



Mimics Enlight Hands-On Workshop

Thanks for joining us for the virtual Mimics Enlight 2.0 Hands-On Training today! Our aim is to make this as interactive and informative as possible so as we get going please use the chat to ask general questions.

Ground rules for training in a virtual environment

- Periodically, We will ask if everyone is ok to move forward in the workflow, If we don't hear anything we'll assume you are caught up before we advance to the next step
- The Materialise team will triage your questions in the chat and answer them when in real time and during breaks in the case plan.
- If you get stuck...** Let us know via chat and we'll determine if a breakout room is necessary

Navigation and Shortcuts

2D Views*

Action	Shortcut**	Description
Zoom In	Ctrl + RMB + move mouse cursor up	Zoom 2D view
Zoom Out	Ctrl + RMB + move mouse cursor down	Zoom 2D view
Zoom	Space bar	Toggles between zoomed in and zoomed out of one viewport
Pan	Shift + Arrow keys	Pan 2D view
	Shift + RMB	
	Hold the MMB	
	Shift + Page Up	Pan 10 times
	Shift + Page Down	
	Shift + Home	
	Shift + End	
Threshold adjustments	Shift + Ctrl + LMB + move mouse cursor	Adjusts the lower threshold bound
	Shift + Ctrl + RMB + move mouse cursor	Adjusts the upper threshold bound
Scroll	Scroll wheel	Scroll through the image slices
Go to next slice	Arrow Up	Navigation through the slices
Go to previous slice	Arrow Down	Navigation through the slices
Go 10 slices up	Page Up	Navigation through the slices
Go 10 slices down	Page Down	Navigation through the slices

* The above mentioned shortcuts are working on the view over which the mouse cursor is positioned.

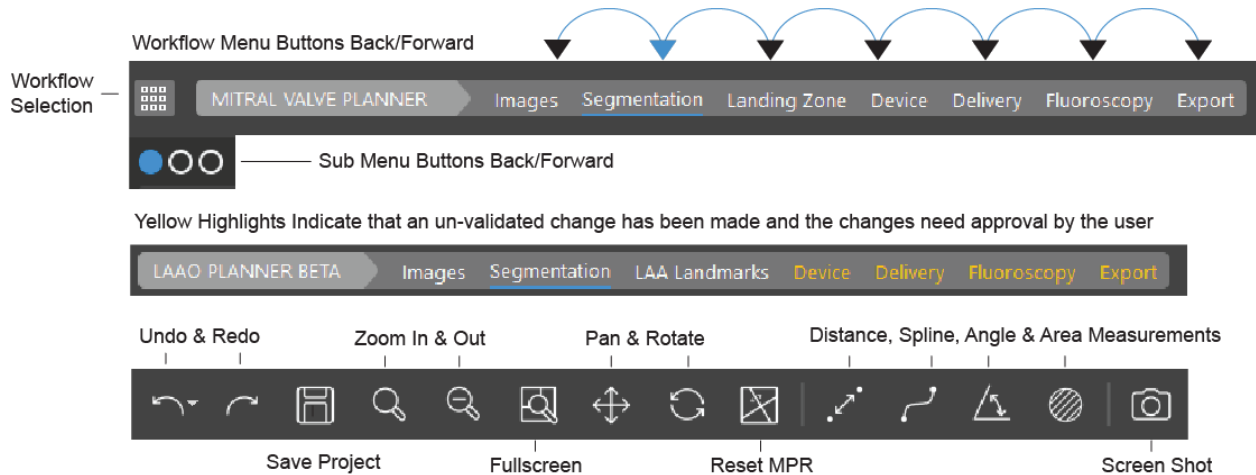
** LMB = Left Mouse Button, RMB = Right Mouse Button, MMB = Middle Mouse Button / Scroll wheel.

3D view*

Action	Shortcut**	Description
Zoom In	Ctrl + RMB + move mouse cursor up	Zoom 3D view
	Scroll up	
Zoom Out	Ctrl + RMB + move mouse cursor down	Zoom 3D view
	Scroll down	



General TMVR Workflow Overview and Navigation



Download the user manual

Navigate to Help>Help> Enlight Mitral so that you have it when you start working offline after the session

TMVR NeoLVOT Case Plan (ViR)

Our patient today has ring already in place with predominately anterior MAC and we need to determine if they are a candidate for a TMVR procedure by analyzing the annuluse, device size, fit, and Neo LVOT result after implanting a S3.

A neo-LVOT area of less than 200mm is currently thought to increase the risk of obstruction

1. Start Case Plan

- Open Enlight Case:** File > **Open** > Mimics Enlight_ViR_Hands On Training.mcs
- Creating New Case:** File > **New From Disk** > Select Data from Import Wizard > Click Next > Select Relevant Images > Open New Study

2. Segmentation

- Select the segmentation step using the LMB and select the 1st blue circle in the sub-menu

Erase and Trim Left Atrium Pulmonary Veins (Use CTRL Z to Undo ERASE)

- Select Left Atrium/ERASE Button
- In 3D Viewport > Hold the RMB while circling unnecessary pulmonary branches to erase them from your segmentation results

Erase Descending Aorta, Spine Artifact and Trim Left Main Coronary

- Select Aorta/ERASE Button
- In 3D Viewport > Hold the RMB while circling each area of interest with your mouse:
 - Descending Aorta
 - Spine
 - Trim Left coronary preserving the bifurcation
- Explore 3D Models using Hot View Buttons



- g. Complete Segmentation step by selecting Ok with the LMB
- h. Select ViR with LMB
- i. Select OK with LMB

Landing Zone

Create 3 Chamber View to Indicate Mitral Annulus

1. In Coronal View

- a. Point your mouse LMB CLICK at the center of the mitral annulus (Ring)
- b. HOVER, LMB on RED LINE to ROTATE CC it to 10pm and 4pm through the center of the LA and and LV



2. In Axial View

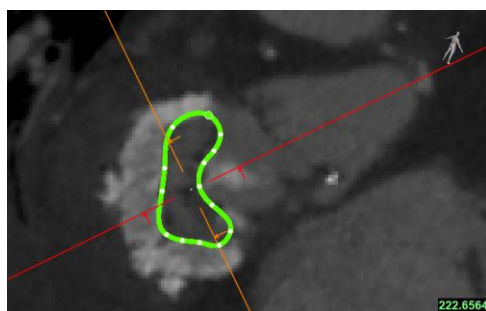
- a. Point your mouse and LMB CLICK at the center of the mitral annulus (Ring)
- b. Rotate ORANGE LINE CC until the GREEN LINE intersects the (Ring)

3. In Sagittal View

- a. Rotate RED LINE CC to 8pm and 2pm so that it intersects the Mitral valve and AO

Landing Zone: Indicate the Mitral Annulus Landing Zone

1. Select Manual Button
2. In Axial View > Trace and Indicate the landing zone by tracing the RING using LMB until you reach the 1st point and close the spline OR stop at the trigone and double-LMB then calculate to create "D" Shape Annulus.



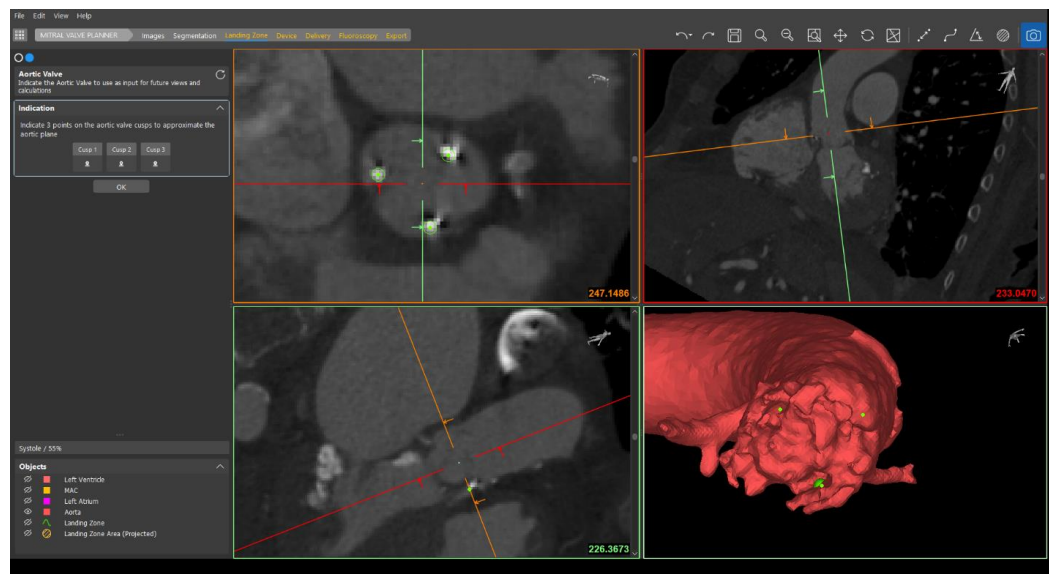
In Objects Menu > Toggle LV, LA, and LA off in the objects Menu

3. Edit Landing Zone in 3D

- a. Refine and Edit annulus spline points along the ring in 3D

4. Create an Aortic Valve Plane by Indicating 3 points

- a. Rotate the RED, ORANGE, and GREEN lines to match the example below:



- b. Indicate a point on each Device Struts using LMB
 - i. Note* (Points are indicated on the apex of AO cusps when there is no device in the aortic position)
- c. Select OK

5. Device Planning

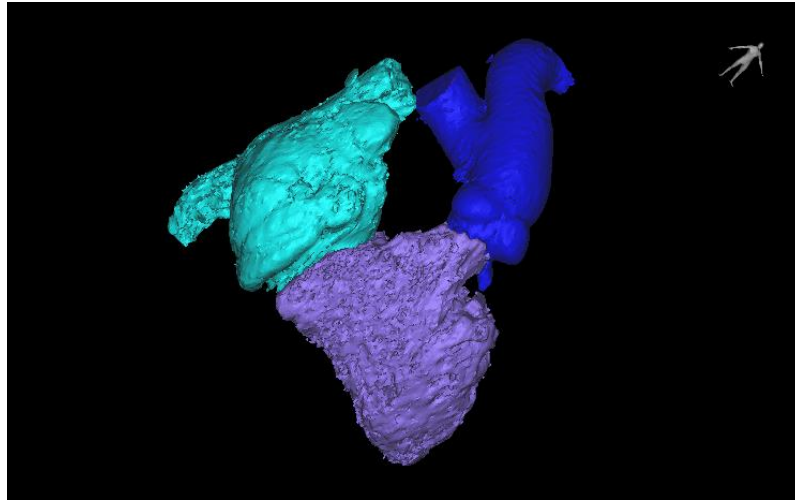
Valve Position #1 LA 10% LV 90%

- a. Select S3 Device from the Device Library dropdown
- b. Select size 29 x 22.5
- c. Calculate Automatic NeoLVOT
- d. Select Camera Tool
 - i. Image to save > Whole Application
 - ii. Save to file
- a. Calculate Automatic NeoLVOT
- b. Select Cine-loop to dynamically analyze the final position of the selected valve
- c. Measure the distance from the device to LV septum using a 3 Chamber View
- d. Measure the AO/Mitral Angle
- e. Click OK to confirm position and advance to Delivery

6. Delivery

Clean up Right Heart Segmentation

- a. Select Transseptal
- b. Select Right Atrium ERASE button
 - i. Trim IVC
- c. Select Pulmonary Artery ERASE button
 - i. Trim Bifurcation
- d. Example Results

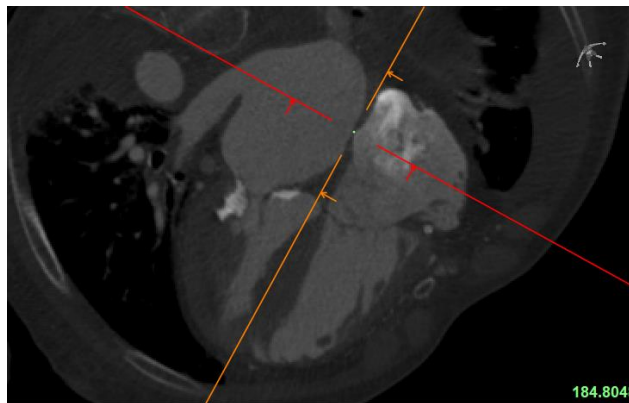


- e. Select OK to advance to next step

Indicate Fossa Ovalis and Inferior Vena Cava

In 3D Viewport > SHFT + LMB to select your area of interest (FOSSA OVALIS) snapping the 2D images to the area of interest

- f. Rotate MPR to create a 4 Chamber View:



- g. Scroll through images with Mouse Wheel or keyboard arrows to locate Fossa Ovalis
- h. **FO Indication:** Indicate the Fossa Ovalis using the LMB
- i. **Inferior Vena Cava Indication:** In 3D Viewport > SHFT + LMB Click on IVC to snap 2D Images to Area of Interest and place and using LMB, indicate the IVC
- j. Select OK
- k. Review Transseptal Pathway and measurements
- l. Pause / Troubleshoot / Breakout Sessions

7. Select “Proceed to Fluoroscopy”

- a. Select and Review “Perpendicular to Device” Button

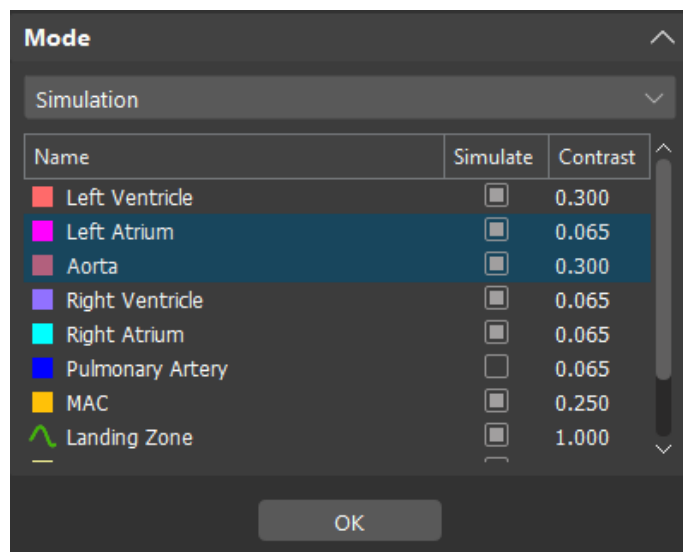


8. Create Custom Fluoroscopy View:

- a. Select “Set by User” button



- b.
- c. Change MODE (Top Left) from Simulation to 3D View
- d. Use Pan, Rotate, and Zoom in 3D Viewport position 3D model to preferred perspective
- e. Turn Simulation View back on
- f. Adjust CRAN/CAUD and RAO/LAO using sliders
- g. Turn ON Landing Zone, Right Atrium and Transseptal Pathway Simulations on by selecting the simulate box and adjust contrast to reflect the numbers below by double left clicking in contrast field.



- h. Select OK

9. Create PPT Report

- a. Insert Photo of device position #1 into the report
- b. Thanks for participating in our workshop!