

# 3dMD

Providing the substance behind the image



**1,200-plus 3D Cameras  
Worldwide include...**

- Addenbrooke's Hospital, Cambridge, UK
- Aichi Gakuin University, JP
- Alder Hey Children's Hospital, UK
- Amsterdam Medical Center / Emma Children's
- Birmingham Dental Hospital, UK
- British Columbia Children's Hospital
- Cardiff University, School of Dentistry
- Central Intelligence Agency, USA
- Chang Gung Memorial Hospital, TW
- Chang Gung University, TW
- Children's Healthcare of Atlanta
- Children's Hospital at Westmead, AUS
- Children's Hospital Boston / Harvard
- Children's Hospital Los Angeles
- Children's Hospital of Zhejiang University, CN
- Children's Memorial Hospital Chicago
- Children's National Medical Center, USA
- Cincinnati Children's Hospital
- Cranial Technologies Inc, USA
- Eastman Dental Institute / GOSH, UK
- Erasmus MC, Rotterdam, NL
- Georgia Institute of Technology
- Guy's Hospital, UK
- Dr David Hatcher / ddi Imaging (CA)
- Hôpital D'Enfants Armand-Trousseau, Paris
- Hôpital Pitié Salpêtrière, Paris
- Indiana University
- Inselspital, Universitätsspital Bern, CH
- iRSM (COMPRU), Edmonton, CA
- Johns Hopkins Medical Institute
- Kenemer Gasthuis, NL
- Kent and Canterbury Hospital, UK
- Kimberly-Clark Corporation
- Lancaster Cleft Palate Clinic
- Loma Linda University
- Louisiana State University
- Manchester Royal Infirmary, UK
- Max Planck Institute, DE
- MD Anderson Cancer Center
- Morriston Hospital Swansea, UK
- Media Communication & Integration Center, Firenze, IT
- Mölnlycke Healthcare, USA
- Mt Sinai Medical Center (NY)
- National Dental Centre of Singapore
- National Institutes of Health / NIDCR, USA
- National Naval Medical Center, USA
- National University Singapore
- Naval Medical Center, San Diego
- Netherlands Forensic Institute
- North Thames Cleft Centre / GOSH & Broomfield, UK
- Old Dominion University
- Osaka University, JP
- Oulu University Hospital, FI
- Princess Margaret Hospital, Perth
- Procter & Gamble Company
- Queen's Medical Centre, Nottingham, UK
- Riga Stradins University, LV
- Royal Children's Hospital, Melbourne
- The Royal Free Hospital, UK
- The Royal Surrey Hospital, UK
- Royal Victoria Infirmary, UK
- St Louis Children's Hospital
- Stephen Schendel, DDS, MD (CA)
- Seattle Children's Hospital
- Shanghai Ninth Hospital, CN
- Temple University
- UMC St Radboud Nijmegen, NL
- Universidad de Navarra, ES
- Università Degli Studi di Verona, IT
- Università di Bologna
- Universität Bern, Zahnmedizinische Kliniken, CH
- Universität Tübingen, DE
- Universität Würzburg, DE
- Universitätsklinikum Freiburg, DE
- UniversitätsSpital Zürich, CH
- University College London, UK
- University of Alabama at Birmingham
- University of Bristol, Dental, UK
- University of California, Los Angeles
- University of California, San Diego
- University of Copenhagen, DK
- University of Hong Kong
- University of Illinois at Chicago
- University of Illinois, College of Medicine
- University of Iowa
- University of Ljubljana, SVN
- University of Maryland
- University of Michigan
- University of Minnesota
- University of North Carolina, Chapel Hill
- University of Oklahoma
- University of Oxford, UK
- University of Pennsylvania
- University of Pittsburgh
- University of Sydney, AUS
- University of Texas HSC, Houston
- US Air Force / Wilford Hall Medical Center
- Yokohama City University, JP

## World Leader in High Precision 3D Surface Imaging Systems



3dMD's systems are the most widely used ultra-fast, high-precision 3D surface imaging devices in leading teaching institutions, hospitals, and private practices worldwide with an outstanding reputation for accuracy, speed, and dependability. Recognized for commitment to scientific innovations in the field, 3dMD continues to provide advanced imaging systems to customers that are simple to use and reliable enough to withstand the pressures of imaging large numbers of patients in busy practice/clinical environments day-in and day-out.

**Market Leadership:** With 1,200-plus 3D cameras worldwide, 3dMD has been continuously developing and refining its sophisticated 3D technology products for the requirements of the healthcare community. Ten-plus years ago, 3dMD pioneered the commercial application of a new non-invasive imaging technique called "active stereo photogrammetry" with the goal of imaging the surface of the human form accurately and efficiently. 3dMD has combined robust software engineering with state-of-the-art, industrial-grade hardware components, which are constructed to rigorous quality inspection and performance testing standards, to ensure image quality and consistency over time in high-throughput environments.

**Multi-Modal Image Fusion:** A natural companion to CT/CBCT initiatives, 3dMD images register 1:1 to correct CBCT surface artifacts caused by patient movement during the duration of the scan; compensate for soft tissue compression from CBCT stabilization aids (i.e. chin cup); eliminate soft tissue draping from supine devices; and supplement any missing anatomical data (i.e. nose). More importantly, 3dMD enables you to accurately document the patient's natural head position and multiple facial expressions non-invasively throughout the treatment cycle. 3dMD patient images are incorporated with the corresponding CBCT/CT data at customer sites worldwide in a number of 3dMD supported 3D software applications such as Dolphin 3D™, SurgiCase CMF™ from Materialise, Maxilim™, OnyxCeph3D™, and VoXim® from IVS.



**Flexible System Approach:** While 3dMD manufactures a range of anatomy-specific imaging systems (i.e. 3dMDface System), each 3dMD system is constructed from a foundation of modular imaging components or units which serve as portable building blocks to make all 3dMD systems simple to reconfigure and easy to maintain. This provides an easy upgrade path for adding modular units to increase capture volume (i.e. from a 180-degree full face capture to 360-degree cranial capture). It also gives the user complete flexibility to reconfigure the modular units for a wide range of standard and custom anatomical requirements. 3dMD's products provide absolute versatility in the field and outstanding value for many years.

Mounted 3dMDface™ System



## Ultra-High Precision Accuracy

- Capture Speed: ~1.5 milliseconds at highest resolution, eliminating the challenges and errors due to patient movement
- Geometry Generation: One continuous point cloud produced from the onset regardless of the number of camera viewpoints, which eliminates the data errors associated with merging/stitching data sets together
- Geometry Accuracy:  $\leq 0.2\text{mm}$  RMS or better (depending on configuration)
- Accurate Texture Mapping: Simultaneous acquisition of geometry and high resolution color texture data to ensure accurate mapping to the geometry



Sophisticated landmarking & analysis techniques

## Engineered Reliability

- Quality-Focused Engineering: Medical-grade machine vision cameras integrated with an industrial-grade flash system ensures repeatable, quality-oriented results 24/7 in high throughput environments
- Resilience to Harsh and/or Reflected Lighting: 3dMD's active stereo photogrammetry technique reliably ensures a quality geometry regardless of room lighting conditions or intense directional and/or reflected light
- Non-invasive: Eye-safe within the safety guidelines of any photographic flash-based system



Quantify soft tissue change

## Ease of Workflow

- Ease of use: Interface utilizes basic point-and-click routines. Calibration is a simple user process taking less than a couple of minutes. Optional Auto-Calibration feature.
- Imaging management integration: Dolphin Imaging, Practiceworks/Orthotrac, and others
- Wall-mount footprint: Easily fits into a busy practice or clinic environment by simply mounting it on a wall, ensuring consistent patient positioning and composure every time
- Fully Portable: All 3dMD systems can be broken down and transported easily allowing the same equipment to be used at any location.
- Processing flexibility: Immediate or offline at a convenient break point
- File formats supported: .tsb, .obj, .stl, .wrl, .aop, .dxf, .raw, ASCII



## 3dMDface™ System

- 180-degree face capture (ear-to-ear)
- Capture Speed: ~1.5 milliseconds at highest resolution... ideal for children
- Two modular units of 6 medical-grade, machine vision cameras and an industrial-grade flash system synchronized in a single capture
- Ultra-high fidelity color textures
- Small footprint and wall-mount option
- Portable laptop version also available
- Extremely reliable and easy to use
- Economical upgrade path to the 3dMDcranial™ and 3dMDtorso™ Systems

## 3dMDcranial™ System

- Full 360-degree head capture
- Capture Speed: ~1.5 milliseconds at highest resolution... ideal for children
- Four or five modular units of 12 or 15 machine vision cameras and an industrial-grade flash system synchronized in a single capture
- Reconfigurable to a 3dMDface System
- Proven support for a range of custom orthotic manufacturing processes

## 3dMDtorso™ System

- 180-degree torso capture including below the breast
- Capture Speed: ~1.5 milliseconds at highest resolution
- Depending on requirements, two, three, or four modular units of 6, 9, or 12 machine vision cameras and an industrial-grade flash system synchronized in a single capture

## 3dMD Software Applications

Today, 3dMD is also pioneering the field of Image Fusion software applications, where a number of 3D modalities (CT, CBCT, MRI, digital dental study models, etc) can be superimposed into a patient-specific anatomical reconstruction for a comprehensive representation of the patient for treatment.

- 3dMDpatient™ Software: Comprehensive 3D surface analysis
- 3dMDvultus™ Software: Sophisticated 3D treatment software for assessing the patient condition, planning patient treatments and surgery, analyzing airways, simulating outcomes, monitoring progress, and evaluating outcomes - a new generation of easy to use software tools that simulate hard and soft tissue outcomes using the patient's fused image as the anatomical foundation.
- 3dMDvultus™ Breast Simulation Module: Powerful biomechanical platform for calculating breast parameters and simulating in real-time how a manufacturer's implant will affect the size and contour.



3dMDcranial5™ System



The leader in 3D surface imaging & applications

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