



decimal3D User Guide

for app version 1.2

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.decimal, LLC. 121 Central Park Place, Sanford, FL. 32771. 1-800-255-1613

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decimal3D Overview

App Version: 1.2

Note: This user guide is intended only for the latest version of the decimal3D App listed above. Please refer to the [decimal3D version history](#) for the complete listing of user guides.



decimal3D is an iPad App, utilizing advanced optical scanning technology that enables the user to capture a full color, dimensionally accurate rendering of a patient's treatment area. decimal3D allows the user to quickly digitize the shape of the physician drawn treatment field

and design the required electron aperture. From the App, the user can order the electron aperture from .decimal for next day delivery.

Access and permissions for decimal3D are managed by the .decimal and users can configure machine and address information through .decimal's p.d software.

User Guide

The decimal3D [User Guide](#) provides important product labeling information, including Instructions for Use and a [Walkthrough Tutorial](#).

Getting Started Basic setup and overview of the decimal3D App.

Instructions For Use

The decimal3D [Instructions For Use](#) outlines the intended use and user requirements of using the application and provides important product labeling information which should be read and understood by all application users.

Overview Intended use and indications for use of the application. **User Profile** Recommended user education and experience level.

Warning Warning of potential misuse.

Testing Responsibilities Testing responsibilities for ensuring correct setup and configuration of the application.

Product Features High level features of the application.

Known Limitations Known application limitations, defects, or inconsistencies.

About

Note: decimal3D is cleared for sale only in the United States

US FDA 510k : K192554

GTIN : 851147007113

Support

For questions, comments, support requests, bug reporting, or to schedule a training session, please contact our customer support team at: 1-800-255-1613

USR-011

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decimal3D User Guide

Overview

The primary purpose and intended use of this device is to improve the efficiency of designing patient specific radiation therapy beam-shaping block devices through the use of optical scanning technology. This device will serve as a direct replacement to the current processes for designing such radiotherapy devices in cases where a “clinical patient set up” is used (i.e. cases where the treatment field is determined by direct physician examination, not by internal imaging technology). One such common current process is for electron therapy clinical setups, which involves hand drawing of the patient-specific aperture shape onto a semi-transparent “template” block, using the treatment light field to verify accuracy against the treatment area that has been outlined directly on a patient by the treating physician. This now flattened and projected aperture shape can then be scanned and digitized allowing for computer controlled fabrication. This new decimal3D device will replace this process by providing a means to accurately scan and digitize the treatment area. After the surface scan is obtained, this device also provides a means for designing and ordering the required devices (e.g. digitization of the field for electron apertures), analogous to the current digitization process in the existing clinical workflow.

This product is not intended to replace CT imaging or other internal imaging modalities and should be used only in cases where a qualified Radiation Oncologist has made appropriate determination of the acceptability of a “clinical patient set up” approach, independent of any information provided by this application. In other words, the role of this product is to simply ensure efficient and accurate ordering of a patient-specific device from our company, in cases where a licensed Radiation Oncologist has predetermined that such a device and treatment approach is appropriate for the patient at hand. Thus this device’s indications for use include patients with a variety of cancer and disease conditions, which will be treated under the direct supervision and guidance of a radiation oncologist that has prescribed a desired dose of radiation to be delivered to the patient.

Purpose

The purpose of this document is to provide guidance on the setup, access, and usage of the decimal3D App.

Getting Started

Proper use of this software is critical to safe and effective treatment of patients using devices generated by this application. Users are expected to read and understand this complete User Guide including the [Instructions for Use](#), which outlines the general usage principles and limitations of the decimal3D App. Users must read and understand these instructions before operating the system for clinical use. Refer to each section below for complete details:

- **Instructions for Use**
 - [Overview and Indications for Use](#)
 - [User Responsibilities](#)
 - [Warning](#)
 - [User Profile](#)
 - [Product Features](#)
 - [Walkthrough Tutorial](#)

Precautions

It is the responsibility of those utilizing this application to ensure all that all usages of this product relating to patient treatments are performed by trained and qualified personnel only and that such personnel is aware that the quality of any generated treatment plans is highly dependent on the quality and correctness of the input data; therefore if any questions or uncertainties exist regarding the quality, units, or identification of input data arise, they must be investigated and resolved before the data are used.

Initial Setup

Your decimal3D App will arrive pre-installed and pre-calibrated on a 7th generation Apple iPad, which has been assembled with a Structure Sensor Mark II (by Occipital). So your decimal3D system will arrive in a ready-to-use state (please refer to the Instructions for Use herein for some additional set up instructions regarding iPad security). Also, please note that after the initial purchase, all hardware concerns, including damage or warranty repairs, should be directed to the appropriate hardware provider.

On first use of decimal3D users are also responsible for confirming the accuracy of machine data using .decimal's p.d App. This data will be used in decimal3D for determining the brand of your linear accelerator, the available electron applicator sizes, and tray location. Users should complete a site survey found at <https://dotdecimal.com/site-survey/> if they do not have an account with .decimal and our staff will assist users in setting up machines via p.d.

Training

While .decimal3D has been designed to be simple and intuitive, live (web-based) training is included with your purchase of the decimal3D application. Please contact our customer service team to schedule a private training session at your convenience.

System Usage

Improper System Usage

When using decimal3D, as with any complex program, there is the potential for misuse. The decimal3D App should be used under the guidance of a physician by authorized users such as physicists, certified medical dosimetrists, radiation therapists, and other licensed clinical staff who have been trained by the .decimal staff or by the clinical staff.

decimal3D allows users to enter custom information (COMP_ID field) that will be engraved onto patient specific devices (e.g. blocks and bolus) to aid in proper identification and usage of our products. Please note however, that PHI and PII should never be entered into these fields, as your devices will be delivered via shipping services that cannot guarantee HIPAA-compliance of the packages throughout the entire shipping and delivery route.

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decimal3D Instructions for Use

Overview, Indications for Use, and Intended Use

The primary purpose and intended use of this device is to improve the efficiency of designing patient specific radiation therapy beam-shaping block devices through the use of optical scanning technology. This device will serve as a direct replacement to the current processes for designing such radiotherapy devices in cases where a “clinical patient set up” is used (i.e. cases where the treatment field is determined by direct physician examination, not by internal imaging technology). One such common current process is for electron therapy clinical setups, which involves hand drawing of the patient-specific aperture shape onto a semi-transparent “template” block, using the treatment light field to verify accuracy against the treatment area that has been outlined directly on a patient by the treating physician. This now flattened and projected aperture shape can then be scanned and digitized allowing for computer controlled fabrication. This new decimal3D device will replace this process by providing a means to accurately scan and digitize the treatment area. After the surface scan is obtained, this device also provides a means for designing and ordering the required devices (e.g. digitization of the field for electron apertures), analogous to the current digitization process in the existing clinical workflow.

This product is not intended to replace CT imaging or other internal imaging modalities and should be used only in cases where a qualified Radiation Oncologist has made appropriate determination of the acceptability of a “clinical set up” approach, independent of any information provided by this application. In other words, the role of this product is to simply ensure efficient and accurate ordering of a patient-specific device from our company, in cases where a licensed Radiation Oncologist has predetermined that such a device and treatment approach is appropriate for the patient at hand. Thus this device’s indications for use include patients with a variety of cancer and disease conditions, which will be treated under the direct supervision and guidance of a radiation oncologist that has prescribed a desired dose of radiation to be delivered to the patient.

User Responsibilities

It is the user's responsibility to test each device ordered through decimal3D for proper function, fit, and clinical acceptability **prior to use on a patient**. The user must also agree to the *Terms and Conditions* as well as the *Processing Agreement* prior to ordering a device for patient use.

Clinical Safety

It is the responsibility of the user to perform end-to-end testing prior to the clinical use of decimal3D. The user should follow accepted industry guideline and clinical experience for the end-to-end testing. This testing should be performed by qualified personnel and should ensure (at a minimum) that users are able to scan, digitize, and order an electron block that meets or exceeds the clinical accuracy as compared to the clinic's current process for clinical electron set ups.

It is the responsibility of the facility to ensure that all users of the decimal3D have had training on the decimal3D App and possess the appropriate clinical education and experience to properly use the application.

Warning

It is critical that all users read these Instructions for Use and the User Guide material carefully and completely and consult the provided User Guides and other training materials to ensure proper use of the application.

Prior to the delivery of any treatment on a patient, users are responsible for performing patient specific QA to ensure clinical acceptability of the delivered treatment device. Since users are responsible for testing the acceptability of the delivered dose before treatment, .decimal, its staff, and representatives shall not be liable for any mis-treatments that may result from use of its software or devices.

Caution: Federal law restricts this device to sale by or on the order of a physician.

User Profile

The decimal3D App should be used under the guidance of a physician by authorized users such as physicists, certified medical dosimetrists, radiation therapists, and other licensed clinical staff who have been trained by the .decimal staff or by the clinical staff.

Product Features

decimal3D is a medical software accessed on an iPad and managed through the Apple App Store® (users must create an account with Apple to manage their iPad software installations). decimal3D allows users to enter standard patient information, capture a three dimensional scan of the physician drawn treatment area, digitize the exact shape of the treatment field, and place a beam to complete the design of a patient-specific electron aperture. The decimal3D App also allows the user to order the aperture for fabrication and delivery by .decimal.

System Availability and Data Integrity

The decimal3D App is installed on a standard Apple iPad and uses the Structure Sensor Mark II by

Occipital. These off-the-shelf hardware components are covered by manufacture warranties, which can be extended to ensure continuous support and service for all components of the decimal3D system. All system data is stored locally on the iPad using secure encryption technology. As this application stores patient protected health information (PHI), clinics should secure the iPad following their internal Mobile Device protection policies to ensure protection of patient data and maintain HIPAA compliance. Remote tracking and lockout software is highly recommended to ensure the iPad data can be locked, deleted, and recovered in the event an iPad is lost or stolen.

It should be noted however, that decimal3D nor its host iPad should be used as the sole location to store critical patient treatment record information. As a mobile device, iPads can be prone to potential loss or damage. Once an order has been placed however, .decimal securely stores the treatment device information on its servers for the time period required by the US FDA and users may request this information, if necessary, in the event of local data loss. AS such, users should take care to digitize and place orders in a timely fashion and transfer any critical patient notes recorded in decimal3D to the appropriate patient record database on a regular basis.

Coordinates and Units of Measure

The following is a list of several important items that users should understand in regards to the information displays in the decimal3D Application:

- All linear dimensions are shown in centimeters (cm)
- All angular dimensions are shown in degrees (deg)
- All date/time values are provided in a *mm/dd/yyyy h:m:s am/pm* format using local time
- All date and time information should match current iOS date and time, including proper use of daylight savings time where appropriate (note: decimal3D will display in am/pm format, while iOS may display in 24 hr format depending on local settings)

Data Validation

Users are responsible for confirming the accuracy of machine data using decimal's p.d App. This data will be used in decimal3D for determining available electron applicator sizes and tray locations. Users should complete a site survey found at <https://dotdecimal.com/site-survey/> if they do not have an account with .decimal. .decimal staff will aid users in setting up machines.

Unauthorized Use and Access Control

decimal3D will contain sensitive patient information that is protected under various governmental regulations, therefore users must ensure they adequately follow all appropriate and applicable rules regarding how, where, and when their staff may access the application and its data. Since all application and data access requires user login credentials, it is important that site administrators implement a strong password policy and that all users understand the importance of maintaining secrecy of their password (i.e. passwords should never be shared among more than one user). It is these user credentials that protect the system and its data from unauthorized access and replication. Please note that in

In addition to the iPad passcode or biometric access protections, decimal3D requires a separate user-specific login to ensure that all PHI is protected by non-shared access account credentials.

System Calibration

The decimal3D application relies on both the Structure Sensor Mark II and built-in iPad color camera. Proper operation of the decimal3D App requires that these two components be properly calibrated to ensure accurate alignment of scanned image colorization. A calibrator app has been provided with your iPad and the system is shipped pre-calibrated. However, part of the regular maintenance of the decimal3D application is for users to verify and adjust the calibration every 6 months OR anytime the Mark II Sensor is removed from the iPad OR anytime the system is subjected to an impact (e.g. fall or drop) that may have jarred or shifted the Sensor. The calibration procedure is simple and the provided calibrator app walks users through adjusting and testing the system's calibration.

Known Limitations

Below are listed the known application limitations, defects, or inconsistencies.

1. Site information including Machine and Address Settings cannot be edited from decimal3D (these can be edited using .decimal's p.d software available on Windows computers)
2. User passwords cannot be changed within the decimal3D App (please log in to direct.dotdecimal.com to change your password or contact .decimal customer service to request a password reset)
3. Patient Databases are stored locally on each iPad, so facilities with more than one iPad will not be able to access all patient records from each iPad (note: once an Order is placed however, the order information is available via direct.dotdecimal.com, which can be accessed from any device or computer)
4. Scans are able to be deleted even if they contain contours and beams, so care should be exercised whenever deleting scans as all data associated with that scan will also be deleted
5. Very bright indoor lighting can interfere with scanning, especially on dark or shiny surfaces; if you experience difficulty with the scanner recognizing a surface, try scanning in a lower light condition

Release Notes

For the release notes for each version of the decimal3D Application, please refer to [decimal3D Version History](#).

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Last update: **2020/03/16 15:44**

decimal3D Version History

This section is intended to provide access to previous versions of the decimal3D userguide documentation. Below you will find the userguide for each released version of the decimal3D App.

Finding the App Version

To find your application's current version open the "Advanced" page from the left side menu.

Using the current version of the application, find the appropriate user guide below.

Versions

This is a list of the user guide as released for each version of the decimal3D App.

User Guide information is directly available on this website and a PDF is provided for offline user guide access.

Latest Stable Version

- **1.2.0** -

PDF user guide

- *Release Notes:*

1. Added couch angle calculation when defining the initial beam entry position
2. Added millability enforcement to cutout shapes and warnings to users when 1.5mm or greater deviations are found
3. Increased spinner sizes and spacings, and added "wrap around" support to improve usability of beam editing
4. Reduced contour drawing "dwell times" to improve usability and fixed some bugs with undo/redo
5. Added the SiteID to the Order Page
6. Added an additional "edit scan" button to the Scan Details view
7. Updated DOB spinner default and allow forward dates (but warn on save attempt as this greatly improves usability)
8. Fixed keyboard positioning to prevent covering of input controls on certain pages
9. Fixed a bug where hitting cancel on the beam Save confirmation would close the beam task, thereby deleting user changes
10. Removed emoji keyboard options when adding/editing patient information
11. Fixed errors with allowable block size determination and potential saving of the wrong block size and app crashing
12. Changed crosshair color and line thickness

Previous Versions

- **1.1.0** - PDF user guide
 - *Note: This version 1.1.0 was the first release intended for clinical use.*
- **1.0.0** (Non-Clinical)

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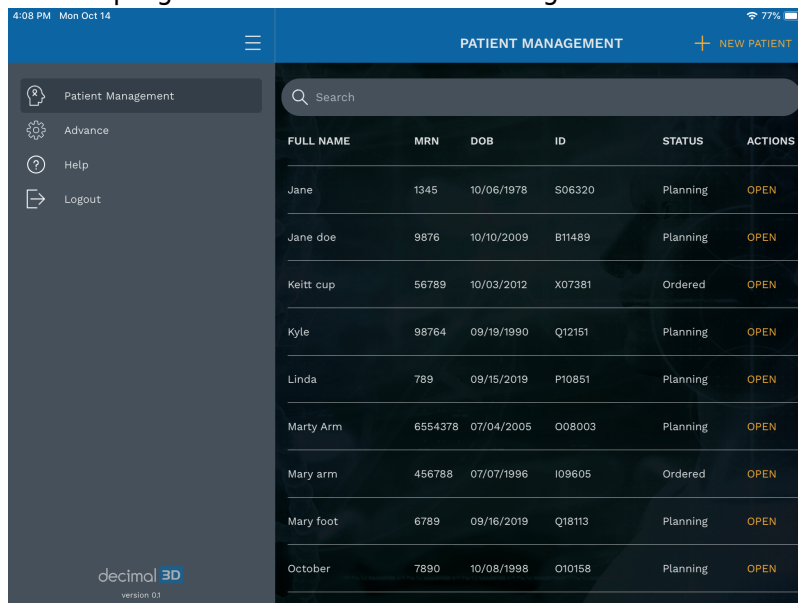
Walk-through

This walk-through is intended to be an easy to follow step-by-step guide for completing a “standard clinical electron” set-up. It covers all steps involved in designing and ordering an electron aperture from .decimal. The intent is that after completing this walk-through you will have gained the knowledge and understanding necessary to complete a clinical electron set up utilizing the decimal3D App (it should be noted that the values provided herein are not intended to represent clinical guidelines and should in no way be considered a recommendation for values that are appropriate for clinical use).

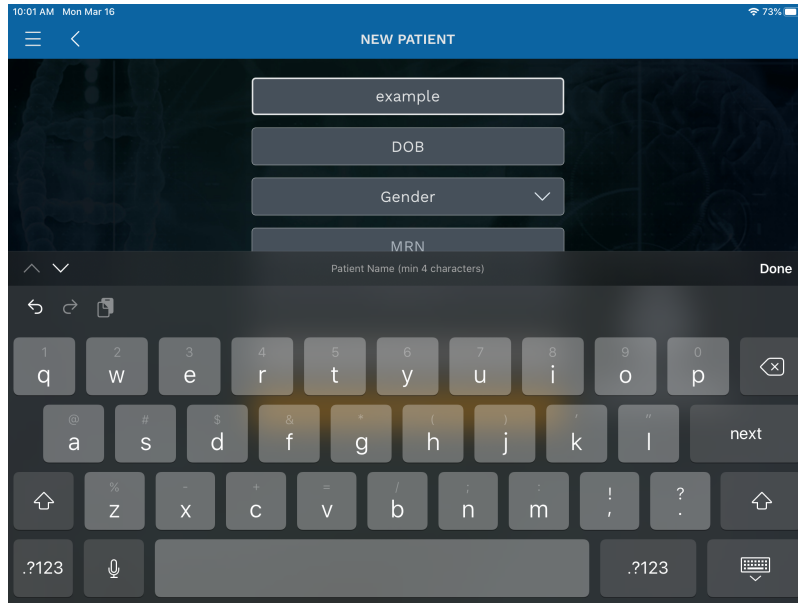
1. Have the physician outline the desired treatment area on the patient's skin using a marker or pen with high color contrast
2. Bring the patient to the simulator or treatment room and place them in the desired treatment position
3. Open the decimal3D app on the iPad and login with your unique username and password. The username and password is the same as what is used to sign in to p.d.



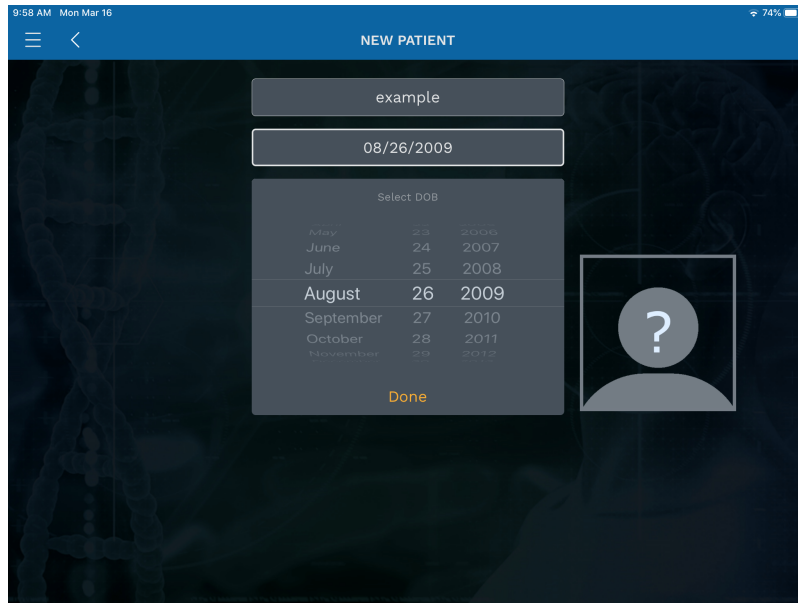
4. Select *New Patient* in the top right hand of the Patient Management Screen



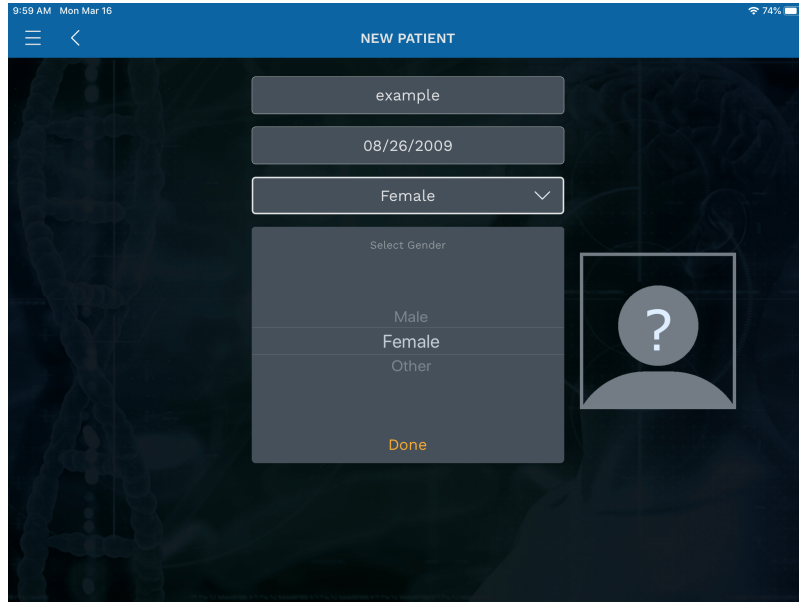
5. Enter the *Patient Name*



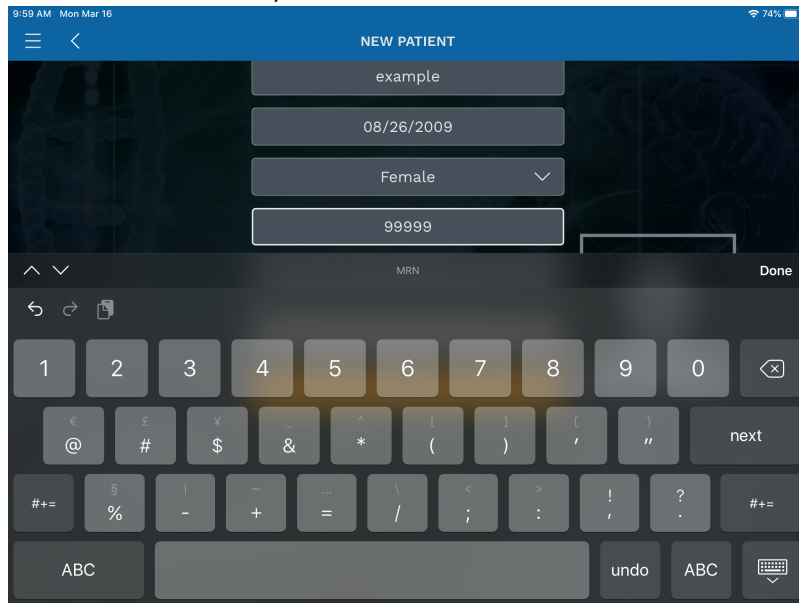
6. Enter the *Date of Birth*



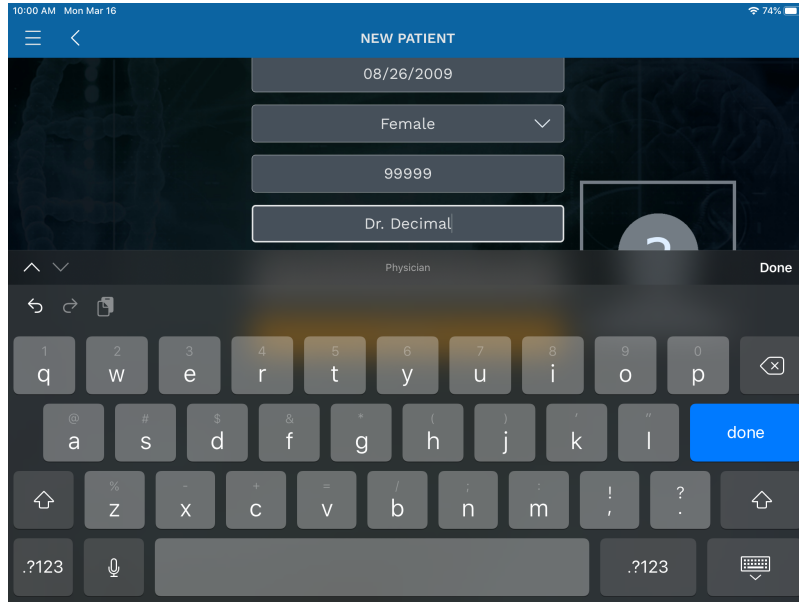
7. Select the patient *Gender* from drop down



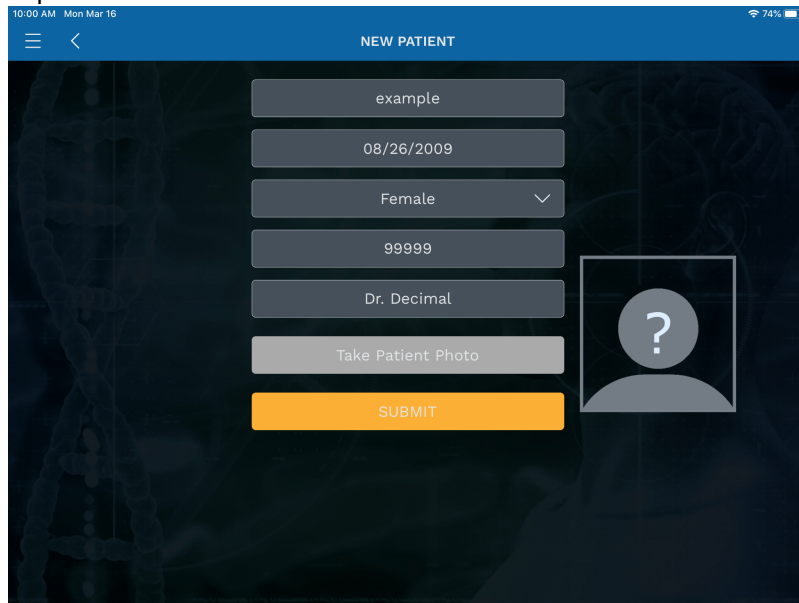
8. Enter the *MRN* (Medical Record Number)



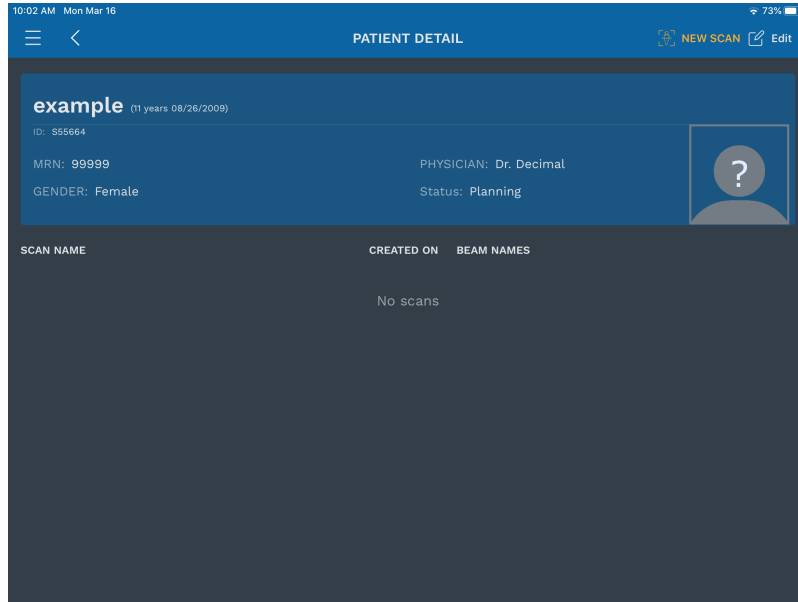
9. If desired, enter the *Physician* name



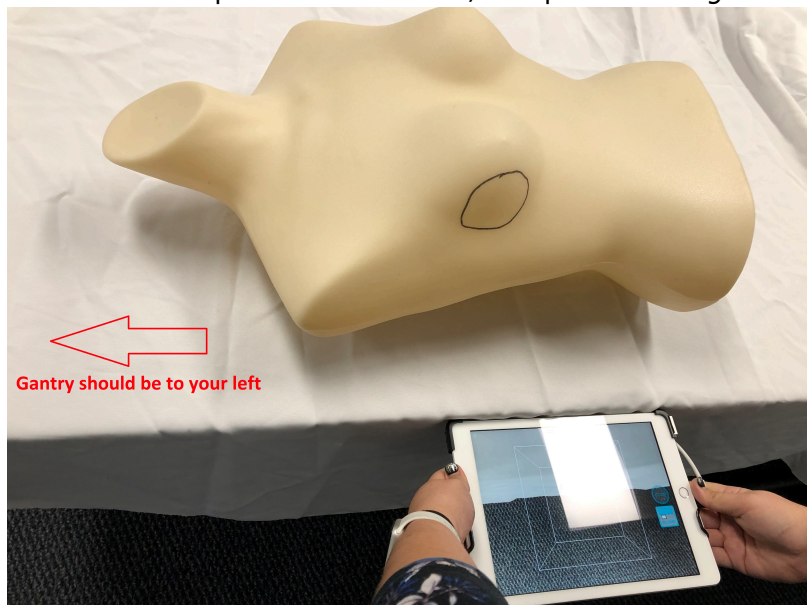
10. Press *Submit* and the patient record will be created



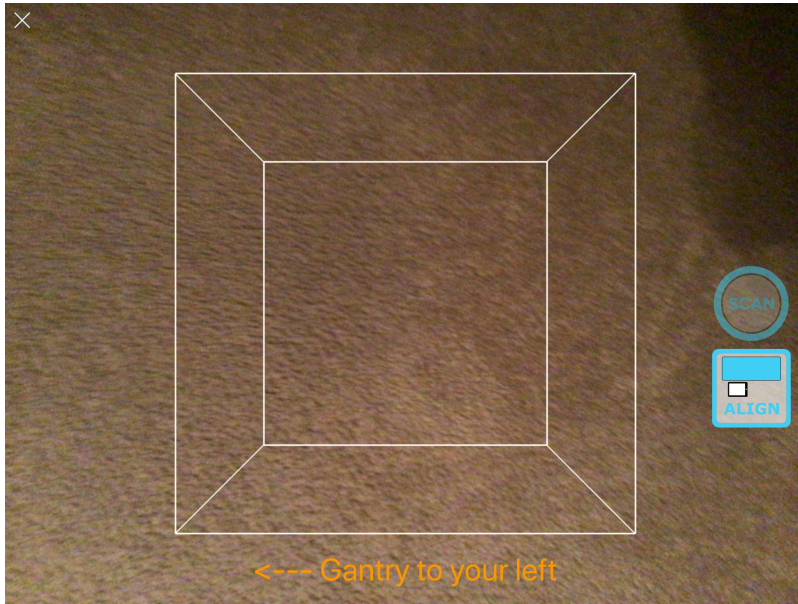
11. In the top right hand corner select *New Scan*



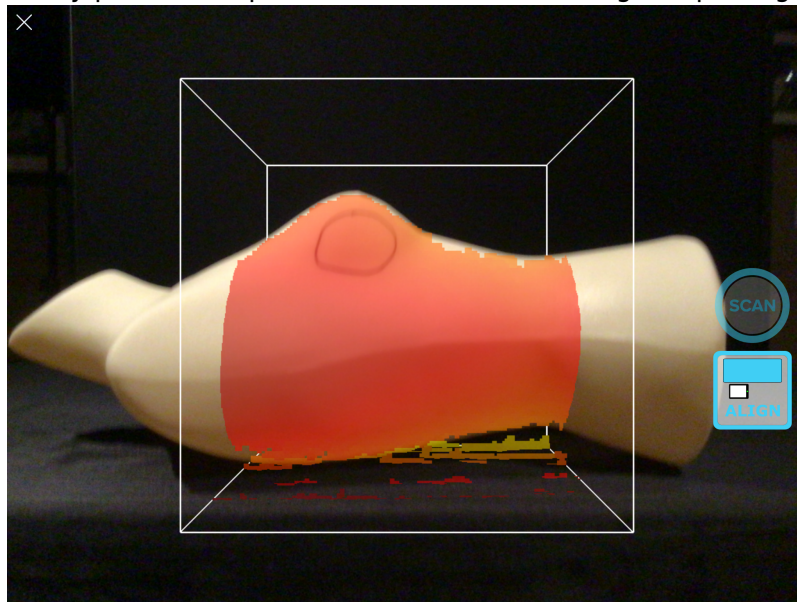
1. Before starting the scan, you must align the iPad to the treatment table so that couch and gantry angles can be accurately determined
2. To perform this alignment, simply hold the iPad against the edge of the treatment table (with the gantry toward YOUR LEFT and the iPad parallel to the floor) and press the *Align* button as



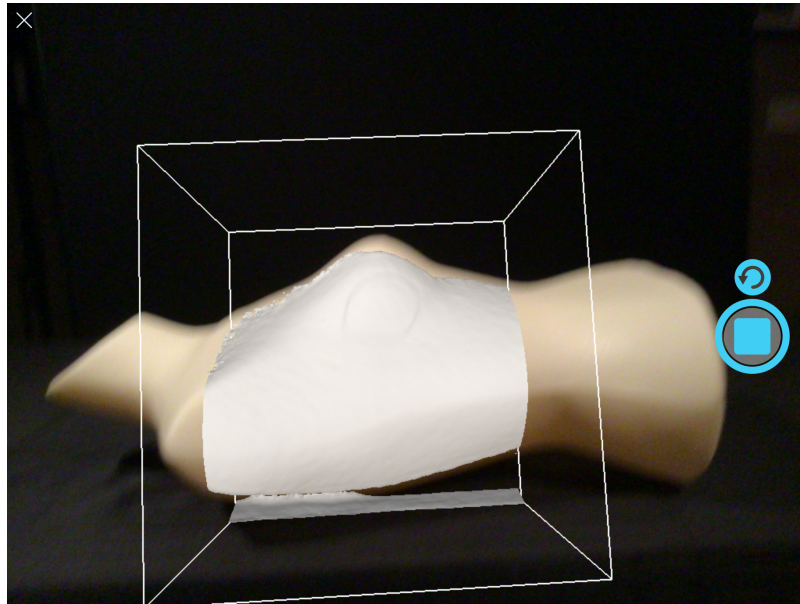
shown in the images below



3. You are now ready to scan the patient. Focus the scanner on the area to be scanned. Adjust your distance from the patient to ensure the entire area to be scanned appears in RED (red indicates an ideal scan distance, yellow is slightly too far away, and if no color is shown, you are too close to the patient). The ideal distance is about half a meter (18 to 24 inches).
4. The box shown in the app can also be adjusted to control the size of the area to be scanned. Only areas fully within the box will be captured during the scan, so you can use a two-finger pinch to shrink or expand the box as needed for the field size at hand.
5. Once you are correctly positioned, press the *Scan* button to begin capturing data.



6. While the scan is active, the area that has been fully captured will appear white. You should continue scanning until the entire desired area is shown in white. For relatively smooth or flat areas, the scan can be obtained within 1-2 seconds without moving the iPad, but for larger or highly curved areas, you may need to slowly move or rotate the iPad to capture the entire patient surface.

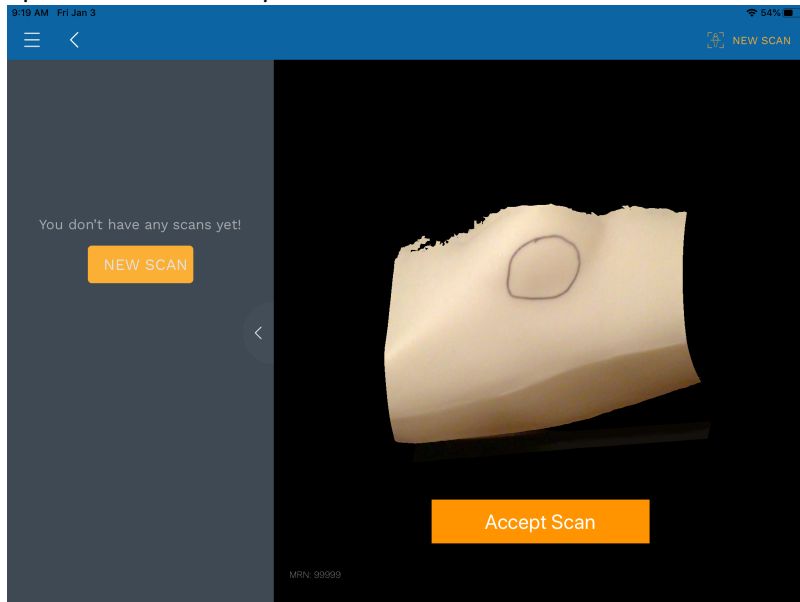


7. Press the *Scan* button again to complete the scan.

1. The decimal3D app now automatically begins processing the scan depth and color data to produce the colorized 3D model

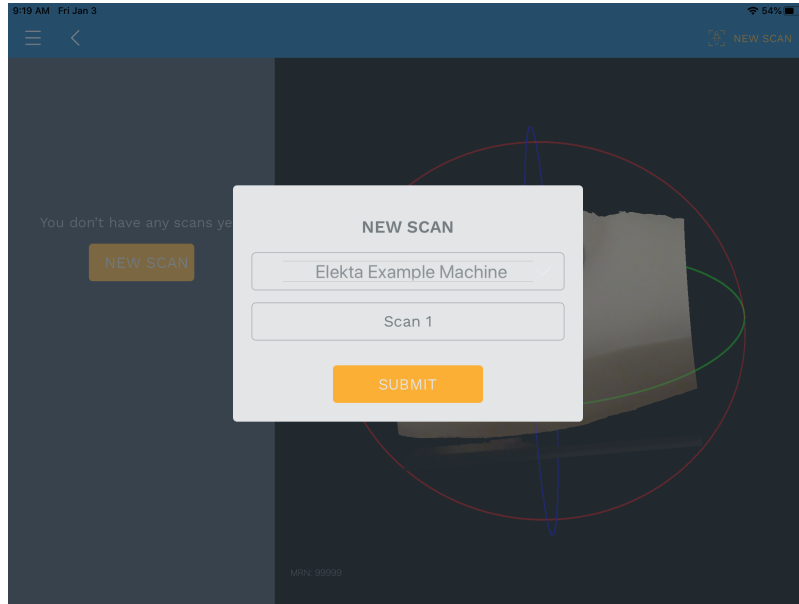
12. Once the scan is done processing review the resulting model

1. If the scan is acceptable select *Accept Scan*



2. If it the scan is not acceptable select *New Scan* button on the left-hand side to discard this scan and start a new scan

13. Choose the desired treatment machine from the scroll selector and edit the name of the scan if desired (by default scans are labeled with sequential numbers, e.g. *Scan 1*). Scan names are used only as a convenience for users to locate scans within a patient and are not used for any other purpose in the application. Press *Submit* when done.

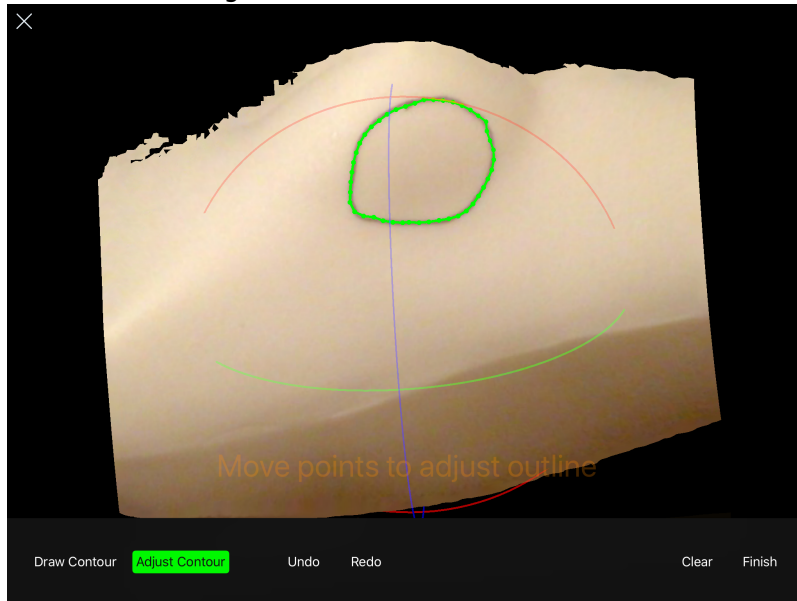


- 14. Your scan is now saved and you are ready to digitize the treatment field
- 15. Select *New Contour*
- 16. You should now rotate, pan, and zoom the display to provide a good view of the treatment field
 - 1. Rotate by using a single finger drag in any direction
 - 2. Pan by using a two finger drag in any direction
 - 3. Zoom by using a two finger pinch motion anywhere in the display
- 17. Now you will trace the physician drawn treatment field directly on the 3D patient model using either the Apple Pencil or your finger
 - 1. To start drawing dwell on the scanned image at the desired start point for a full second, then continue drawing the entire treatment area as a single closed contour. Continue drawing until the contour is closed back at the original start point (the contour will change colors to indicate it is now complete). If you lift the pencil/finger before closing the contour you can continue by dwelling again for one full second at a point near where you left off with the previous drawing and then continuing onward.

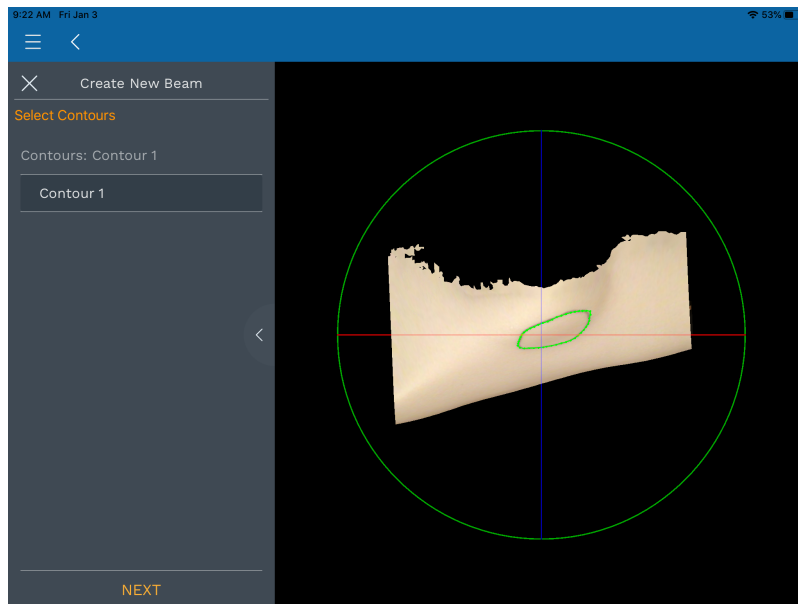


- 2. Once you have closed the contour, the application will automatically switch to the *Adjust Contour* mode. In this mode you can move points by placing the Apple Pencil or finger on a point, dwelling for one second, and then sliding it to a new position. There are also tools to

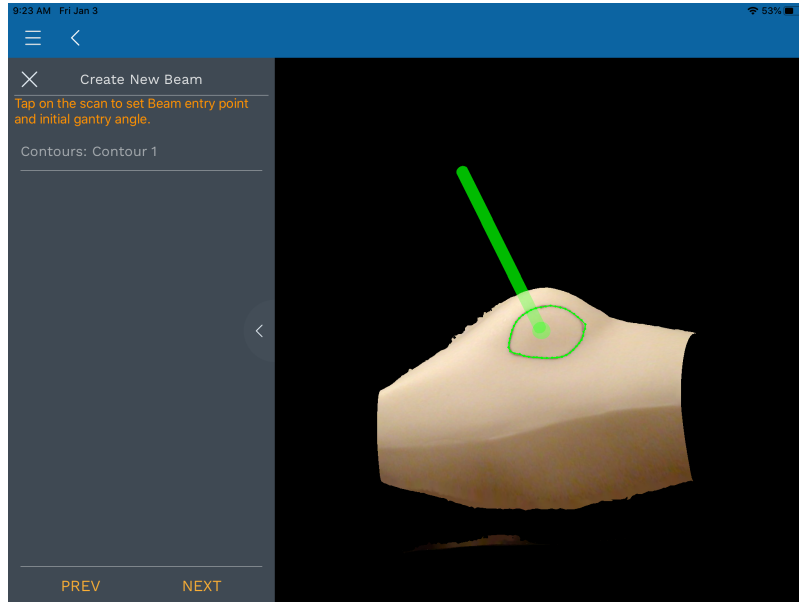
undo edits and clear all to start again if needed.



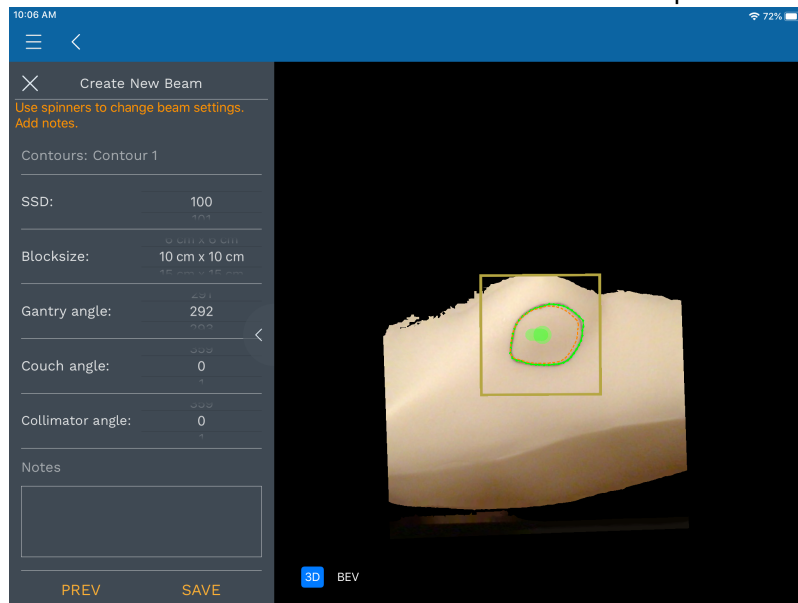
- 3. Once you're satisfied with the contour select the *Finish* button. Provide a name for the contour (or leave the name at the default) then press *Submit* to save the contour.
- 18. You are now ready to create your electron aperture by specifying the treatment beam parameters (the application will automatically enter the beam creation task when the contour is completed).
- 19. The first step in defining the beam is to select the contours to use for the aperture projection (note the contour is automatically selected when this task is started). Press the *Next* button to accept the contour selection.



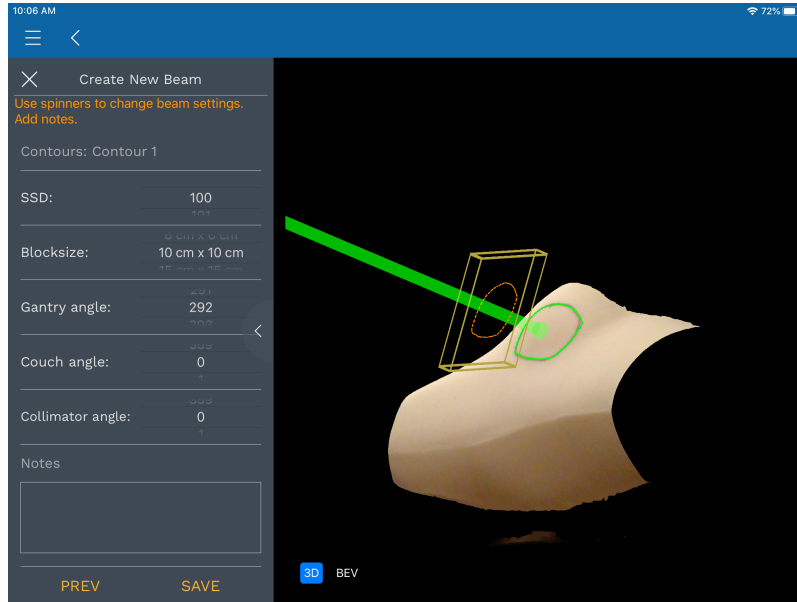
- 20. Now you will set the beam entry point by tapping on the patient model at the desired location. Tap again to change the location if needed, then press *Next* to accept this position



21. You are now presented with all the remaining parameters needed to fully define the desired treatment beam.
1. These include: SSD, Applicator Size, Gantry Angle, Couch Angle, and Collimator Angle
 2. Adjust the parameters as needed to meet the clinical needs of the patient at hand.



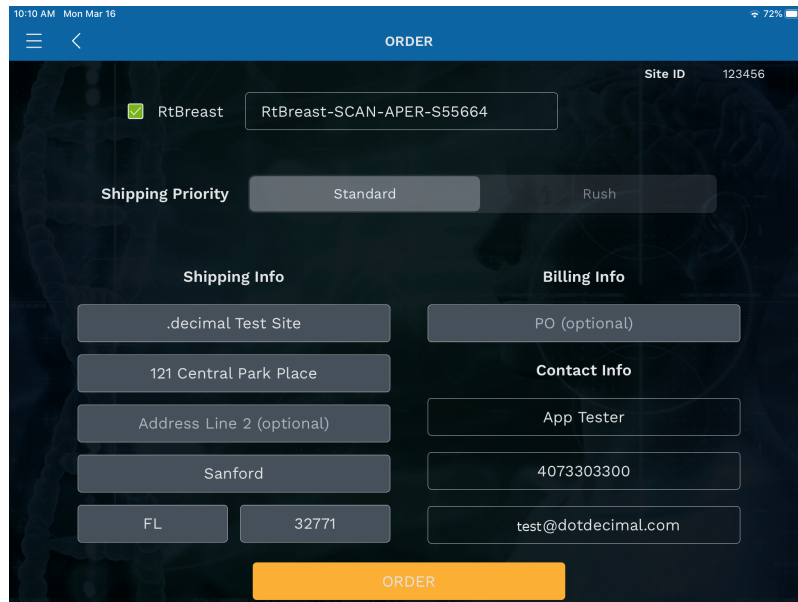
1. You may also wish to rotate the model to ensure an appropriate treatment angle has been selected (and to check for possible collisions of the applicator with the patient). You can also switch to a Beam's Eye View (BEV) where you can view and measure the block shape (note the BEV shape is projected to the isocenter plane).



3. Once you're satisfied with the beam and block (cutout) press the Save button. You will be prompted for a beam name. This name will be engraved on the actual cutout during manufacturing, therefore you should provide a meaningful beam name before pressing *Submit*.

22. You are now ready to order the cutout by pressing *Order* in the top right hand corner.

1. All available cutouts are automatically selected for ordering and the engraving data for each cutout is shown at the top of the order page.
2. Select a shipping priority, review the Shipping and Billing Address information, and press *Order* to securely transmit your order information to .decimal for the cutout to be manufactured.



3. Wait for 30-60 seconds to receive a confirmation of successful order and you're done !!!

23. If you encounter any difficulties or problems contact our customer service team at 1.800.255.1613

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Last update: **2020/03/16 14:42**