

**Rapid pay-off**  
>> The speed of the data collection and the avoidance of complaints or rework provides additionally for the investment to pay off rapidly.

## >> 3D X-ray



**3D**  
**GREEN**  
15 x 15



## **PaX-i3D<sup>15</sup> GREEN**

**GREEN – a pro for positioning your practice**

- >> Flat panel DVT sensor with 49.5 µm pixel size
- >> CMOS CSI OPG sensor for pin sharp images
- >> Multi-FOV from 5 x 5 to 15 x 15 cm; possible representation of whole upper and lower jaw with temporomandibular joints
- >> Minimum voxel size of 80 µm in volume of 5 x 5 cm
- >> Less movement artefacts because of short DVT cycles times of 9 s (low dose) or 15 s (high resolution)
- >> GREEN 3.0 reconstruction algorithm for excellent image quality
- >> DVT scout view for accuracy in lesser volumes
- >> Automatic sensor switch from 2D to 3D
- >> Simple positioning of patient face-to-face with three laser light visors in OPG and DVT mode
- >> Optional: Magic pan for even better OPG quality
- >> Optional: One-shot or scan CEPH



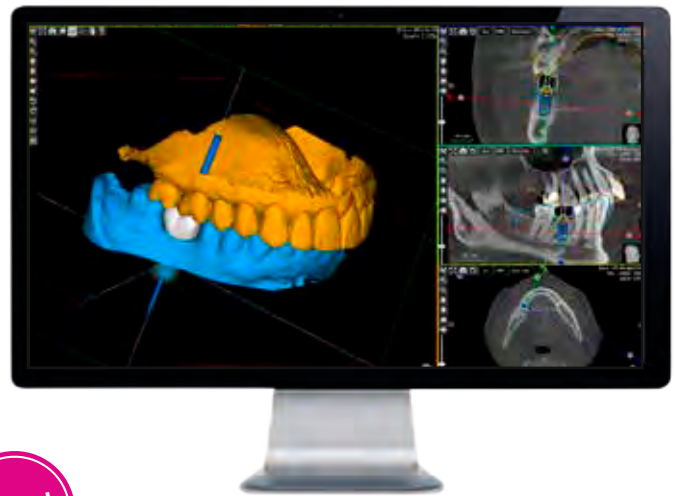
**>> Optional  
supplementation with  
3D X-ray data (DICOM)**



## >> Highly precise imaging in the third dimension



## >> Enhanced benefits from 3D X-ray data (DICOM)



**PaX-i3D GREEN<sup>nxt</sup> 16**

**New!**

## The next GREEN generation. Unique.

- >> CMOS premium sensor for OPG and DVT with 49.5  $\mu\text{m}$  pixel size
- >> Multi-FOV from 5 x 5 to 16 x 9 cm
- >> Minimum voxel size of 80  $\mu\text{m}$  in volume of 5 x 5 cm
- >> 2 modes: High resolution and low dose
- >> Reduced movement artefacts and radiation exposure due to short DVT cycle times of 4.9 s (5 x 5 and 8 x 9 cm) or 8.9 s (12 x 9 and 16 x 9 cm)
- >> Low-dose scan CEPH in 1.9 s and high-resolution scan CEPH in 3.9 s
- >> OPG cycle in 6,1 s
- >> Simple positioning of patient face-to-face with three laser light visors in OPG and DVT mode
- >> Optional: Magic pan for even better OPG quality
- >> Optional: Fast-scan CEPH with recording time of 1.9 s
- >> NEW: Automatic metal artefact reduction ART-V
- >> NEW: Model scan directly in STL format



3D  
GREEN<sup>nxt</sup>  
16 x 9

## >> Motion capture



### Freecorder® BlueFox

**Digital motion capture by means of optoelectronic measuring technology**

- >> Highly precise camera sensor resolution of 3  $\mu\text{m}$
- >> Great refresh rate of 100 Hz to capture quick movements like jaw joint clicking
- >> No radiation exposure due to implementation of LED technology
- >> Acquisition of patient-related movement and position data of mandible (XML)
- >> Recording of 3D geometry of joint spaces
- >> Avoidance of errors in bite registration due to Computer-Assisted Repositioner (CAR)
- >> Application of movement and position data in analog work process and in digital workflow



**>> Dynamic recognition through Freecorder® BlueFox motion data (XML)**

## >> The fourth dimension - visualized dynamics



**bluefox**  
OpTra®Dent

New!

### The new software for Freecorder®BlueFox

- >> Intuitive, visually appealing user interface
- >> Simple patient management
- >> Communication with customary practice management systems/byzz<sup>®</sup>nxt via VDDS/VDDS media interface
- >> Exchange of movement data (XML) via import/export function
- >> Use of predefined or creation of individual measurement reports
- >> High-resolution measurement graph in sagittal, frontal, and horizontal view
- >> 3D joint space analysis for CMD diagnostics and therapy



### NOA<sup>®</sup> - Non-occlusal attachment Innovative connector in digital workflow

- >> Bracket for individual fitting of reference bow for Freecorder®BlueFox measurements
- >> Perfect fit due to highly precise, digital 3D printing technology even with difficult occlusion like overbite
- >> Use of bio-compatible printing materials
- >> Optimum cost-benefit ratio due to low manufacturing costs and multiple use
- >> Quick and easy to use
- >> Great wearing comfort
- >> Repeatable measuring results

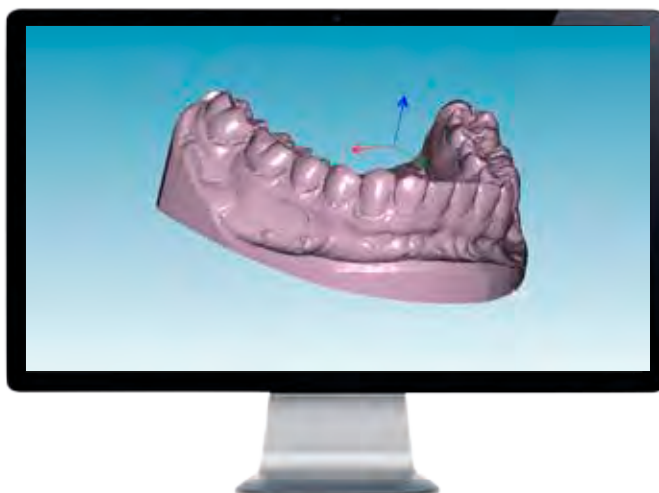
New!





## Top-class 3D model scanner

- >> Stripe white light scan in 40 s at an accuracy of 5  $\mu\text{m}$
- >> High-performance cameras with ultra-fast USB 3.0 interface and new CMOS sensor
- >> Direct control of individual scanner axes to capture hardly accessible areas
- >> Software-aided user guidance
- >> Digital capturing of all customary articulators
- >> Simple transfer of scans and data into exocad



## >> Mandibular model scan in anatomically correct occlusion (STL)...



## >> Analog becomes digital



>> ...or application of an intra-oral scan of the dental surfaces (STL)



 CONDOR<sup>®</sup> intra oral scanner

New!

### Open, powder-free color scan

- >> Precise enough to scan even human hair
- >> High scanning velocity of record a quadrant in 30 s or the whole jaw in 60 s
- >> Powder-free scanning
- >> True color scanning of dental surfaces
- >> Light-weight and small ergonomic handpiece (approx. 110 g, 20 cm); direct data transfer via USB interface
- >> Mobile use due to high-performance (gaming) laptop
- >> Innovative scan software
- >> Unlimited STL data export via open interface
- >> Perfect fit for dental works



# >> Software solutions



## byzz<sup>®</sup>nxt3D

The innovative diagnostic, planning, and production software

- >> Implementation for DVT indications in various fields like odontology, orthodontics, otorhinolaryngology, and radiology
- >> Import of optical scan (STL) and X-ray data (DICOM) via open interfaces
- >> Matching and consolidation of STL and DICOM data
- >> Data export to open CAD/CAM systems and 3D printers
- >> Modular program packages: byzz<sup>®</sup>nxt3D Pro, byzz<sup>®</sup>nxt3D Master, and byzz<sup>®</sup>nxt3D FreeCAD
- >> Simple and intuitive handling
- >> Compatible with PC and Mac



- >> Matching and consolidation of obtained DICOM, XML, and STL data

>> Real motions become virtual



## byzz<sup>®nxt</sup>3D FreeCAD

The dental free-form modeling software

- >> Direct import of optical scan data (STL)
- >> Creation and processing of objects
- >> Processing of surfaces and voxels
- >> Boolean operations
- >> CT scan correction
- >> Surgical guide designer
- >> Free export of STL data, e.g. to 3D printer



## byzz<sup>®nxt</sup>4D

Virtual animation of individual patient dynamics

- >> Extension of byzz<sup>®nxt</sup>3D range of functions by the fourth dimension
- >> Import of Freecorder®BlueFox position and motion data (XML)
- >> Matching and consolidation of DICOM, XML, and STL data sets
- >> Digital planning of dental/medical and prosthetic gadgets and therapeutic devices allowing for real jaw motions

Coming soon!

# >> Products and services

**3D print** is a highly precise, computer-assisted manufacturing procedure to build up the individual layers successively on the basis of digital CAD/CAM data and using a minimum amount of material. 3D print in (dental) medicine and dental laboratory technology with the purpose of manufacturing accurately fitting products offers the following:

- >> Predictable and repeatable results
- >> Use of bio-compatible printing materials
- >> Short manufacturing times
- >> Optimum cost-benefit ratio



## **NOA® - Non-occlusal attachment**

- >> Uncomplicated fastening of reference bow for Freecorder®BlueFox measurements
- >> Precise assignment of mandibular motion and scan data
- >> Repeatable positioning



## **CMD therapy splints**

- >> Condylar path related 3D positioning of condyles under screen control
- >> Therapy in several steps is possible
- >> Fully repeatable manufacture



## **Orthodontic splints**

- >> Allowing for condylar position before, during, and after orthodontic therapy
- >> Wearing comfort due to accurate fitting
- >> Great aesthetic value



## **Drill templates**

- >> Optional creation of individual planning proposal allowing for relevant anatomical structures
- >> No separate planning software required
- >> Tooth, bone, or mucosa-supported



## **Temporary dental prostheses**

- >> Allowing for digitally determined occlusion
- >> Fully functional occlusal surfaces design in statics and dynamics
- >> Prototypical basis of permanent dental prostheses



## **Mandibular protrusion splints (MPS)**

- >> Successful therapy of sleep apnoea and snoring
- >> Great wearing comfort and joint-friendly
- >> In particular suited for CMD patients because condyle positions are allowed for

## >> Benefits through collaboration



### Modern dental surgeries...

...generate benefits for staff and patients alike on the basis of **dentflow™**.



### Future-oriented laboratories...

...are the central **dentflow™** interfaces and public health service providers.

## Do you draw the benefits at your dental surgery... or your ...laboratory...!?

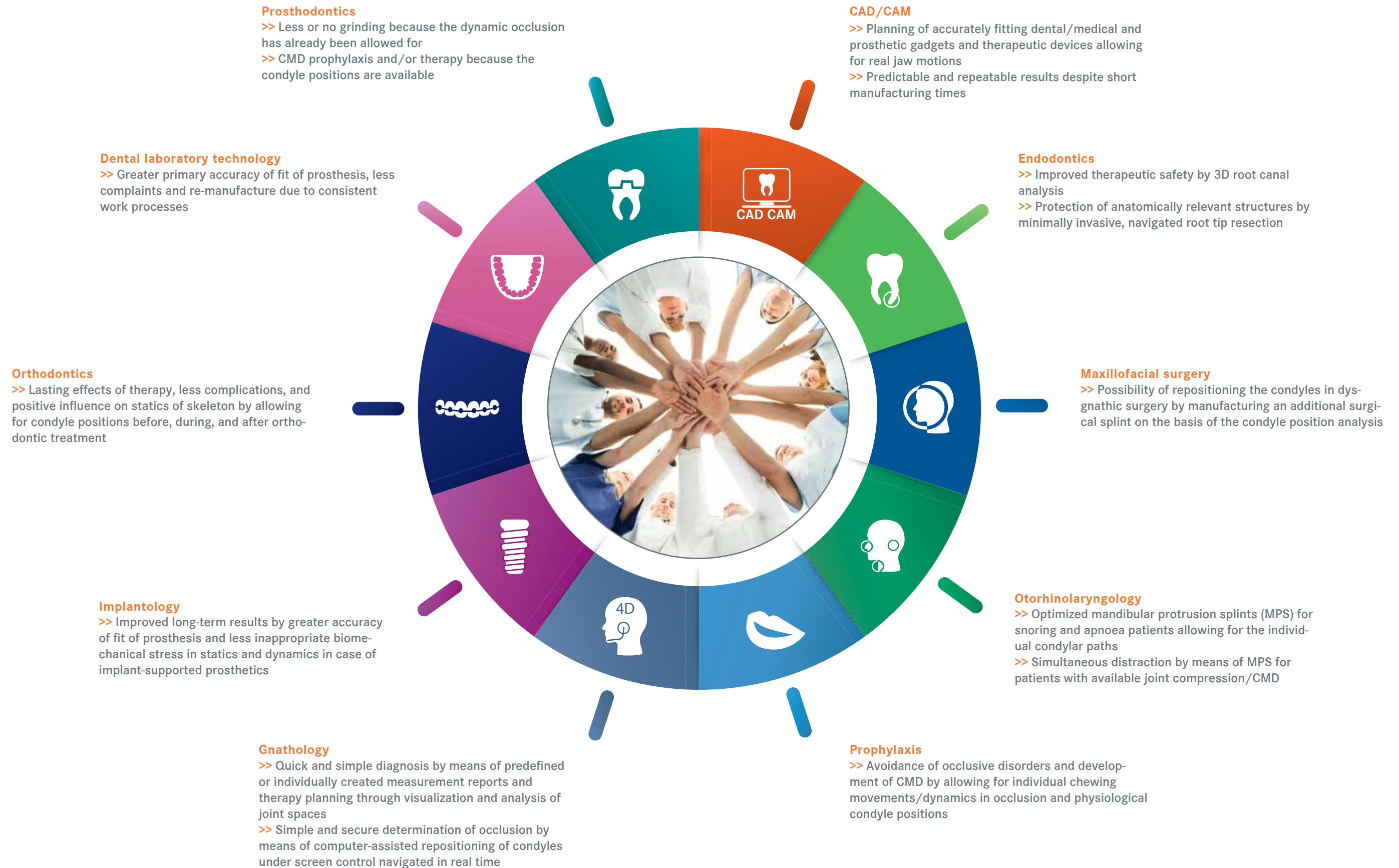
- >> Greater insight
- >> Failure transparency
- >> Safety of results
- >> Repeatability
- >> Time saving
- >> Increase in efficiency
- >> Pay-off
- >> Growth
- >> Improved image
- >> Patient loyalty/acquisition
- >> Better compliance
- >> Exchange of information
- >> Material savings
- >> Environmentally friendly

- >> Unique selling proposition
- >> Increase in quality
- >> Planning reliability
- >> Less complaints
- >> Customer satisfaction
- >> Customer loyalty/acquisition
- >> Increase in productivity
- >> Economic efficiency
- >> Growth
- >> Independent of location
- >> Internationalization
- >> Exchange of information
- >> Material savings
- >> Environmentally friendly



## >> Target groups

## >> Versatile fields of application >> Flexible benefits



## >> Contact



### Contact in case of questions

- >> on Freecorder®BlueFox,
- >> on the Software OpTra®Dent software,
- >> on the Condor intraoral scanner and
- >> on the end products

fon. + 49 (0) 231 . 725469 . 102  
fax. + 49 (0) 231 . 725469 . 199

email. [info@ddi-group.de](mailto:info@ddi-group.de)  
http. [www.ddi-group.de](http://www.ddi-group.de)

Otto-Hahn-Straße 15  
D - 44227 Dortmund



### Contact in case of questions

- >> on the PaX 3D X-ray machine,
- >> on the 3D model scanner freeSCAN<sup>pro</sup> and
- >> on the byzz<sup>®nxt</sup> software solutions

fon. + 49 (0) 7351 . 47499 . 0  
fax. + 49 (0) 7351 . 47499 . 44

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