DICOM Patient Import

In order to begin designing boluses in the decimal Bolus Designer App you must first have patient imaging captured, structure geometries defined, and a treatment plan ready. This information is brought in the Bolus Designer App by importing DICOM CT, Structure Set, and Plan files.

Default Import Directory

The default import directory can be set in the app settings by navigating to View → Settings. This directory will always be the default directory when importing a patient. Users can then further refine the import folder as needed starting from this default level.

Importing a New Patient

If you have a set of CT Images, structures, and a plan you can import them directly into a new patient through the “Import Patients” menu.

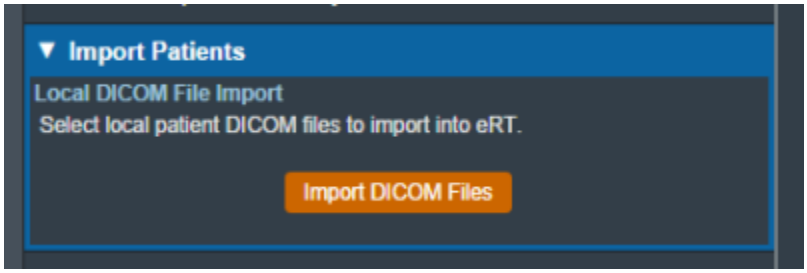

Fig. 3: Import in the Main App Page

Fig. 4: Import Directory Input

The Import DICOM Files option allows you to either browse your computer or copy the path to the folder that contains the CT images and structures you wish to import. The following options are available for browsing for local files:

- **Add Folder:** Browse for an entire folder of DICOM files to import into a patient

    - Use recursive folder search: This option can be selected prior to adding a folder to reclusively search and add all DICOM files within the selected folder and all sub-folders.
- **Add Files:** Browse for individual DICOM file(s) to import into a patient. Note: this option does not make use of the recursive folder search option.

A list of selected DICOM files for import will be displayed and you can choose to add more files for the selected patient or remove any files as desired.

Refer to the Processing Imports section once files have been selected to import.

Processing Imports

Clicking the Import button will start processing the selected files.

Fig. 5: Import Loading screen

When importing a new patient, the DICOM plan file must have the proper UIDs that reference the structure set in order for the plan to be successfully imported. If there are no Errors while importing you will be taken to the Electron Machine Definition page.

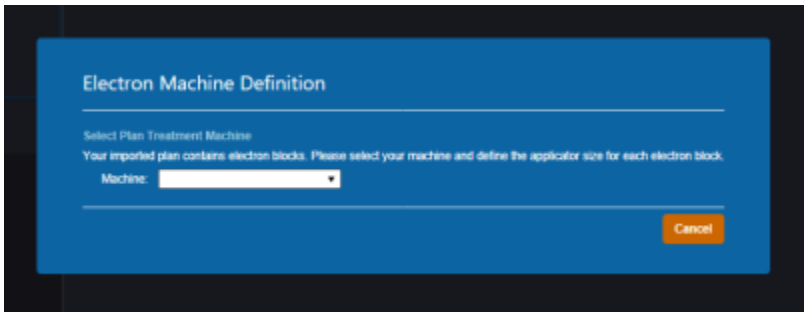

Fig. 6: Electron Machine Definition

If there are errors, please refer to the Common Errors section below for further details.

Electron Machine Definition

Users must select an electron treatment machine from the current site when importing a new plan into the Bolus Designer app. After a machine is selected, an applicator must be assigned to each beam in the

plan.

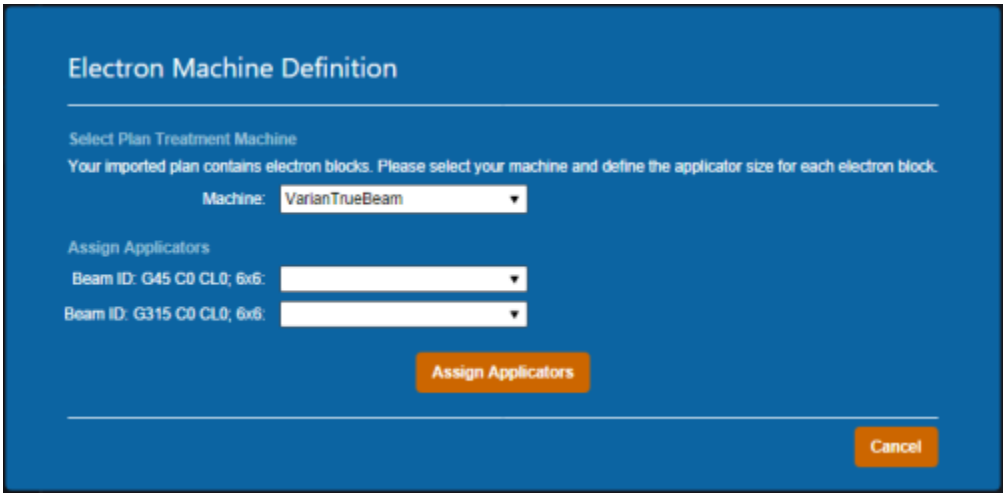

Fig. 7: Assigning Applicators

After every beam has an applicator assigned to it, the import can finish and you will be taken to a confirmation page for your import.

Common Errors

Structures Skipped During Import

Structures can be skipped during Structure Set import if the structures meet the following criteria:

- Non closed planar (e.g.: points or structures where slices are not fully closed)

Structures that are skipped will be denoted at the end of the DICOM import as shown in figure 8.

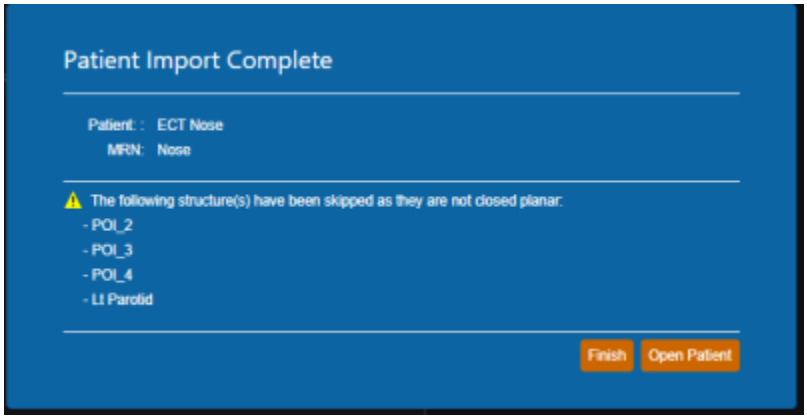

Fig. 8: Import Finalized

Missing CT Images, Structure Set, or Plan File

If the files you have selected to import do not include CT images, a structure set, and a plan file you will receive this error message.

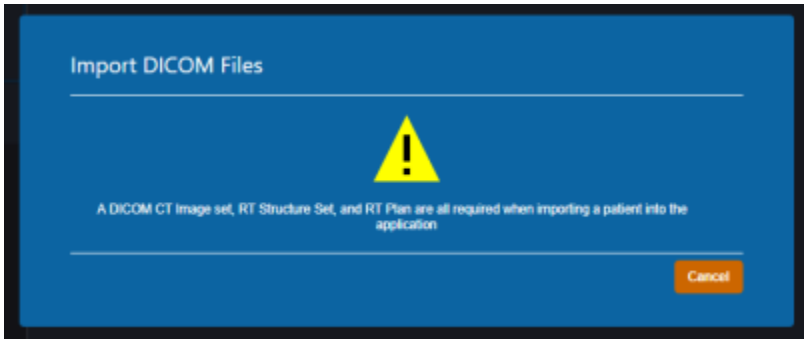

Fig. 9: Missing DICOM Files

You must re-start the DICOM import process and select the all the required files in order to successfully import a treatment plan.

Bolus Designer Settings

The Bolus Designer App allows users to view and edit app-level configuration settings. The Settings block is located in the main page of the app below the Import Patients block.

Note:
These settings are saved as part of the shared patient file storage and will be used by all users sharing the patient database.

Export Logs

The Export Logs block allows the user to export a file containing logs of user activity within the app. This .csv file contains data exported from the app database that keeps track of critical user activity, including (but not limited to): opening of patients and plans, plan approvals, DICOM exports, and hardware ordering.

Refer to the Bolus Designer User Logging guide for details on what actions are logged.

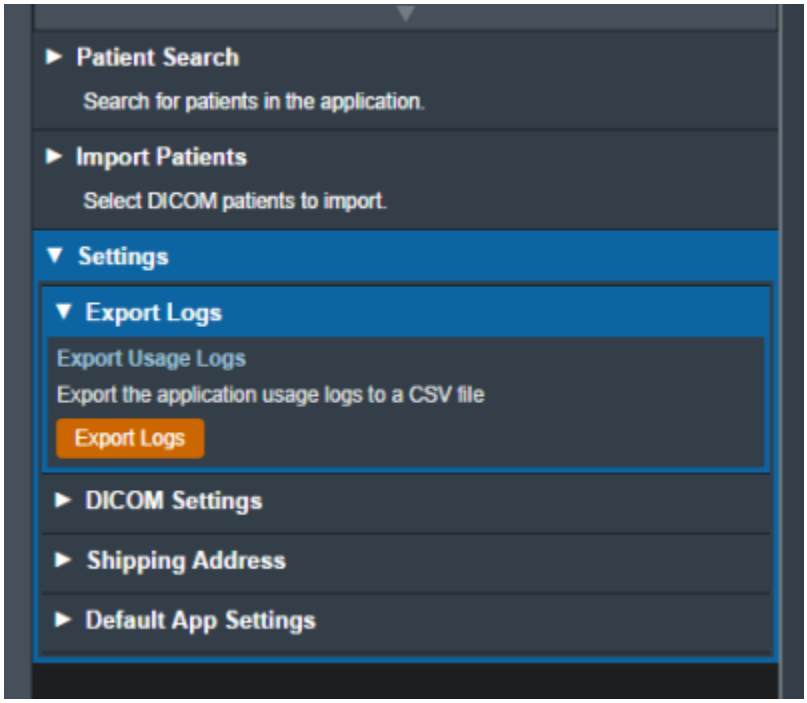

Fig. 10: Export Logs UI

DICOM Settings

The DICOM Settings block allows the user to view and edit settings related to the export of DICOM files. These settings include the default DICOM export directory and a list of DICOM export server AE titles.

These settings are applied and available to all users of the selected Site ID for which the settings are present.

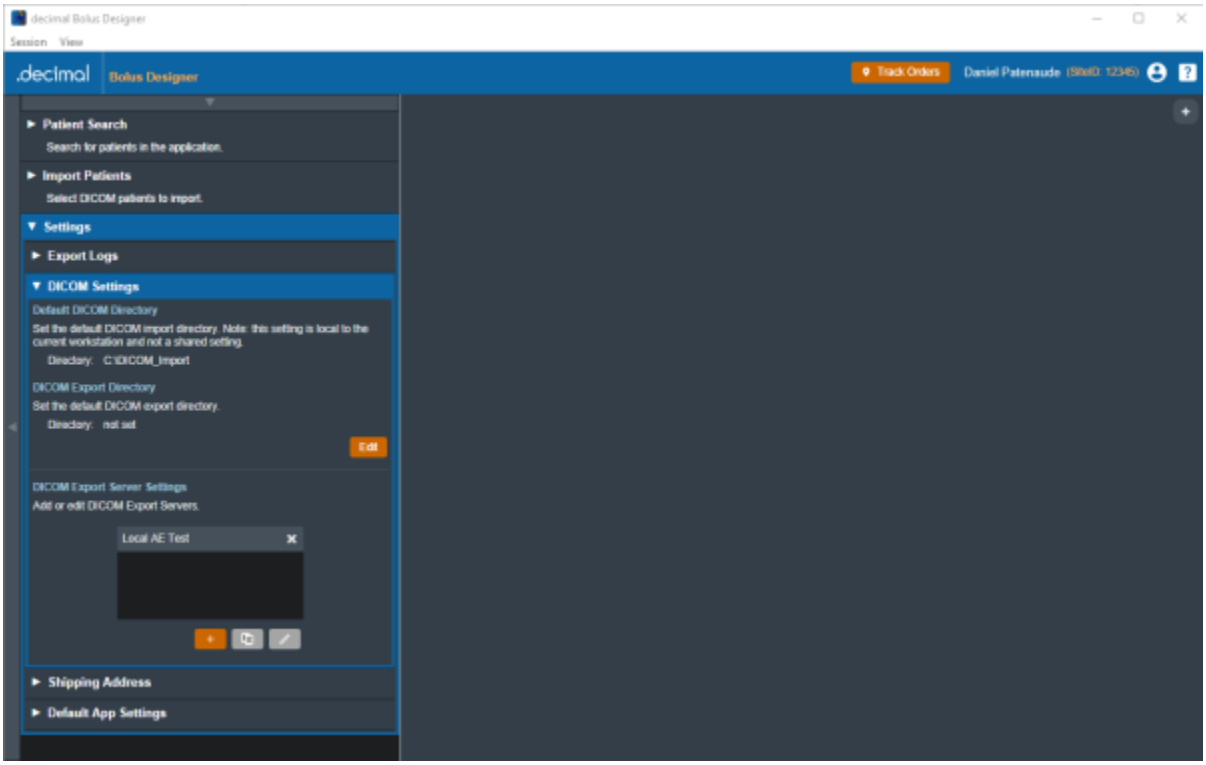

Fig. 11: DICOM Settings UI

DICOM Export Directory		
Export Directory	Sets the default export folder when exporting DICOM files to disk.	
DICOM Export Server Settings		
Export Export Servers	A list of DICOM AE titles (DICOM Receivers from another system) that the Bolus Designer app can export to.	
	Server Name:	The name of the DICOM server that will displayed to the user when exporting within the Bous Designer app.
	IP Address:	The local network IP address to which DICOM files will be sent by the Bolus Designer DICOM sender.
	Port:	The local network port on which the DICOM sender should transmit the DICOM files.

Designing a Bolus

Fix Me!

Plan Locking

Plan Locking is a mechanism whereby users can “lock” a plan to prevent further edits or changes. It should also be noted that before users are able to order blocks or boluses in the Bolus Designer app, the plan for those parts must be locked. Note, locked plans cannot be unlocked.

Locked plans differ from unlocked plans in the following ways:

1. They are read only and no treatment plan data can be changed
2. The plan hardware devices are no longer being recomputed in the UI as during locking those items are saved to the patient disk storage to ensure they never change from how they were viewed at the time of the lock.

When a user goes to select a plan for their patient, they will be able to tell if the plan is locked or not. Plans that are green are locked while unlocked plans are the standard blue. Locked plans also state the time they were locked and by which user in order to maintain integrity with the plan.

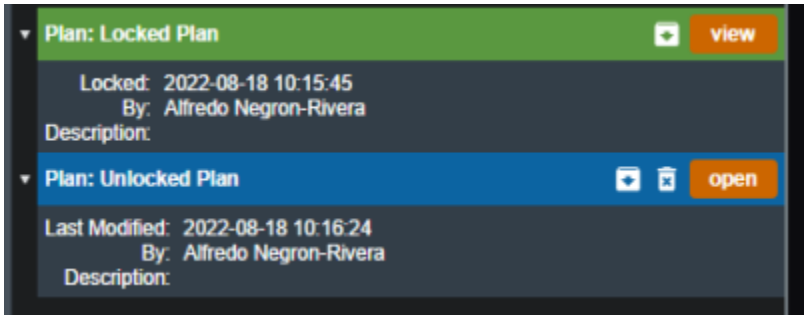

Fig. 33: Plan selection with a locked plan

Locking a plan

In order to lock a plan a user must simply open the plan they wish to lock and select the “Lock” option inside the General Block. NOTE: The option will not be enabled if the plan does not have a designed bolus.

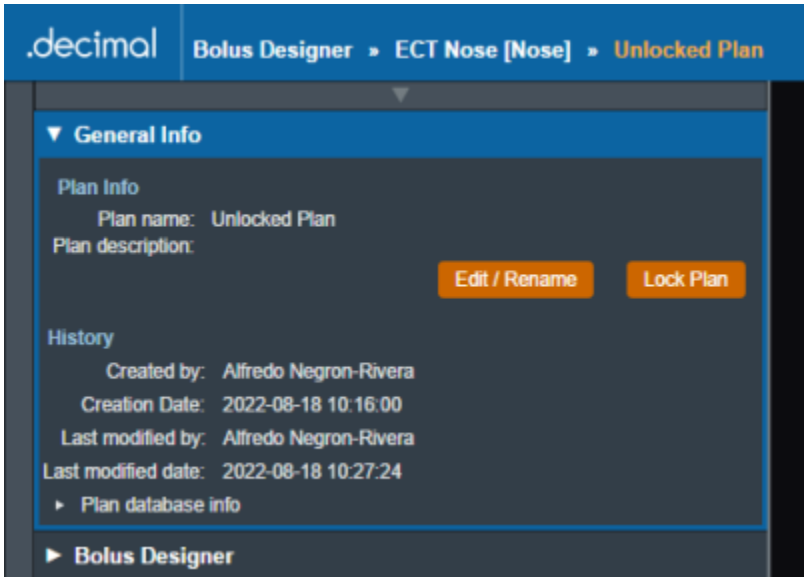

Fig. 34: Lock plan button

After selecting to lock a plan a user must confirm their selection. They will also have a final opportunity to change the Name and/or Description for the final plan.

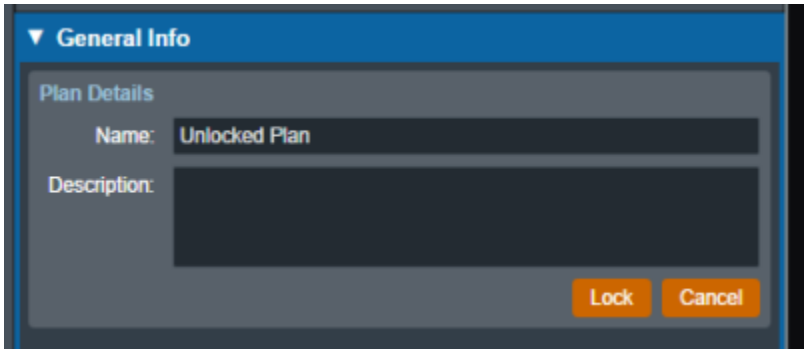

Fig. 35: Plan lock confirmation

A user can also lock a plan when attempting to order devices in an unlocked plan. The UI will show a message and prompt the user to lock the plan before the ordering process can continue. Refer to the Ordering Devices section for information on device ordering.

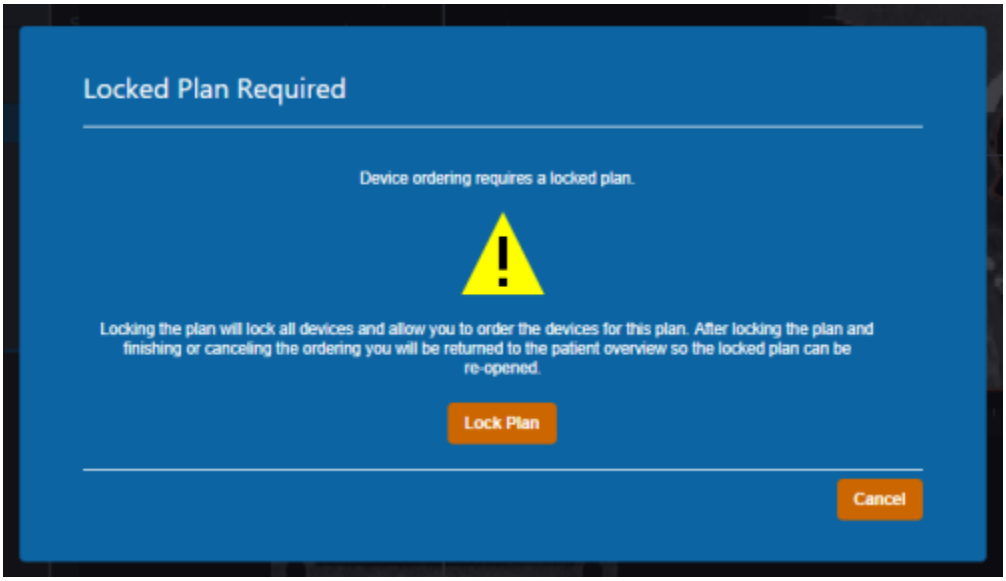

Fig. 36: Ordering block plan locking

When that is completed all users on this environment should see the plan as locked (see figure 33).

DICOM Export

The Bolus Designer App allows for the export of patient and plan information in the DICOM file format. If the treatment plan is not locked, authorization from a qualified user is required to enable export.

The user can choose to export the CT Images, RT Structure Set, and RT Plan as DICOM files. There are a few considerations to keep in mind for each DICOM file that is exported from decimal Bolus Designer:

- **CT Images:**
  - The Bolus Designer App allows CT Image export for the convenience of end users only. This application does not modify CT Images in any way and the exported CT Image files are exact

copies of those imported into the app for the patient course at hand.

- **Structure Set:**
  - Exported RT Structure Sets will be a copy of the imported Structure Set data, with a notable exception:
    - Structure(s) will be added to the Structure Set for any bolus that are present in beams within the treatment plan.

For unlocked plans, new UIDs will be generated each time the plan is changed and DICOM files are exported. For locked plans, the DICOM UIDs are fixed and will always be the same each time the DICOM file is exported.

Local Export

The Bolus Designer App allows the export of DICOM files to a local directory. A default DICOM export directory can be set in the Bolus Designer DICOM Settings.

Server Export

The app also allows the export of DICOM files to a DICOM server (AE title). When exporting to a DICOM server, the user can choose to export to a server defined in the Bolus Designer DICOM Settings or to a custom server.

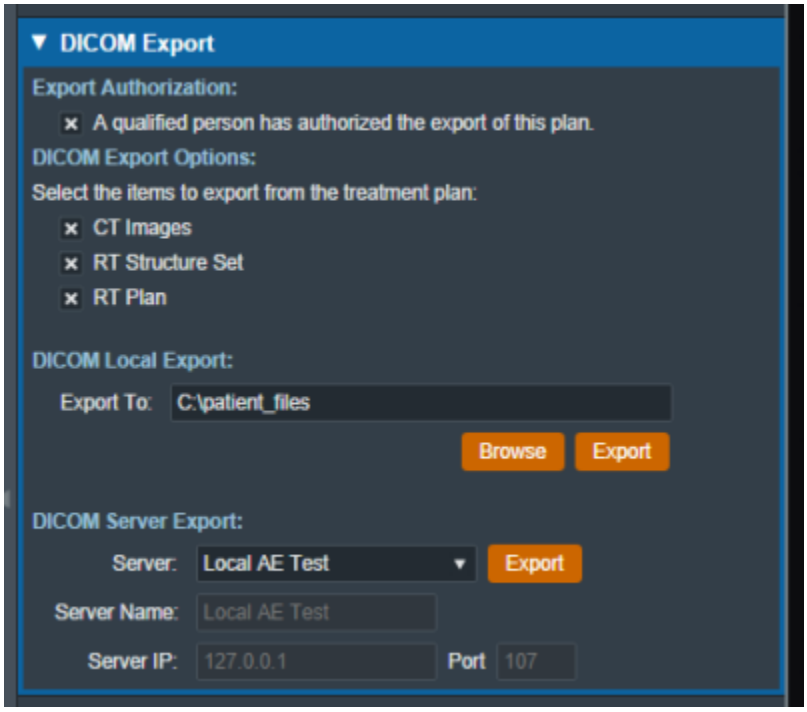

Fig. 37: DICOM Export UI

Ordering Devices

Once a plan has been locked, the user is able to order the devices assigned to the beams in the plan. Ordered devices will be sent to .decimal for manufacturing through decimal Direct via secure HTTPS.

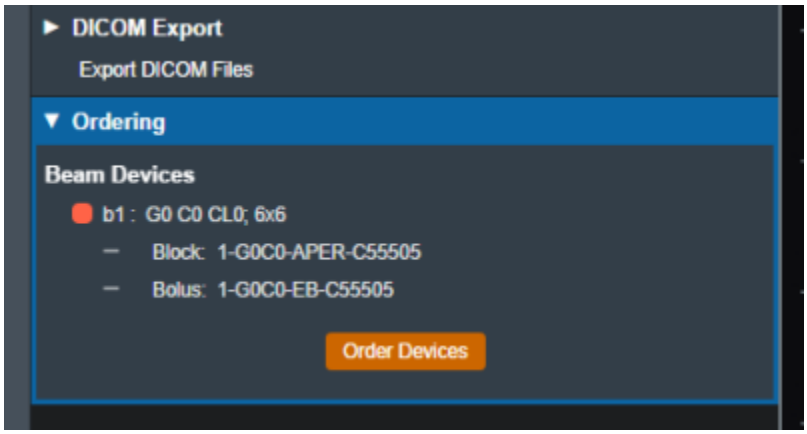

Fig. 38: Part Ordering Example

Select the “Order Devices” option and all devices will be shown to the user along with the beam in the plan that utilizes said Device. If the plan is not locked, the UI will prompt the user to lock the plan before ordering can proceed (see figure 36). From here users can select which devices they would like to order and move on to the next step.

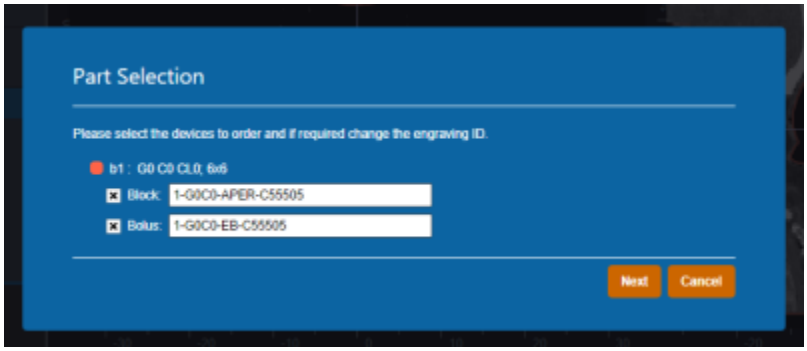

Fig. 39: Part Selection Example

Once the user has decided which devices to order, the following fields will need to be filled out in order to complete the order. The shipping address is set to the address assigned to the current site and can be edited by an Admin user through decimal Direct.

- **Shipping Priority**: **Standard** (Overnight delivery by end of day) or **Rush** (Overnight delivery before noon).
    - **Note:** Extra charges may apply for Rush delivery.

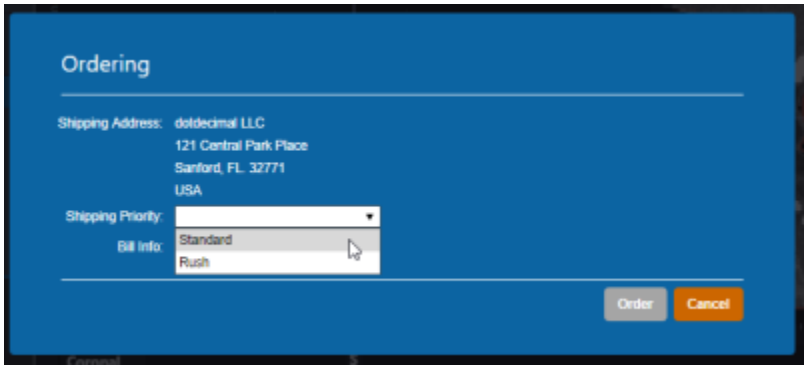

Fig. 40: Shipping Priority Selection

- **Bill Info**: Any additional PO or specific Billing information to be added to the order. This is an optional field.

Once these fields have been filled the device(s) can be ordered and the user will be provided with a confirmation if the order is completed successfully.

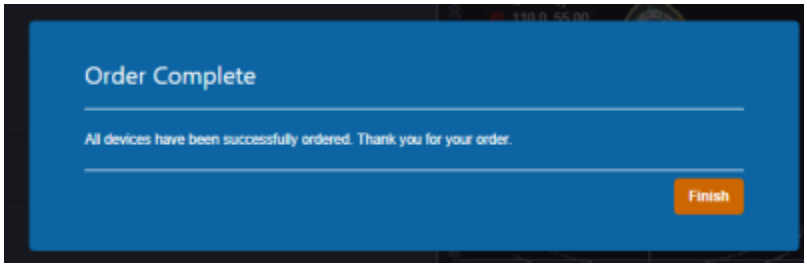

Fig. 41: Order Confirmation

After the order has been placed to decimal Direct the ordered devices will be noted within the Ordering block. Additionally users can view the order report for that device by selecting the highlighted link. This will take the user to the decimal Direct page with the order confirmation for that device.

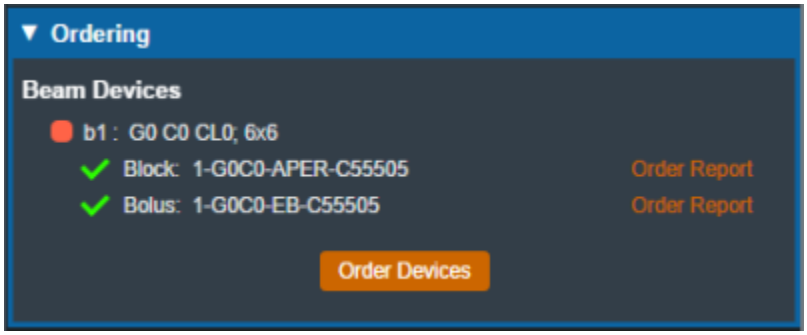

Fig. 42: Access Order Report

Bolus Designer App Settings

The following settings are present within the decimal Bolus Designer settings UI accessed within the View → Settings menu:

Note:
These settings are local client settings for the logged in Windows user to the local work station and are not shared with other users.

General Settings

- **Landing Page**
  - Allows the user to specify whether or not to view the application landing page when Bolus Designer is opened.
- **UI Theme**
  - Set the visual theme of the application (Note: the 'blue' theme is the currently supported theme; a 'dark' theme is available, but is a deprecated theme and not routinely updated at this time).

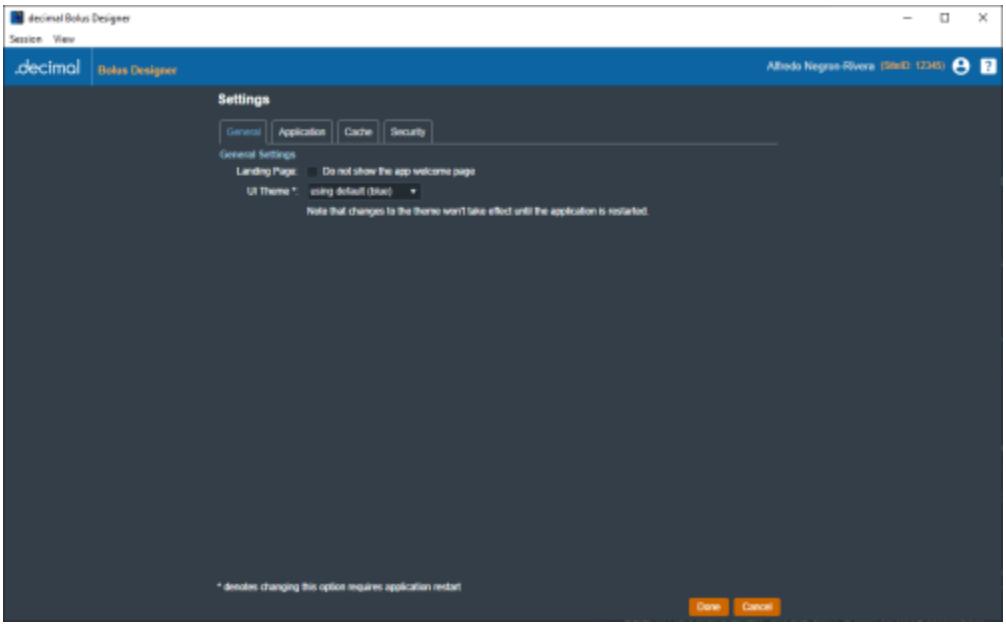

Fig. 43: General Settings

Application Settings

- **Patient Storage**
  - The directory for the decimal Bolus Designer patient database and file store. The default location is a folder above the application directory installed via the decimal Launcher on the local workstation. Setting this to a shared network resource allows multiple users to share a common patient database. Refer to Application Data Management for more information.
- **Default DICOM Directory**

- Sets the default DICOM import directory. This directory will be used each time a DICOM import is attempted.

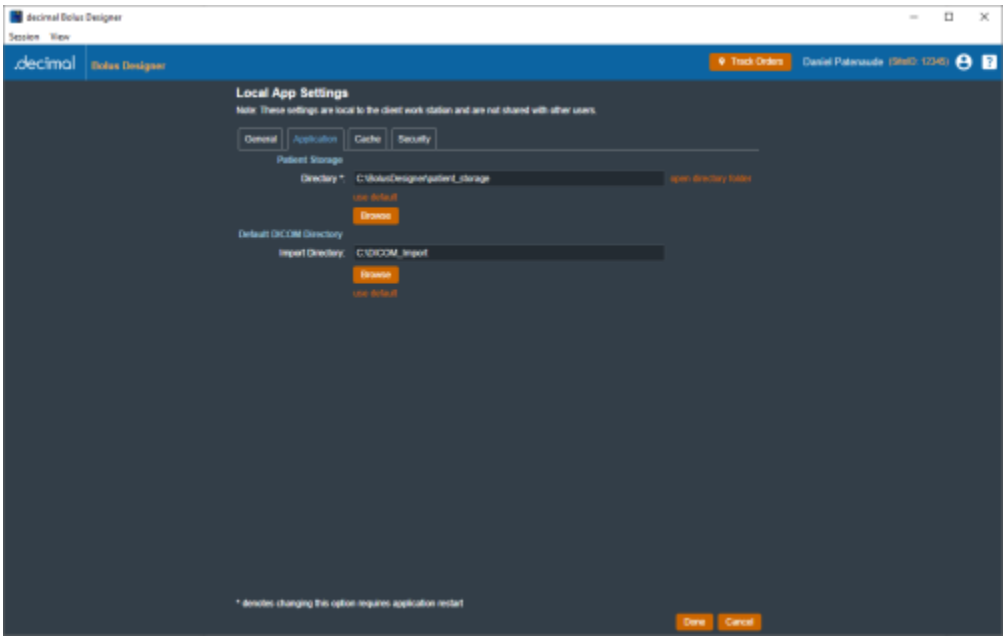

Fig. 44: Application Settings

Cache Settings

- **Local Disk Cache**
  - The local disk cache is where calculation results are stored on the client computer. The recommended storage size for this cache is 25GB.
- **Network Disk Cache**
  - The network disk cache is where calculation results are stored on a network drive where all users can access. If calculation data is not found on the local client cache, the network cache will be checked for the calculation results. The recommended storage size for this cache is 25GB.

Users can choose to manually clear the disk cache or let it clear oldest data as the cache fills. Refer to Application Data Management for more information.

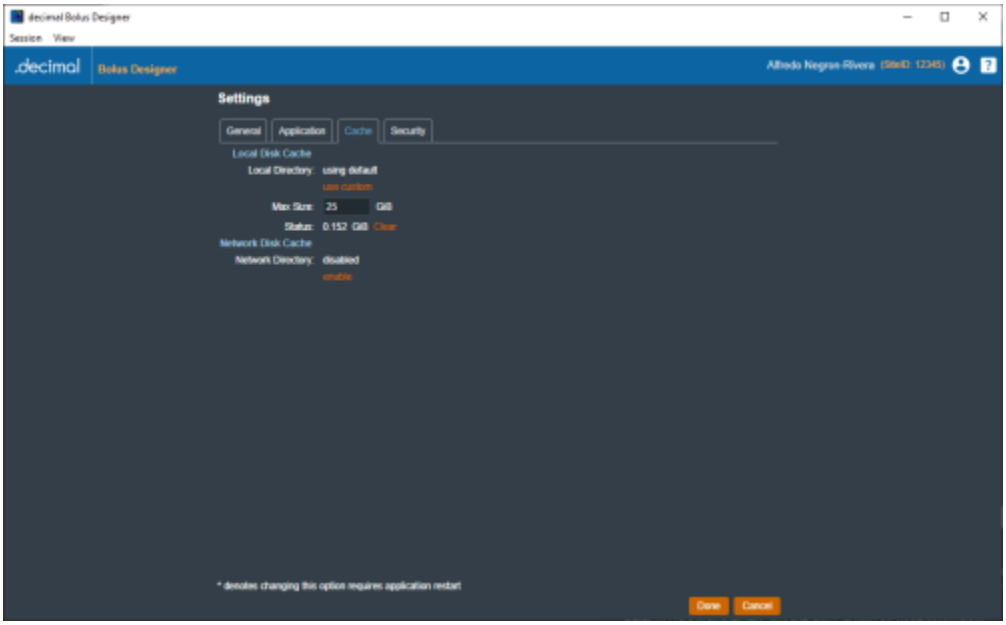

Fig. 45: Cache Settings

Security Settings

- **Inactivity Timeout**
  - Specifies the time out period (in minutes) to automatically log the user out of the application. Timeout is based on mouse/keyboard interaction within the user interface. Note: This inactivity timeout is different than the user session token received from the decimal Launcher.
- **SSL Settings**
  - Allows the user to disable the app's SSL certificate revocation check. Users with a network proxy may need to enable this option if their proxy configuration is interfering with the SSL certificate revocation checking.

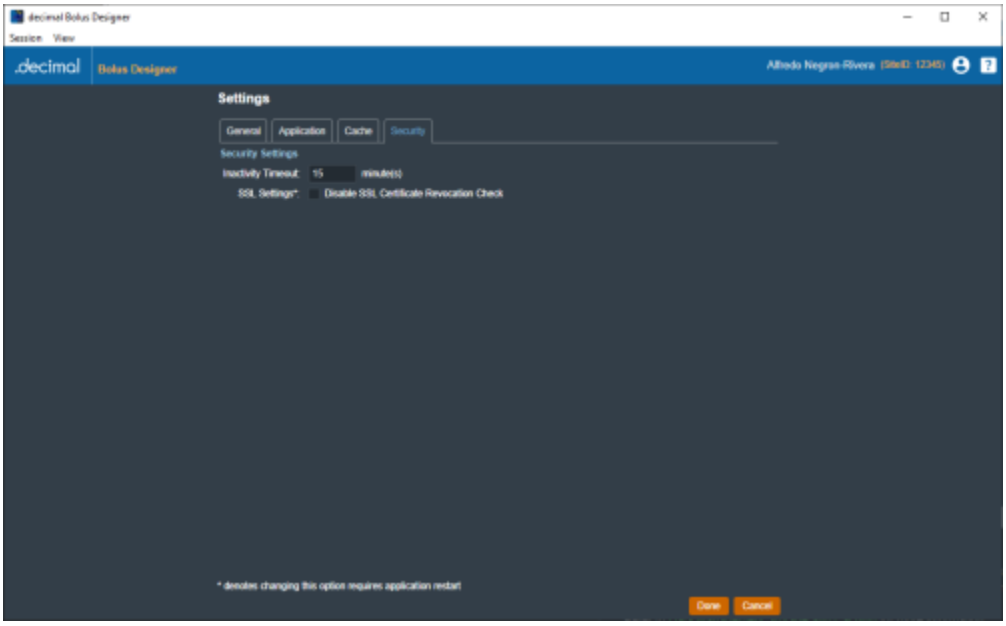

Fig. 46: Security Settings