GI Mentor™

User Guide

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Chapter 1 Safety Precautions

Before using the GI-BRONCH Mentor simulator, please read these safety precautions to ensure proper use of the equipment. These items contain important notes to prevent injury to the operator and damage to the equipment. The following precautions apply to both the GI Mentor and the BRONCH Mentor which share the GI-BRONCH Mentor platform.

Two symbols are used to indicate specific types of warnings in addition to the general note table, which is clearly marked:

A warning that indicates a prohibition.

A general warning that emphasizes essential information about something that must be done.

The following safety precautions must be adhered to upon setup and using the GI-BRONCH Mentor simulator. Failure to follow these precautions may result in the removal of the warranty and may cause irreversible damage to the simulator or injury to operators.

Read all the instructions and precautions fully before attempting to setup or use the GI-BRONCH Mentor simulator.

Follow all warnings and instructions marked on the GI-BRONCH Mentor simulator.

Do not attempt to open, check, alter, or fix any part of the GI-BRONCH Mentor system, unless directly asked to do so during a support session with a 3D Systems representative.

Unplug the GI-BRONCH Mentor simulator when you know an electrical storm is approaching.

Before cleaning, unplug the GI-BRONCH Mentor simulator from the wall outlet. Use a dry cloth without liquid. Do not use aerosol cleaners.

Do not use the GI-BRONCH Mentor near water.

When not in use or upon moving, disconnect all scopes from the system side connector. Failing to do so may result in irreparable damage.

When not in use or upon moving, make sure that the tool tray is at its original folded position. Failing to do so may result in damage to the system.

When placing the GI-BRONCH Mentor in a room with additional simulators, other electrical systems, or large amounts of metal, ensure that these items are at least 1 meter away from the GI-BRONCH Mentor simulator. Failing to do so may result in an improper functioning of the simulator.

The BRONCH Oral Nasal Insert must be pushed all the way into position prior to attempting scope introduction.

Do not move the BRONCH Oral Nasal Insert in any way while the bronchoscope is inserted into the cavity. Doing so may result in irreparable scope damage.

The GI Upper / Lower panel must be locked in place properly prior to attempting GI scope introduction.

The bronchoscope's insertion tube should not be bent unnecessarily - neither by attaching it to the hanger clip, nor by leaving it within the mannequin when not being used.

Do not leave the syringe, master tool, or any other instrument inserted in the scope's working channel unnecessarily.

Place the GI-BRONCH Mentor on stable ground only.

To protect the GI-BRONCH Mentor from overheating, the opening on the back of the platform should not be covered or blocked.

The GI-BRONCH Mentor should not be placed near a radiator or heat register.

The GI-BRONCH Mentor should be placed in a room with a temperature range between 5 and 30 degrees centigrade. Proper ventilation is crucial.

Do not allow anything to rest on the power cord or position the GI-BRONCH Mentor where a cord could be stepped on or pulled out accidentally.

Do not overload wall outlets and extension cords.

Never spill liquid of any kind on the simulator.

Avoid placing or dropping anything on the GI-BRONCH Mentor. It may cause a malfunction or irreparable damage.

Power must be off when handling the system or disconnecting any internal part during a support session.

Unplug the GI-BRONCH Mentor from the wall outlet and contact 3D Systems support under the following conditions:

- When any cord, especially the power supply cord, is damaged or frayed.
- If liquid has been spilled into the GI-BRONCH Mentor.
- If something has been dropped on the GI-BRONCH Mentor.

When opening the system's back panel and pulling out the computer drawer during support – please note that the monitor must be in the opposite (front) side of the system and the computer drawer must be pulled out cautiously to avoid equilibrium problems.

Chapter 2 System Overview

The GI-BRONCH Mentor™ is a multidisciplinary platform that provides hands-on practice of multiple GI procedures as well as complete bronchoscopy procedures and basic endoscopic and bronchoscopic skills for single trainees or an entire team.

The system is aimed at enhancing operational and medical decision-making, improving skills such as hand-eye coordination, and expanding medical knowledge.

Growing Library of Modules

The GI Mentor training system has been developed in collaboration with medical experts from around the world. It incorporates a variety of practice opportunities and provides an extensive gastrointestinal training curriculum which covers most if not all of the gastroenterology endoscopic procedures.

Working Modes

3D Systems GI Mentor has two main working modes:

- **Training mode** – is designed to provide trainees with an extensive and complete simulation environment of the GI endoscopy procedure.
- **Management mode** – is reserved for instructors to manage trainees, create training programs, analyze trainees' results, and monitor their progress. For more information, refer to the *MentorLearn Guide for Administrators.*

Training Management System

MentorLearn is a newly developed training management system, offering a comprehensive solution for managing training, simulation curricula and users for the 3D Systems line of simulators.
The MentorLearn system was designed to offer web based access and management, connecting all simulator stations, or it can be utilized as a standalone management system for one or more simulators. For more information, see MentorLearn on page 36.

Chapter 3 The GI-BRONCH Mentor Platform

The platform consists of:

- Wheeled hardware unit which includes a touch screen, keyboard, and trackball.
- One or more scopes according to system configuration (Colonoscope/Duodenoscope/Bronchoscope).
- Set of tools according to system configuration.
- Double foot switch.

The Hardware Platform

Figure 3-1: The GI-BRONCH Mentor platform

❶ 24” touch screen, keyboard, and trackball
❷ BRONCH oral/nasal insert (see Figure 3-3 on page 9)
❸ Rotating tool tray (see Figure 3-6 on page 12)
❹ Power switch, foot switch connector and USB outlet (on back panel)
❺ Scope connector, computer activation button (see Figure 3-5 on page 11)
❻ Scope hangers (see Figure 3-4 on page 10)
❼ GI interchangeable panel

GI Interchangeable Panel

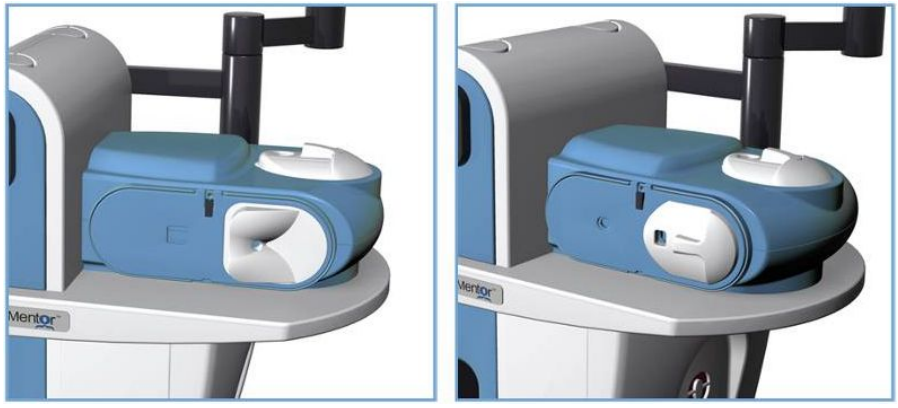


Figure 3-2: Upper/Lower GI panel

To switch between the upper and lower GI orifices:

1. Lift the black clip.
2. Horizontally flip the panel and fix it back into the designated niche on the lower side.
3. Lock down the black clip.

Note: The panel must be properly positioned when introducing the GI scope.

BRONCH Oral-Nasal Insert

Figure 3-3: BRONCH oral-nasal insert

Note: The insert must be properly positioned when introducing the scope.

Scope Hangers

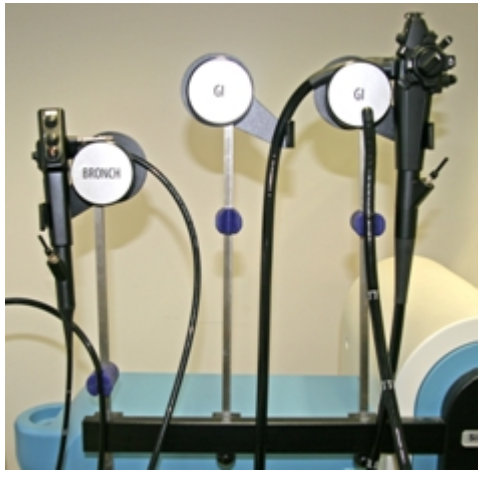


Figure 3-4: Scope hangers.

- The two GI scope hangers each come with a clip for hanging the scope's insertion tube as shown above.
- The BRONCH scope hanger comes with a clip for hanging the connector cable. Do not attempt to hang the bronchoscope's insertion tube.

Connecting the Scope

The scope is connected to the socket at the front of the system.

To connect the scope:

1. Fit the scope side connector exactly in the prongs and recesses of the system side connector.
2. Turn the external dial on the scope connector to the right until you hear a click.

To disconnect the scope:

1. Turn the dial to the left and remove the scope side connector.

Note: Bumping against the scope side connector while connected may result in damage to both the scope and the system.

Figure 3-5: System side and scope side connectors

Tool Tray

Configuration 1

A rotating tool tray is designed to provide convenient access to the tools (see Figure 3-6). The tool tray includes hangers for all GI and BRONCH tools, although it is recommended to hang only the tools of the currently used simulator.

Note: When not being used or upon moving the system, the tool tray must be stored in its original position to avoid breakage.

Figure 3-6: Tool tray hangers with GI tools – Configuration 1

There are four connectors in the back of the rotating tool tray and two additional connectors at the bottom of the tool tray.

The tools are connected as follows:

[Back connectors from closest to the system - see Figure 3-7]

❶ BRONCH Mentor Syringe
❷ BRONCH Mentor Master Tool
❸ GI Mentor Master Tool
❹ BRONCH Mentor EBUS Needle

[For the connectors under the tool tray, the order is of no consequence]

❺ GI Mentor Guide Wire
❻ GI Mentor Guide Wire

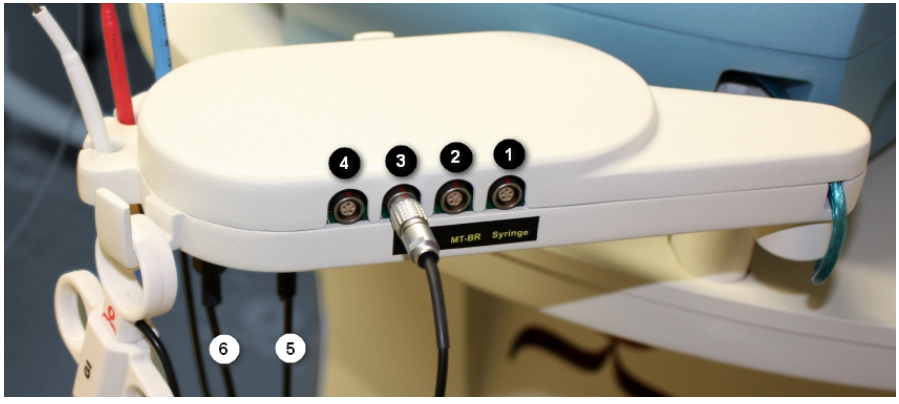


Figure 3-7: Tool tray connectors

Configuration 2

The tool tray design is slightly different in the second configuration. However its functionality and rotation for working position compatibility are the same.

Note: When not being used or upon moving the system, the tool tray must be stored in its original position to avoid damage.

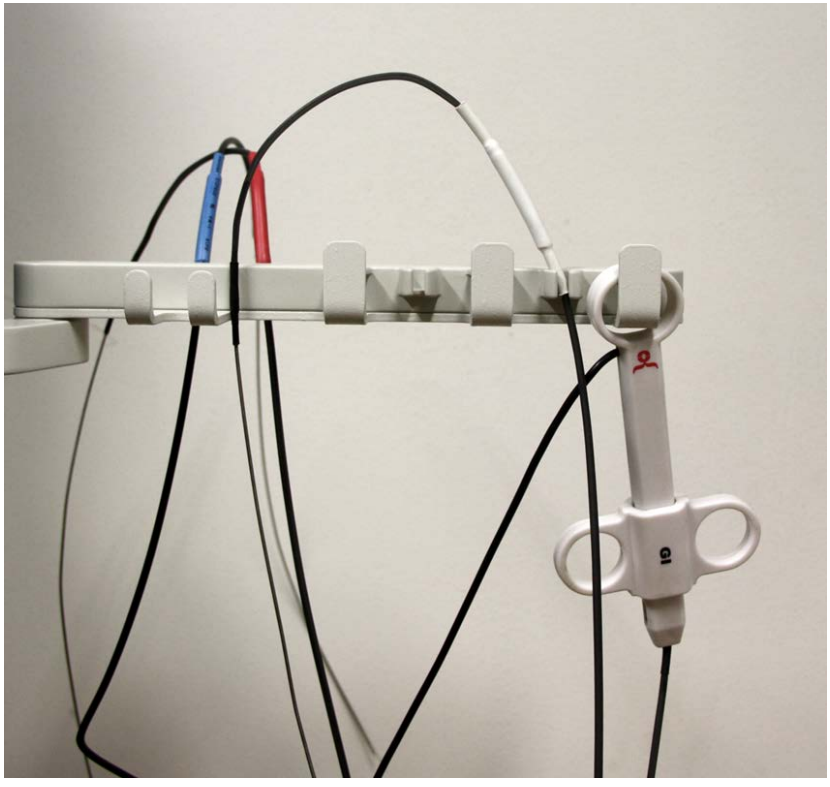


Figure 3-8: Tool tray hangers with GI tools – Configuration 2

The tool connectors are on the back side of the mannequin body, next to the monitor pole. Use the labeled outlets to connect the tool cables as shown below.

Figure 3-9: Tool connection outlets

❶ GI Mentor Red Wire outlet
❷ GI Mentor Blue Wire outlet
❸ GI Mentor Master Tool outlet

Foot Switch

A double foot switch is provided with the platform and utilized in some of the modules for actions such as application of electrosurgical current (left foot switch) or application of X-ray (right foot switch).

Available Endoscopes

Two scope types are available with the GI Mentor. Both are real scopes that were modified for simulation purposes.

The following scopes are available and provided according to which modules were purchased:

- Colonoscope
- Duodenoscope

Colonoscope

The colonoscope, a forward viewing endoscope, is an actual scope modified for simulation purposes.

1 – Working Channel

2 – Up-Down Directional Knob

3 – Right-Left Directional Knob

4 – Lock/Free Switch for Up-Down Movement

5 – Lock/Free Switch for Right-Left Movement

6 – Suction Button

7 – Insufflation and Irrigation Button

Figure 3-10: Colonoscope

Duodenoscope

The duodenoscope, a side viewing scope, is an actual scope modified for simulation purposes.

1 – Working Channel for Master Tool

2 – Working Channel for Red Wire

3 – Working Channel for Blue Wire

4 – Up-Down Directional Knob

5 – Right-Left Directional Knob

6 – Tool Elevation Lever

7 – Lock/Free Switch for Up-Down Movement

8 – Lock/Free Switch for Right-Left Movement

9 – Suction Button

10 – Insufflation and Irrigation Button

Figure 3-11: Duodenoscope

Auxiliary Tools and Connectors

The GI Mentor has three available tools that are provided according to the modules purchased: a Master Tool and two wires (see Figure 3-6 on page 12). The Master Tool is used to simulate most of the tools in all the modules. The wires are used in addition to the Master Tool in the ERCP modules to simulate a guide wire (red wire) and a pushing catheter for a stent placement (blue wire). The Master Tool is used in the ERCP modules to simulate all the other available tools.

Master Tool

Figure 3-12: Master Tool

To select a virtual tool using the Master Tool:

1. Insert the Master Tool slowly into the working channel until the Tools menu appears.

   The Tools menu opens with pictures of all available tools.

To work with Master Tool handle:

- Pull the Master Tool handle back to open, inflate, or fill the tool.
- Push the Master Tool handle forward to close, deflate, or inject using the tool.

Additional Wires

A blue wire and a red wire are used in the ERCP modules. The duodenoscope allows for working simultaneously with three tools and wires, inserted through three separate openings. Each colored wire is inserted into its color marked opening and simulates a different tool or wire during the ERCP procedure. For more information, see Working with Multiple Tools and Wires on page 96.

Chapter 4 The GI Mentor Express Platform

The GI Mentor™ Express is a portable platform that provides hands-on practice for basic endoscopic skills and GI procedures.

The platform consists of:

- Simulator body.
- Laptop computer set on an adjustable docking station.
- One scope which is used for all simulation modules.
- Working channel from scope to simulator body.
- Master tool simulating multiple endoscopic tools.
- Foot switch.
- Wireless mouse.
- Optional – two coaxial catheters and one guide-wire for the ERCP modules.

The Hardware Platform

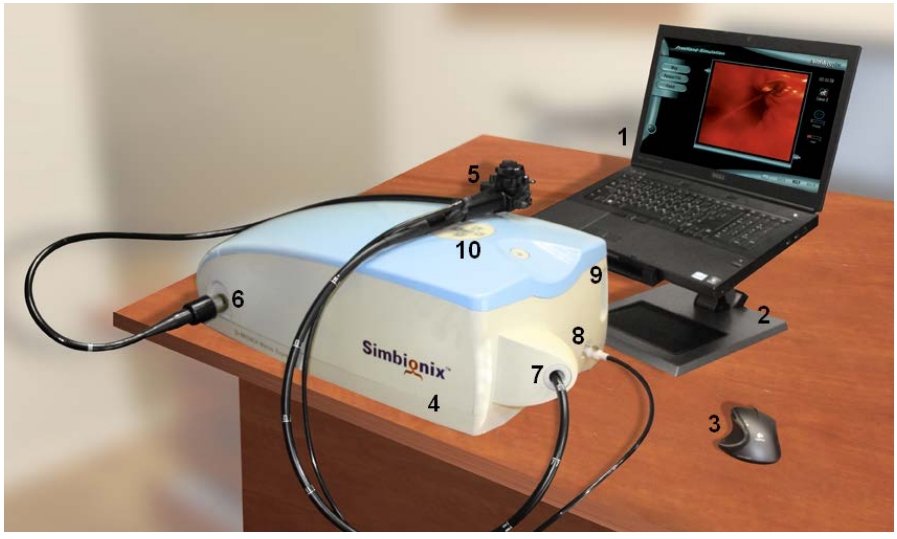


Figure 4-1: The GI Mentor Express platform

❶ Laptop
❷ Adjustable docking station
❸ Wireless mouse
❹ Simulator body
❺ Scope
❻ Scope connector
❼ Generic upper/lower orifice
❽ Working channel quick release connector
❾ Master tool connectors
❿ Control panel

* A foot switch is provided
* Control panel functionality availability is per software version

Laptop Setup

The laptop is placed on an adjustable docking station and can be raised, lowered, or slanted, as needed.

Figure 4-2: Laptop on docking station

1. Slide the lock/unlock switch (5 on Figure 7) toward the back of the docking station to unlock it.

2. Place the laptop on the docking station, inserting the pins on the docking station into the sockets on the back of the laptop.
   When the laptop is connected correctly, blue lights are lit on the eject button (3) and the power button (4).
3. Slide the lock/unlock switch (5) forward to lock the laptop in place.
   When the docking station is locked, the eject button (3) is disabled and a blue light next to the lock/unlock switch (5 on Figure 9) is lit.

Figure 4-3: Attaching and securing laptop to docking station

4. To release the laptop, slide the lock/unlock switch to the back of the docking station (5) and press the eject button (3).
5. To secure the laptop in place, slide the battery bar adjuster (1) to extend the battery bar (2) to the back of the laptop.
6. The power button (4) can be used to turn on the laptop once connected to the docking station.

Figure 4-4: Docking station connectors

7. Connect laptop power supply (1) to the docking station and to the power outlet.
8. Connect the USB simulator cable to the lower USB socket of the docking station (2).
9. Connect the USB nano receiver for wireless mouse to the upper USB socket of the docking station (3).

Figure 4-5: Adjusting the docking station

10. Adjust the height of the docking station by pushing the switch (3) to the open position and then tilting the stand (2) up or down. Push the switch (3) to the close position.

11. Adjust the angle of the docking station by releasing the handle (1) and tilting to the desired angle. Lock the handle (1) back in place.

Connecting the Scope

The scope is connected to the socket at the side of the system.

To connect the scope:

1. Fit the scope side connector exactly in the prongs and recesses of the simulator's side connector.

Figure 4-6: System side and scope side connectors

2. Turn the external dial on the scope connector to the right until you hear a click.

To disconnect the scope:

1. Turn the dial to the left and remove the scope side connector.

Note: Bumping against the scope side connector while connected may result in damage to both the scope and the system.

Figure 4-7: Scope connected to simulator body

Scope

One scope is used with the GI Mentor Express. It is an actual scope modified for simulation purposes.

Note: Unlike the GI-BRONCH Mentor scope, the GI Mentor Express scope's tip does not mechanically flex. However, in the simulation environment, it will flex according to the dials' movement.

1 – Working Channel

2 – Up/Down Directional Knob

3 – Right/Left Directional Knob

4 – Lock/Free Switch for Right-Left Movement

5 – Lock/Free Switch for Up-Down Movement

6 –Suction Button

7 – Insufflation and Irrigation Button

8 – Tool Elevation Lever

Figure 4-8: GI Mentor Express scope

Auxiliary Tools and Devices

The GI Mentor Express has several tools and devices provided with the platform: a Master Tool, a foot switch, and a wireless mouse. The Master Tool is used to simulate all the tools in all the modules except for ERCP. The ERCP modules come with additional two coaxial catheters and a guide wire, which are used to simulate guide wire and stent placement system. The Master Tool is used in the ERCP modules to simulate all the other available tools.
The foot switch is used to apply electric current for simulated electro-surgery tools and the mouse facilitates easier control over the interface. In the ERCP modules the foot switch is also used to apply X-ray and to hold the Guide Wire in place while coaxial tool or catheters are being switched.

Foot Switch

The triple foot switch is used to simulate the application of electrosurgical currents and X-ray exposure (fluoroscopic view).
Foot switch 1 simulates the application of electrosurgical currents and foot switch 3 simulates the X-ray exposure. Foot switch 2 is used to activate the Hold Guide Wire function, for holding the guide wire in place.

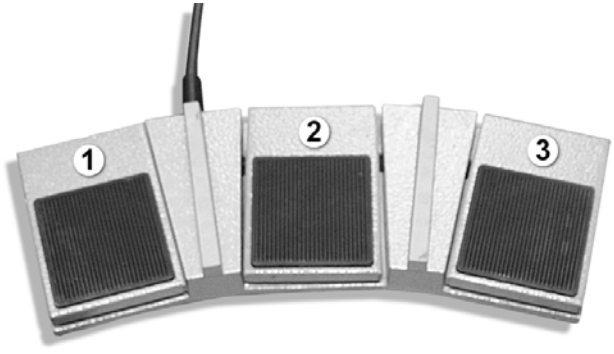


Figure 4-9: Foot Switch

Note: Foot switches 2 and 3 are used only for the ERCP modules.

Master Tool

The Master Tool is used to simulate all the tools in the basic GI modules.

Figure 4-10: Master Tool inserted into the working channel

To select a virtual tool using the Master Tool:

1. Insert the Master Tool all the way through the working channel until the Tools menu appears on the screen.

   The Tools menu opens with pictures of all available tools.

Note: Unlike the GI-BRONCH Mentor, working with the Master Tool requires fully inserting it through the Working Channel. Only then will the Tools menu appear for simulated tool selection.

To work with Master Tool handle:

- Pull the Master Tool handle back to open, inflate, or fill the tool.
- Push the Master Tool handle forward to close, deflate, or inject using the tool.

Catheters and Guide Wire (ERCP)

To use the Master Tool and Catheters in the ERCP simulation:

- Use the Master Tool to simulate the sphincterotome, needle knife etc.
- Following the successful cannulation of the papilla, introduce the Guide Wire through the Master Tool until it appears in the simulation.

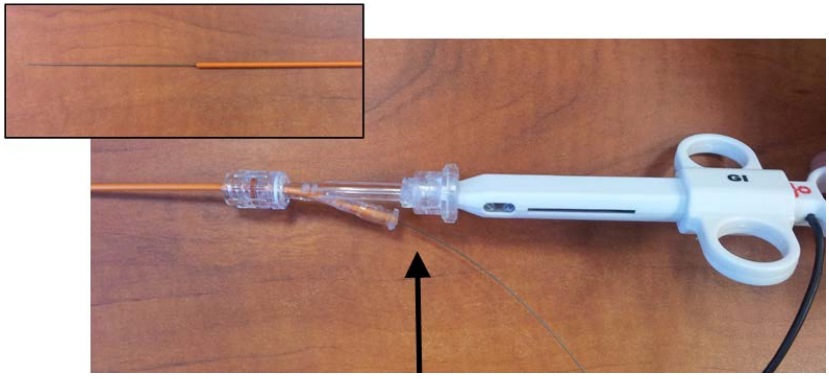


Figure 4-11: Guide Wire inserted into the Master Tool

- You can pull back the Master Tool and reintroduce it over the Guide Wire to change the tool selection.

Note: Use the **Hold Guide Wire** function (foot switch activated) to keep the Guide Wire in place while pulling or reintroducing the Master Tool or Catheters. Press again to release.

- To place a stent, introduce the two coaxially connected catheters over the guide wire and select from their respective onscreen menus.

Figure 4-12: The connected catheters inserted over the Guide Wire

Note: The simulation will identify each of the catheters separately although they are connected and introduced as one.

- To separate the two catheters, unscrew the Luer Lock open and manipulate each separately.

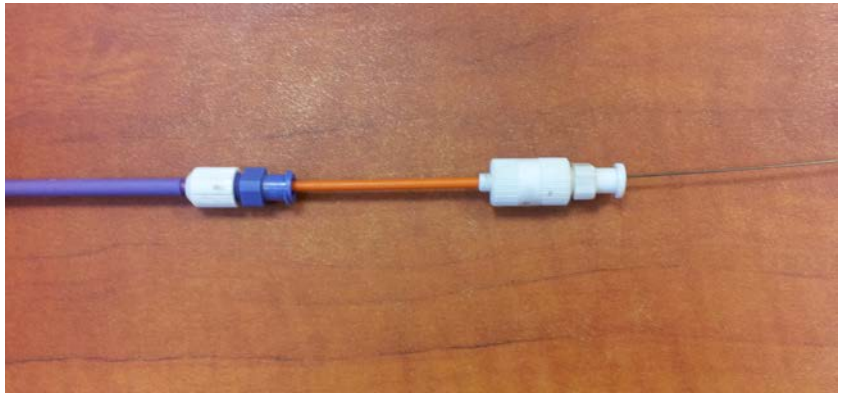


Figure 4-13: Unscrewing the Luer Lock and separating the catheters

Chapter 5 Getting Started

This chapter explains in general terms how to begin using the system.

User Interface

The GI Mentor simulator's interface may be operated using either the touch screen or the trackball (or the wireless mouse for the GI Mentor Express).

- Touch screen: Use the tip of your finger to touch the buttons and icons as directed in this manual.

  or

- Use the trackball/mouse in the usual fashion, as a computer mouse.

Note: In this document, **Press** will be used to either click a button or icon with the mouse or tap a button or icon on the Touch screen.

Essential Workflow

The following chapters will describe how to use the simulator. To get started, on any simulation case or task follow this workflow.

1. Log in to the simulator, entering your login name and password (see page 37).
2. Select a module or course from the Library and review its didactic materials if available (see page 44).
3. Select a virtual patient file, open it and review the patient's history and condition (see page 44).
4. Press **Start** to run the simulation case or task (see page 46).
5. Perform the virtual patient simulation: inspecting, diagnosing and treating as you see fit. Multiple educational aids and helpers are at your disposal (see page 51).
6. Once you have completed treating the virtual patient, click **Finish** to exit the simulation.

7. Review your performance report and learning curve graphs (see page 100).

Chapter 6 MentorLearn

MentorLearn Overview

MentorLearn is a web based simulator curricula management system, providing the optimal solution for managing training and education needs for the 3D Systems line of simulators.

This easy to use system facilitates performing the administrative tasks of a simulator-based curriculum, running a training course or workshop. The system includes a library of ready-to-use simulator based courses and a platform to design new training courses. Courses may include online didactic content, proficiency based hands-on training, and performance review and assessment. For more information regarding using MentorLearn, refer to the *MentorLearn Guide for Learners.*

MentorLearn Workflow

All GI Mentor modules, including didactic materials, simulation tasks, simulation cases etc. are accessed from MentorLearn, 3D Systems' web based simulation curricula management system.

When you want to use didactic materials from a GI Mentor module, you log in to MentorLearn and open the materials from MentorLearn. The MentorLearn login page appears on the screen when you turn on the system.

When you want to perform a hands-on training task or case, you open the task or task from MentorLearn, MentorLearn opens the GI Mentor simulator for you, closes it when you finish the case or task, and shows you a report of your performance afterwards. This is the workflow for performing hands-on training.

- Log in to the simulator, entering your login name and password (see page 37).
- Train within a module or course (see page 40).
- Review didactic materials (see page 44).

- Start a GI Mentor Hands-On case or task from MentorLearn (see page 46). MentorLearn opens the GI Mentor simulator for you to begin the hands-on simulation.
- Perform the case or task using the GI Mentor simulator (see page 93) When you finish the case or task, MentorLearn closes the GI Mentor simulator and displays a performance report.
- Review your performance (see page 100).

Logging in to MentorLearn on the Simulator

In order to access functionality on a simulator, you need to first enter the MentorLearn system. You require a login name and password to login. When you login, your Library page is displayed. The structure and content of the Library page varies according to your user-type. For more information regarding using MentorLearn, refer to the *MentorLearn Guide for Learners* or *MentorLearn Guide for Administrators.*

To log in:

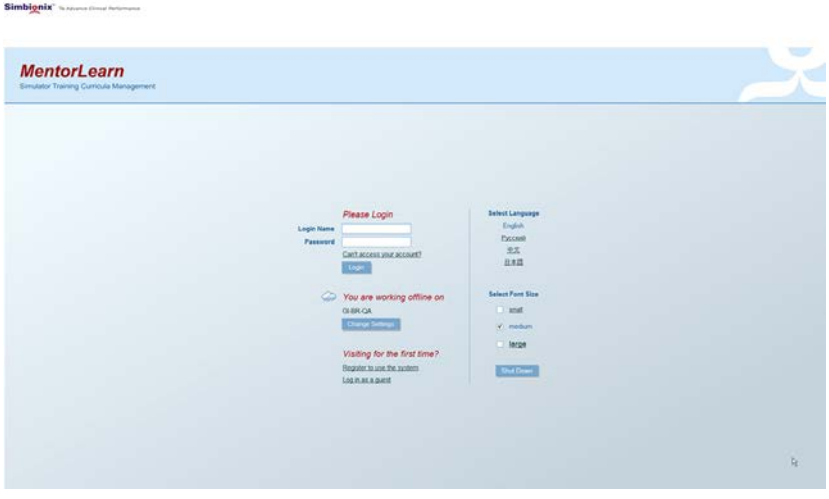


Figure 6-1: MentorLearn Login screen

1. In the Login page, in **Login Name**, enter your login name. The login name is not case sensitive.
2. In **Password**, enter your password. Your password is case sensitive.

3. Press **Login**.

   MentorLearn opens and displays your **Library** page. Your first name, last name, and user type appear in the top right corner of the screen.

   When you log on, the MentorLearn menu bar appears at the top of the page. The menu bar gives you structured access to the MentorLearn functionality. Press any button on the menu bar to open the associated tab in MentorLearn.

Note: The buttons that appear on the menu bar are dependent on your user-type.

Switching to Offline or Online Mode

The online configuration is possible only if there is access to the internet. If there is temporarily no internet access but you need to use the simulator, you can switch to offline mode.

When you switch to offline mode, MentorLearn switches from the centralized database to a local database, meaning any data that is created during the time the simulator is in offline mode is not saved to the centralized database after the simulator is switched to online mode. Any reports or information about a simulator case is maintained in the offline database but will not be available when you are in online mode.

To switch from online mode to offline mode:

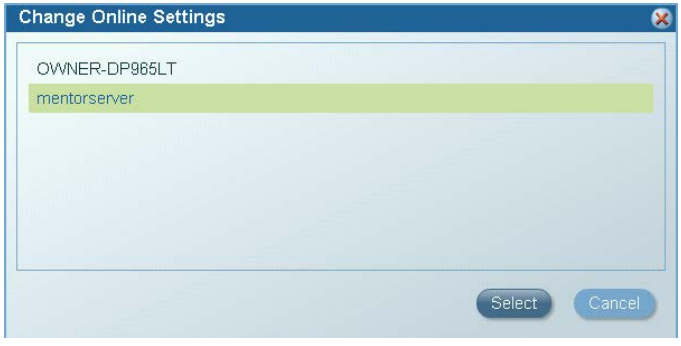
1. In the Login screen, press **Change Settings**.

   Or

While MentorLearn is open on the simulator, click the Cloud icon on the top of any screen. The following dialog box is displayed.

Press **Change Settings**.

The **Change Online Settings** dialog box appears.



2. Select the name of the offline simulator from the list.

Note: The name of the offline simulator is its computer name (i.e. its serial number). MentorLearn will list the computer's serial number as the name of the offline simulator.

3. Press **Select**.
4. When asked if you want to connect to the offline simulator, press **OK**.

MentorLearn is redirected to work with the selected simulator.

Note: It is recommended that you switch back to online mode as soon when the internet connection is restored.

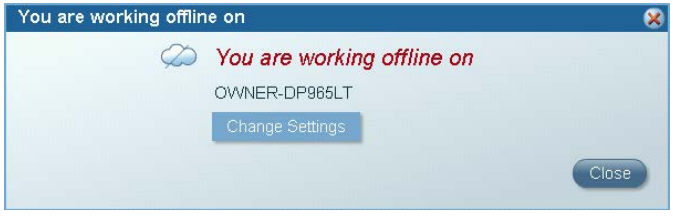
To switch from offline mode to online mode:

1. Ensure that the simulator is connected to the internet.

In the Login screen, press **Change Settings**.

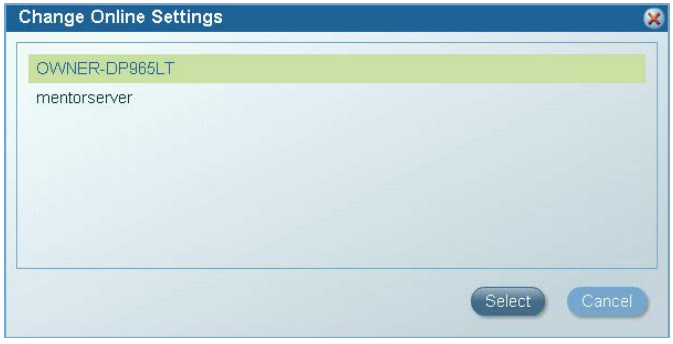
Or

While MentorLearn is open on the simulator, press the Cloud icon on the top of any screen. The following dialog box is displayed.



Press **Change Settings**.

The **Change Online Settings** dialog box appears.



2. Select the name of your MentorLearn online database from the list.
3. Press **Select**.
4. When asked if you want to connect to the online simulator, press **OK**.

   MentorLearn is redirected to work with the common online database.

Accessing a Module or Course within My Curricula or Library

This section describes how users train using MentorLearn.

- To access training courses and modules that you have been assigned, press **My Curricula**.

  The training courses and modules you have been assigned are displayed.

- To access all the training courses and modules available in the library, press **Library**.

  On the GI Mentor tab, MentorLearn displays the list of modules and standard courses in the GI Mentor library. They are categorized as Tasks and Skills, Clinical Procedures, Standard Courses (ready-to-use courses provided by experienced educators in collaboration with 3D Systems), and Customized Courses (courses you and other educators at your center have created). All the training courses and modules available in the library are displayed.

Easy Access to Courses and Modules in the Library

You can easily access courses and modules in the Library using the buttons on the top of the screen.

- Click the **Modules** button to display only Simbionix modules.

- Click the **Ready-to-Use Courses** to display only the Standard Courses (predefined training courses).

- Click the **Customized Courses** to display only the Customized Courses.

- Enter a term in the **Search** box and click **Search** to search for a specific module or group of modules. To clear the search results, click one of the easy access buttons.

Open a module or course, review didactic material or perform a hands-on simulation case. For more information, see Reviewing Didactic Materials (on page 44) and Reviewing a Case File (on page 44).

1. To open a module or course, press its row. The module opens, displaying a description of the module, its learning objectives, and the educational content of the module.

Figure 6-2: Opening a Module

Reviewing Didactic Materials

The GI Mentor modules and courses may include didactic materials preceding the hands-on training. Materials can also be added by the site using the simulator, per simulation course/curricula, including: video tutorials, real-life procedure videos, reading material and more.

1. On the MentorLearn menu bar, press **Library**.

   MentorLearn displays the list of Simbionix modules and standard courses in the simulator library.

   Tip: Use the scroll bar to scroll down.

2. Open a module or course by pressing its row. The module opens, displaying a description of the module and all the items in the module.
3. In the **Didactics** category of each course assignment, select the didactic material you want to look at and press it row.

   The didactic material opens.

Note: If the didactic material is in a format that is not supported by the simulator, you are prompted to save the file to an external location. PDF, Flash files, and graphic files can be opened on the simulator. Microsoft® PowerPoint® and Word® files cannot be opened on a simulator. If you are using MentorLearn Online, the didactic material may be viewed on another computer by accessing your MentorLearn Online site.

4. When you have finished, close the material.

Reviewing a Case File or Task Description

To open a case or task:

1. From the MentorLearn menu bar, press one of the following tabs to access a list of GI Mentor courses and modules:

   - **Library** tab - lists all the courses and modules in the GI Mentor library. If other simulator library tabs appear, select the GI Mentor Library tab.
   - **My Curricula** tab - lists all your assigned courses and modules.

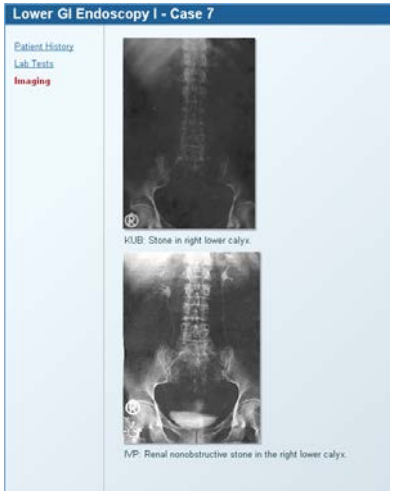
Note: You can press the **Expand** icon to the left of a module or course name to display more details about the module or course. The details include a description and the objectives of the module or course.

2. Open the module or course you want by pressing its row.

The curriculum description and objectives appear, with a list of didactic materials and hands-on tasks and cases.

3. From the **Hands-on** category of a course assignment, select the case or task you want to perform and press its row.

The patient file opens. You can review the patient's history, lab tests, and relevant imaging.



Starting a Simulation Case or Task

To open a case or task:

1. From the MentorLearn menu bar, press one of the following tabs to access a list of GI Mentor courses and modules:
   - **Library** tab - lists all the courses and modules in the GI Mentor library. If other simulator library tabs appear, select the GI Mentor Library tab.
   - **My Curricula** tab - lists all your assigned courses and modules.

Note: You can press the **Expand** icon to the left of a module or course name to display more details about the module or course. The details include a description and the objectives of the module or course.

2. Open the module or course you want by pressing its row.

   The curriculum description and objectives and a list of assignments is displayed, each including didactic materials and hands-on tasks and cases.

3. From the **Hands-on** category, select the case or task you want to perform and press its row.

   The case description file opens.

4. Review the patient's history, lab tests, and relevant imaging.
5. Press **Start**.

   The simulation case begins.

   When you have completed the simulation case, you are returned to MentorLearn, and a report of your performance is displayed (see Viewing Performance Reports on page 100).

Chapter 7 GI Mentor Display Modes

The GI Mentor offers four basic display modes for different procedures:

- Cyberscopy
- General Endoscopy
- Endoscopy and Fluoroscopy
- Endoscopy and Ultrasound

Each display mode has a designated screen layout offering relevant displays, procedural features, educational aids, and tool options, to aid the user in performing different procedures.

Cyberscopy Display Mode

The Cyberscopy display mode is aimed at optimizing the acquisition of basic GI endoscopy skills, such as hand-eye coordination and scope maneuvering. The non-anatomical environments enable focusing on these core endoscopic essential skills.

Screen Layout

There are two different types of Cyberscopy cases, each offering two levels of difficulty:

- EndoBubble
- EndoBasket

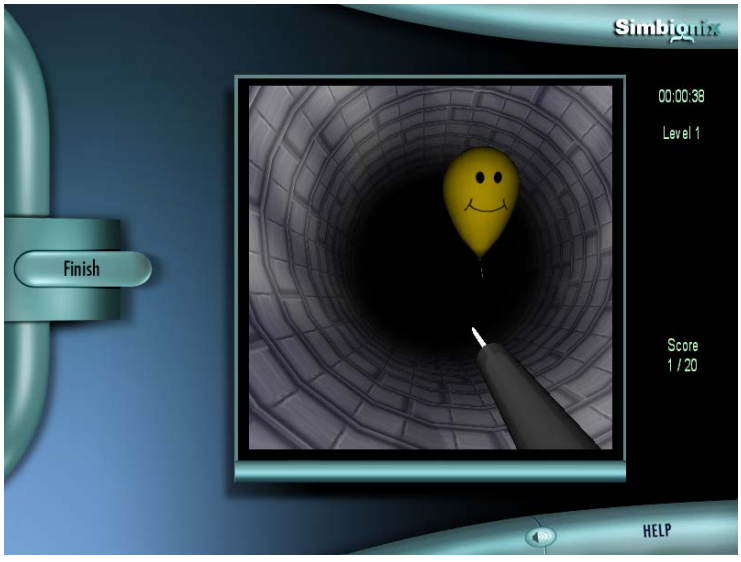


Figure 7-1: Cyberscopy screen- EndoBubble

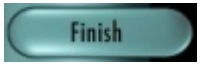
Figure 7-2: Cyberscopy screen - EndoBasket

General Features

The Primary View shows the scope view as you navigate inside the cyber environment.

Note: The forceps and needle are simulated with the scope. The Master Tool is not used the in the Cyberscopy cases.

Elapsed time – displays the time that has elapsed since starting the case.

Finish button 

– ends the current simulation and returns to the previous screen or the performance reports section if the performance was saved.

General Endoscopy Display Mode

The General Endoscopy display mode is used for all modules where the endoscopy modality is the only imagery modality used, such as colonoscopy, gastroscopy, gastric bleeding, and sigmoidoscopy.

Note: The endoscope used is a forward viewing scope, as in reality.

Screen Layout

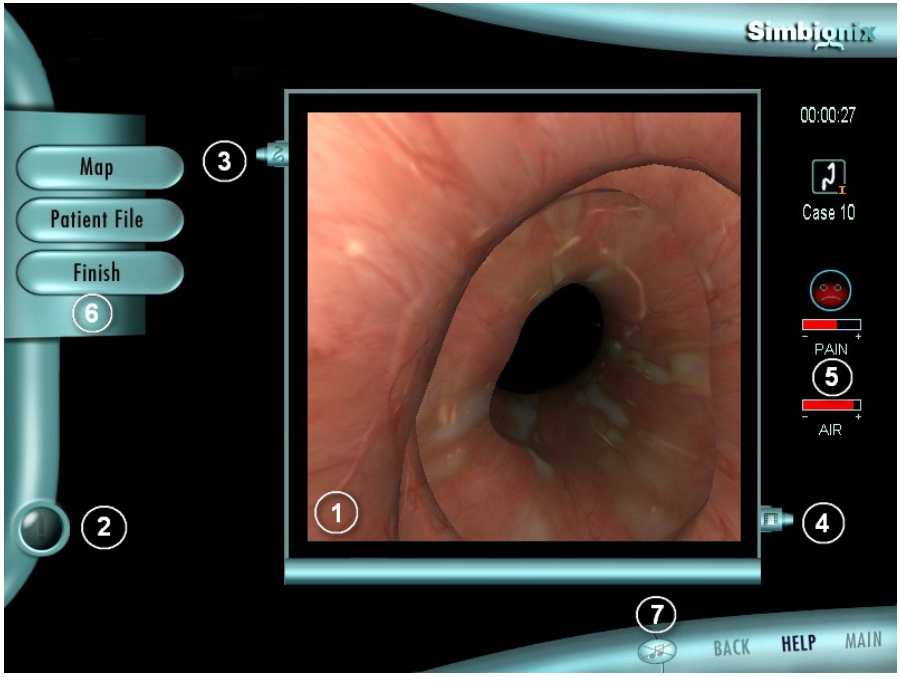


Figure 7-3: General Endoscopy screen

The screen is divided into the following parts:

① Primary View
② Virtual Instructor
③ Interactive Map
④ Snapshots
⑤ Pain and Air Indicators
⑥ General Buttons
⑦ Additional General Buttons

To the right of the main display is the elapsed time indicator. Below it is an icon indication of the module and the case file number you are running.

General Features and Educational Aids

A number of features and educational aids are available while you train on the GI Mentor.

Primary View

The primary view ① shows the real-time simulated endoscope's view during the procedure you are performing, showing a realistic display of the anatomy, including peristaltic movements, inflation and suction affect on the anatomy, fluid squirting, camera blur, bleeding, tools used and more.

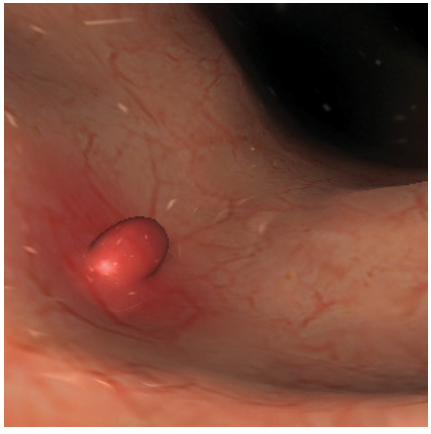


Figure 7-4: Primary view – General Endoscopy display mode

Full Screen View

You can switch between Normal view and Full Screen view, while working with the simulator. The Full Screen view is restricted to the actual view displayed during real endoscopic operations. No educational aids are available on this view.

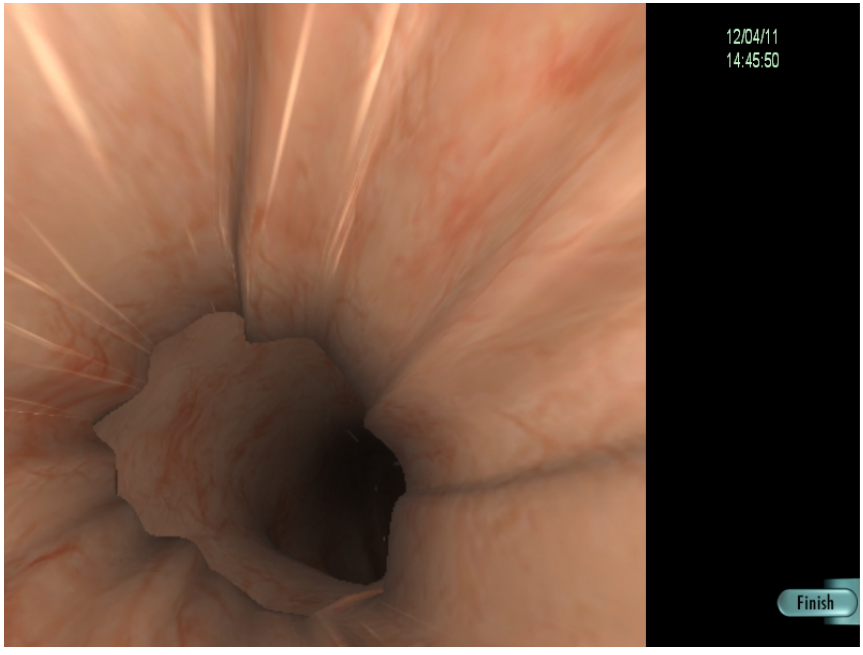


Figure 7-5: Full Screen view

To switch to Full Screen View:

- Double-click with the mouse anywhere on the primary view while in the normal mode.
  Or
- Tap twice anywhere on the primary view of the Touch screen while in normal mode.

Note: Tool selection in Full Screen view is the same as in Normal View (see Working with Endoscopic Tools on page 93).

To return to Normal View:

- Double-click anywhere on the Full Screen display.
  Or
- Tap twice anywhere on the Full Screen display.

External 3D Map View ⑥

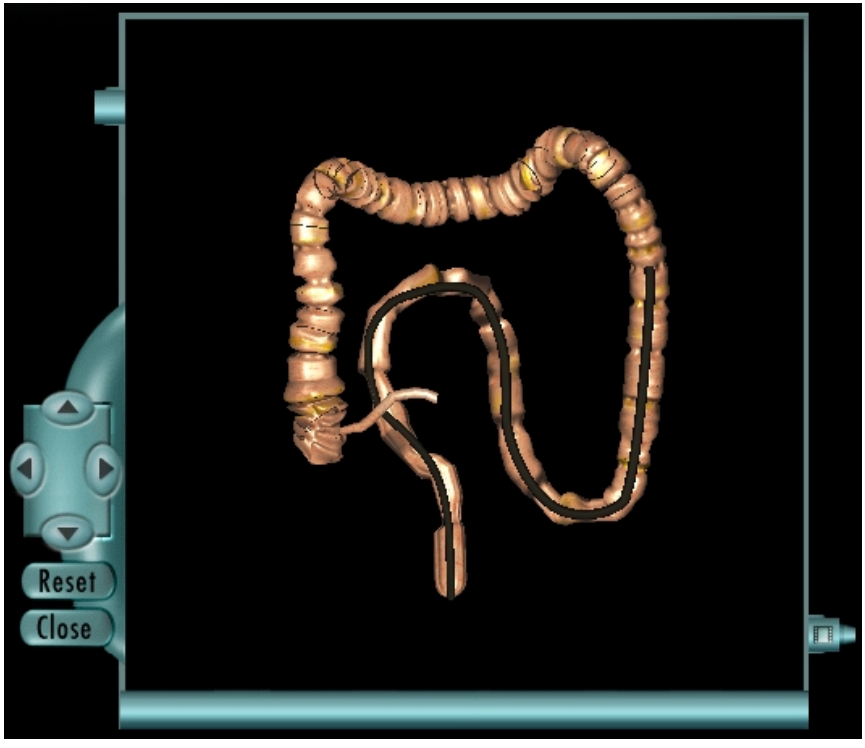


Figure 7-6: External 3D Map – General Endoscopy display mode

The 3D map shows a dynamic external view of the GI tract and the current position of the endoscope. It facilitates a greater understanding of the anatomy and the way it is affected by the endoscope.

1. Press the **Map** 

button to display the 3D map.
2. Use the arrows to rotate the map up and down or left and right.
3. Press the **Reset** button to revert to the original display.
4. Press the **Close** button to return to the primary view.

Note: The 3D Map feature is available in all the modules where training is performed in an anatomical environment.

Interactive Map ③

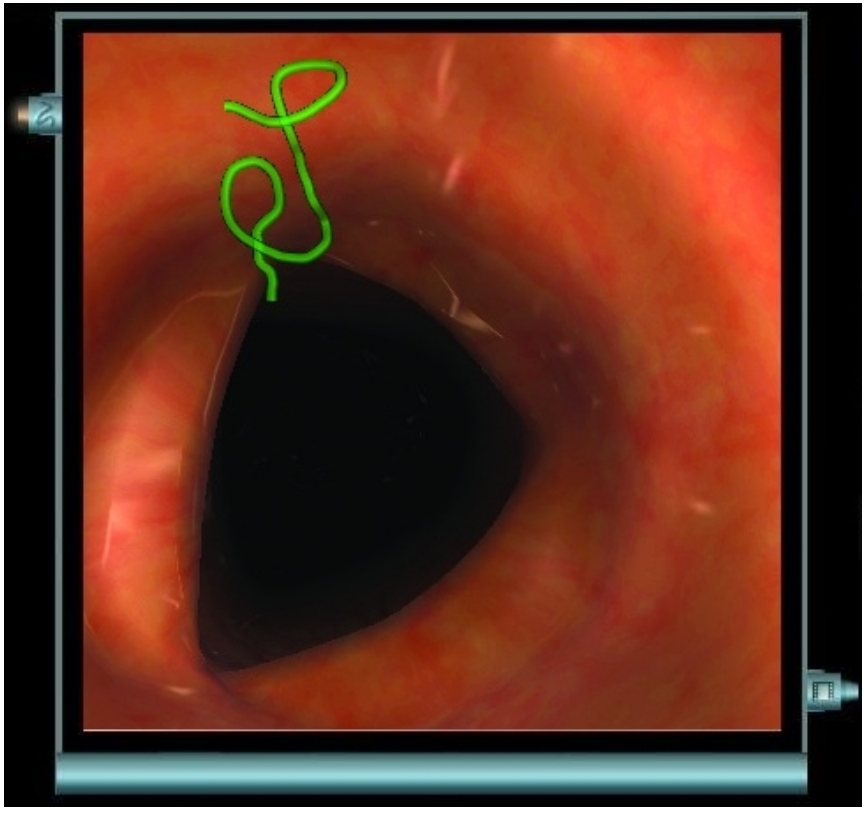


Figure 7-7: Interactive Map

The dynamic Interactive Map enables you to view the current position of the endoscope in the patient's anatomy while you are working. It is overlaid over the scope view, demonstrating scope advancement, looping, shortening, and long/short position.

To display, press the Interactive Map  button. Press the button again to hide.

Pain and Air Indicators ⑤

Two Pain Indicators operate on the simulator. Vocal indications of pain as well as a visual pain indicator show the virtual patient's discomfort level caused by your performance.

The Air indicator shows the level of air in the lumen close to the endoscope. This bar as well as the lumen itself respond to insufflation/suction.

Note: A full air bar does not mean that the lumen cannot be further inflated. Additional air will disperse to more distant segments of the colon.

Both pain and air indicators reflect the user's actions and the way these actions contribute to patient discomfort.

Virtual Instructor ②

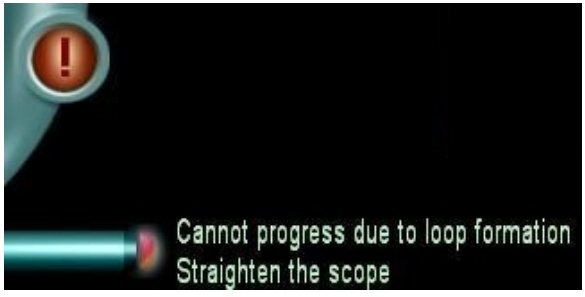


Figure 7-8: Virtual Instructor alert

The Virtual Instructor aid lights up a warning symbol  each time performance is compromised, might lead to an unsafe situation, or might result in a clinical complication. The Virtual Instructor provides an alert explaining the problem and offering a solution. When the performance is corrected, the warning symbol dims and the instructions disappear from the screen.

The Virtual Instructor also displays comments that are not alerts, aiding the training process.

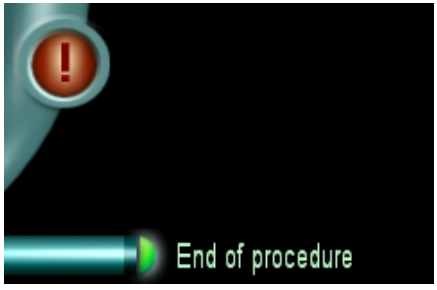


Figure 7-9: Virtual Instructor comment

Snapshot button ④

-  – captures and saves snapshots of the scope's display while working. You can then view and edit the images in the trainee report, and eventually view them on the Performance page.

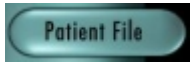
To capture a snapshot:

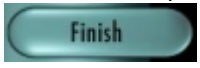
- Press the **Snapshot**  button on the lower right side of the main display.

The captured images are automatically saved. While filling in your trainee report, you may delete an image or add information such as location, pathology, and comments regarding each of the snapshots. All the images and comments will be available at the Performance Report (see Viewing Performance Reports on page 100).

Note: For some events such as a polypectomy or biopsy, a snapshot is automatically captured by the system and can be viewed, together with additional information about the event, from the Performance page.

General Buttons

- ⑥ **Patient File** button 

– Press this button to view the case's patient file. The patient file includes the patient histories, biological test results, and imaging results. You can open the file without ending the current session. Press **Close** to resume the procedure.
- ⑦ **Sound** button  – Press this button repeatedly until the desired sound level is attained. Once the maximum sound level is reached, the next click turns the sound off (mute).
- ⑦ **Help** – opens the online help of the system (check its availability based on the software version).
- ⑥ **Finish** button 

– Press this button to end the current simulation. A message is displayed asking you if you want to save your performance for the session.
    - Press **Yes** – to save your performance. It will open the Trainee Report page, enabling you to fill in a report for the case. The report is saved in the Trainee Report and may be viewed in the Performance tab.
    - Press **No** – to return to the previous selection screen. Your performance will not be saved.

Endoscopy and Fluoroscopy Display Mode

The Endoscopy and Fluoroscopy display mode combines endoscopy and fluoroscopy modalities and is effective for modules such as ERCP, where video endoscopy is used simultaneously with real time fluoroscopy.

Note: The duodenoscope used is a side viewing scope, as in reality.

Screen Layout

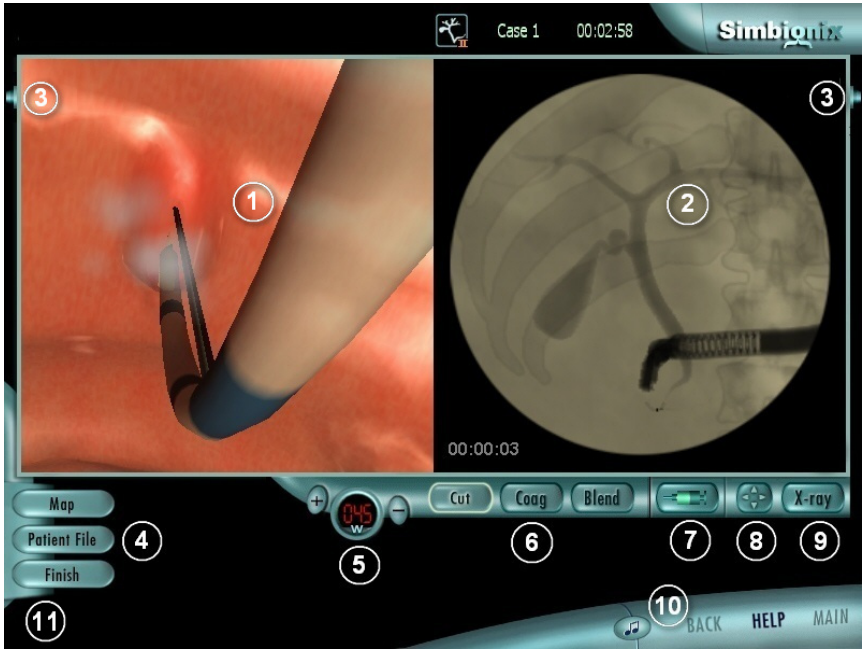


Figure 7-10: Endoscopy and Fluoroscopy screen

The screen is divided into the following parts:

① Endoscopic Display
② Fluoroscopic Display
③ Snapshots
④ General Buttons
⑤ Electricity Power Settings control
⑥ Electrical Mode Selection Buttons
⑦ Contrast Injection
⑧ Fluoroscopic View Controls
⑨ Apply X-Ray Button
⑩ Additional General Buttons
⑪ Virtual Instructor

Above the main displays is an icon indication of the module and the case file number you are running as well as the elapsed time indicator.

General Features and Educational Aids

Primary Views

The Endoscopy and Fluoroscopy mode features a split screen display: the simulated endoscopic view ① on the left and a simulated fluoroscopic view ② on the right.

Note: The simulation starts when the duodenoscope is already inside the esophagus.

Full Screen View – is restricted to the actual view displayed during real endoscopic operations. For a detailed explanation, see page 51.

Electricity, Contrast and Fluoroscopy Controls

⑤ Electricity Power Settings control – is used with tools requiring an electrosurgical current. For a detailed explanation, see Working with Tools Requiring Electrosurgical Current on page 95.

⑥ Electrical Mode Selection buttons – are used with tools requiring an electrosurgical current. For a detailed explanation, see Working with Tools Requiring Electrosurgical Current on page 95.

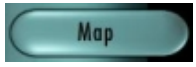
⑦ Contrast Injection is used to inject contrast while using the fluoroscopy view. For a detailed explanation, see Injecting Contrast on page 61.

⑧ Fluoroscopic View Controls – are used to adjust the fluoroscopic image. For a detailed explanation, see Fluoroscopic View Controls on page 62.

⑨ Apply X-Ray Button – is used to apply x-ray (can also be done using a foot switch). For a detailed explanation, see Simulating X-Ray on page 61.

General Features

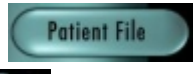
The following is a list of features and educational aids available in the Endoscopy and Fluoroscopy mode:

④ **3D Map** button 

– opens the external 3D Map view over the Primary View. For a detailed explanation, see page 53.

Figure 7-11: 3D Map – Endoscopy and Fluoroscopy display mode

⑪ **Virtual Instructor** – see page 55.

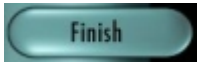
④ **Patient File** button 

– see page 60 .

③ **Snapshot** button  – captures snapshots of the simulation display while working. For a detailed explanation, see page 60.

⑩ **Sound** button  – see page 60.

⑩ Help – see page 60 .

④ **Finish** button 

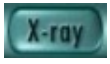
– see page 61 .

Working with Fluoroscopy

You can simulate X-ray application, using the X-Ray button or the right foot switch. The accumulated X-ray exposure time is displayed in the lower left side of the fluoroscopic view. Once the fluoroscopic view controls are activated, you can zoom or pan the fluoroscopic image.

Simulating X-Ray Application

To apply X-Ray:

- Press the **X-ray** 

button below the fluoroscopic display.
  Or
- Press the **X-ray** (right) foot switch.

Note: The fluoroscopic image in the right window will not be updated until either the X-ray button or the X-ray foot switch is pressed or contrast is injected.

Injecting Contrast

To inject contrast agent:

1. Press the **Contrast**  button below the fluoroscopic display.

   The tool that is currently in use injects the contrast agent into the duct.

Note: The Contrast button is disabled if there is no tool inserted capable of delivering contrast.

2. Press the button again to inject more contrast agent.

Figure 7-12: The fluoroscopic image

Fluoroscopic View Controls

To activate the fluoroscopic view controls:

1. Press the **Fluoroscopic View Controls**  button below the fluoroscopic display.

   The Fluoroscopic View Controls are displayed over the fluoroscopic display.

Figure 7-13: Fluoroscopic View Controls in the fluoroscopic display

To pan:

1. Press the desired directional arrow  on the four sides of the fluoroscopic display to move the image horizontally or vertically.

To zoom in or out:

1. Press the **Zoom In**  button to enlarge the display.
2. Press the **Zoom Out**  button to reduce the display.

To flip the image horizontally:

1. Press the **Flip**  button to flip the display horizontally.

To deactivate the Fluoroscopic View Controls:

1. Press again on the **Fluoroscopic View Controls**  button to deactivate the controls.

or

Wait a few seconds and the arrows will become deactivated.

Endoscopy and Ultrasound Display Mode

The Endoscopy and Ultrasound display mode applies to modules such as the EUS Educational and Tasks Modules.

In these two modules, the user manipulates the scope to sonographically demonstrate anatomical landmarks and then captures the relevant ultrasound images and identifies the structures on each.

This display mode combines an endoscope video with radial or linear ultrasound display. In the Educational module, multiple aids are offered per user selection, supporting EUS orientation and interpretation process.

The Ultrasound, Endoscopic and 3D Map views are real-time updated displays subject to scope manipulation. You can switch between the different displays using either a single display or a split screen for two simultaneous views.

Note: The scope used is a side-viewing scope, as in reality.

EUS Training Options

EUS Educational environment – provides a didactic environment where the user can study and practice EUS orientation, ultrasound image interpretation, and anatomy recognition of different landmarks. Numerous aids and “helpers” are available to optimize the learning process. Orientation instructions for over 30 different anatomical landmarks constitute the basis for the EUS training.

EUS Tasks environment – requires the user to demonstrate landmark acquisition and anatomy identification of the same 30 plus landmarks. However, not all “helpers” are available and the user's knowledge is manifested in the results.

The didactic way to perform EUS simulation training is to follow the case info instructions, correctly acquiring and identifying each anatomical landmark.

Screen Layout

Figure 7-14: Endoscopy and Ultrasound screen

The screen is divided into the following parts:

① Left display
② Right display
③ Case Info
④ Elapsed time
⑤ Perforation meter
⑥ Split and Focus buttons
⑦ Content Selection buttons
⑧ Ultrasound Display Function buttons

⑨ Actions Panel for the selected function
⑩ General Buttons

Note: The EUS Tasks environment differ from the EUS Educational environment in the availability of certain features and educational aids.

Selecting between Linear and Radial EUS

When the EUS simulation begins, you are asked to choose between the linear and radial ultrasound.

Note: You can switch between linear to radial during the simulation in the educational environment. (See Switching Between Ultrasound Modes on page 85.)

General Features and Educational Aids

Case Info ③

The case info is the basis for the EUS hands-on ultrasound landmark recognition. Instructional text and matching visual illustration of both orientation and the corresponding ultrasound display are provided for over thirty anatomical landmarks in the Case Info.

The Case Info includes:

- Six different cases with a list of landmarks for each case.
- A verbal explanation accompanied by 3D Map capture showing the position and orientation of the scope and ultrasound beam for each landmark acquisition.
- A preview of the desired ultrasound image for this landmark, with all of its relevant anatomical structures labeled.

To display the case information:

1. Press **Case Info**  button in the top left corner of the screen.
2. Select a case and a landmark from its list to view the scope maneuvering instructions and desired ultrasound capture.

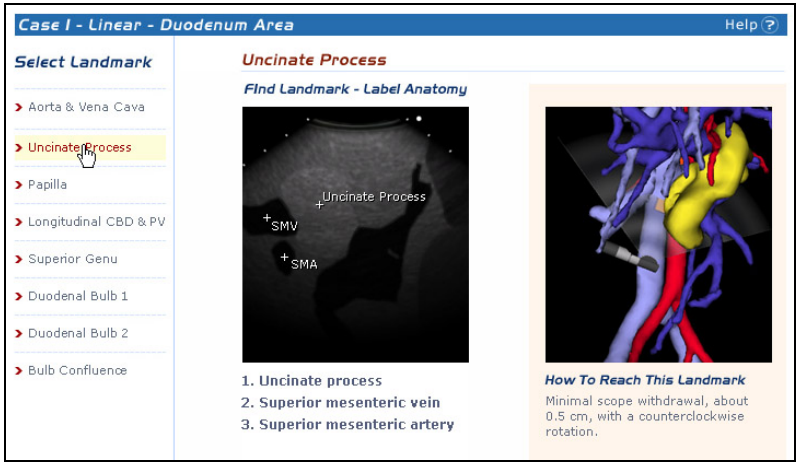


Figure 7-15: Landmark instructions and anticipated capture

Note: The Scope Orientation Instructions for Landmarks are available and can be followed in both the educational environment and the task environment.

Split, Set Focus, and Select Content of the Displays

You can split the display pane into two panes and view simultaneously two displays of your choice or work with a single display pane. The Ultrasound, Endoscopic and 3D Map displays can each be viewed in any of the display panes.

To split the display pane⑥:

1. Press the **Split**  button.
2. Press the display selection button of your choice under each pane (see page 68).

   The selected display appears in the designated pane.

To set the display focus⑥:

1. Press anywhere inside the display pane not currently selected.

   Or

Press the right or left  set focus button.

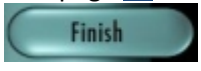
Note: The display focus is indicated by a thin yellow line around the display pane. The Function Buttons and Actions Panel are updated accordingly (see Action Panels on page 69).

To select the display's content⑦:

Press a content button under the display pane to view it in the above display.

-  – Endoscopic (Video)
-  – EUS (Ultrasound)
-  – 3D Map

General Buttons ⑩

- **Sound** button  – see page 56.
- **Help** button – see page 56.
- **Finish** button  – see page 56.

Elapsed Time and Perforation Meter

④ Elapsed Time – display the amount of time that has elapsed since starting the procedure.

⑤ Perforation meter – displays how much the scope is pushing against the tissue.

Ultrasound Display Functions

The Ultrasound Function buttons⑧are located above the right display pane. Pressing a button displays its action panel on the right side of the screen⑨.

Function Buttons

- **Zoom** function button  – For a detailed explanation of its panel options, see page 69.
- **Freeze** function button  – For a detailed explanation of its panel options, see page 72.
- **Helpers** function button  – For a detailed explanation of its panel options, see page 80.
- **Settings** function button  – For a detailed explanation of its panel options, see page 87.

Action Panels

 Zoom Panel

Note: This panel is available for both the educational and task environments.

Press the **Zoom**  function button above the right pane.

The **Zoom** panel is displayed.

Figure 7-16: Zoom panel

Zooming

To enlarge the ultrasound display:

1. Press the **Zoom In** button.

To reduce the ultrasound display:

1. Press the **Zoom Out** button.

To set the center of the view after zooming in:

1. Press the **Set Center** button and then press anywhere on the ultrasound image.

   The selected point becomes the center of the ultrasound image.

To zoom on a selected region:

1. Press the **Region** button.

   A yellow square is displayed on the screen and the **Region** sub-panel is displayed.

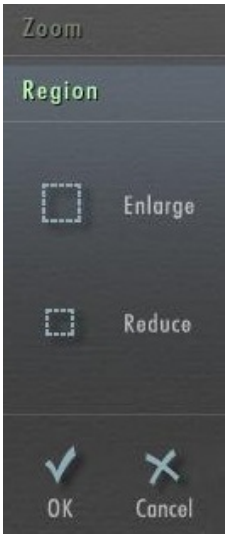


Figure 7-17: Region sub-panel

2. Press **OK**.

   The selected area is enlarged.

To enlarge a selected region:

1. Press **Enlarge**.

   The size of the yellow square is enlarged.

2. Press anywhere on the screen.

   The yellow square moves to the selected area.

3. Press **OK**.

   The selected area is enlarged.

To reduce a selected region:

1. Press the **Region** button.

   A yellow square is displayed on the screen and the **Region** sub-panel is displayed.

2. Press **Reduce**.

   The size of the yellow square is reduced.

3. Press anywhere on the screen.

   The yellow square moves to the selected area.

4. Press **OK**.

   The selected area is enlarged.

To reset the zoom level of the ultrasound display:

1. Press the **Reset**  button. The display returns to its original zoom settings.

 Freeze Panel

Use the Freeze panel to freeze the ultrasound image, which is the first step in capturing and saving a desired landmark, and work with its features.

Note: This panel is available for both the educational and task environments.

Press the **Freeze**  function button above the display pane.

The **Freeze** panel is displayed.

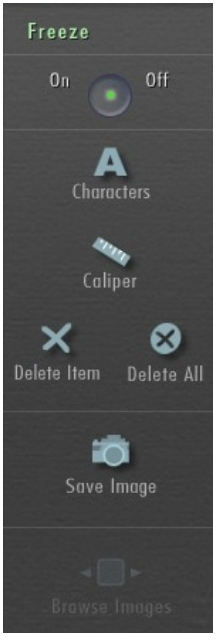


Figure 7-18: Freeze panel

Freezing and Unfreezing

To freeze the ultrasound image:

1. Press the **On/Off**  button to freeze the ultrasound image.

   The ultrasound image is frozen and a green dot appears above the **Freeze** function button and in the **On/Off** button indicating the image is frozen. The image will remain frozen until the **On/Off** button is pressed again.

To unfreeze the ultrasound image:

1. Press the **On/Off**  button again.

   The ultrasound image returns to the live duodenoscope image and the green dot is turned off above the function button and in the panel.

Note: When you try to unfreeze the ultrasound image, you are asked if you want to save or discard the frozen image, i.e. the captured landmark, if the image was modified or not saved.

Manual Structure Labeling

The ultrasound image freeze features allows for anatomical structure labeling. The feature is the same in both the educational and task environments.

Note: The educational EUS offers additional Automatic Labeling that can be helpful in the learning process. For a detailed explanation, see Automatic Labeling for Anatomical Structure Identification on page 80.

To manually identify anatomical structures and organs:

1. Press the **Character**  button.
2. Press on the Ultrasound display where you want to label an organ or structure.

   The white **+** turns to yellow and the **Characters** sub-panel is displayed.

Figure 7-19: Characters sub-panel

3. Press to select a name from the list or type the name in the text box with the keyboard.

Note: You can also type a letter to display the list of names for that letter and then use the keyboard or screen to select the name from the list.

The name appears in yellow in the specified place on the ultrasound image.

4. Press **Enter**.

The label turns to white on the image and is set for that structure.

Note: The Enter button on the screen and the Enter key on the keyboard can both be used for setting the label.

Figure 7-20: Anatomical labels and measurement on Ultrasound display

Upon completion, the original Freeze panel is displayed. You can save the image with the anatomical labels or continue to label other anatomical structures.

Caliper Measurements

To take a measurement:

1. Press the **Caliper**  button.

   The **Caliper** sub-panel is displayed.

Figure 7-21: Caliper sub-panel

2. Press on the Ultrasound display where you want to define the first caliper point.
3. Press the **Lock 1st Point**  button.

   A yellow square appears where the first point was placed.
4. Press on the Ultrasound display where you want to define the second caliper point. A second yellow square appears on the screen and a yellow line is drawn between the two points.
5. Press the **Lock 2nd Point**  button.

The yellow line turns to white and the distance is displayed in mm on the right side of the ultrasound display.

You can press the **Cancel** button at any time to cancel the current measurement and return to the Freeze panel.

Upon completion, the Freeze panel is displayed. You can save the image with the measurement or continue to measure other values.

Deleting Measurements and Labels

To delete a measurement or label from an image:

1. On the **Freeze** panel, press **Delete Item**.

   A red **+** appears on the screen.

2. Place the **+** sign over the measurement or label you want to delete.
3. Press to select the item.

   The item turns to yellow and a prompt appears asking if you want to delete the item from the image.

4. Press **Confirm Delete Image**.

   The measurement or label is deleted from the image.

To delete all the measurements and labels from an image:

1. On the **Freeze** panel, press **Delete All**.

   A prompt appears asking if you want to delete all the items on the image.

2. Press **Confirm Delete Image**.

   All the measurements and labels are deleted from the image.

Saving Ultrasound Images

You can save snapshots of frozen ultrasound images (i.e. landmarks), while working. Those images can also include structure labeling and measurements.

You can easily browse through these images and delete images you don’t need.

To save an image:

1. Press the **Save Image**  button.

   The **Save Image** sub-panel is displayed.

Figure 7-22: Save Image sub-panel

2. Press **Add New Image** if you want to save the displayed image as a new image.

   Or

   Press **Overwrite Image** if you want this image to replace the previous image.

   The image is saved to the case performance.

   You can press the **Cancel** button at any time to return to the **Freeze** panel without saving.

Browsing Images

To browse through the saved images:

1. Press the **Browse Images**  button. The **Browse Images** sub-panel is displayed.

Figure 7-23: Browse Images sub-panel

2. Press the **Previous Image** button to view the previous image or **Next Image** button to view the next image. The image number indication below the two arrows will change accordingly.

To select an image:

1. Press the **Select Image** button.

   The image is now active and can be used for labeling, measuring, and other actions.

To delete an image:

1. Press the **Delete Image**  button.
2. Press **Confirm Delete Image**.

You can press the **Cancel** button at any time to return to the **Freeze** panel.

Helpers Panel

Note: This panel is only available for the educational environment.

Press the **Helpers** function button.

The **Helpers** panel is displayed.

Figure 7-24: Helpers panel

Automatic Labeling for Anatomical Structure Identification

You can automatically label organs and anatomical structures in the ultrasound view in order to identify them.

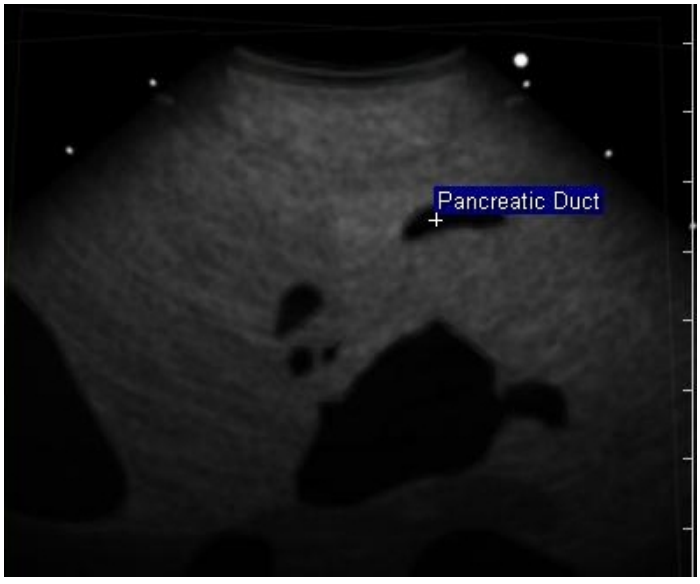


Figure 7-25: Automatic labeling

To automatically label:

1. Press the **Labels** button.
2. Press on the structure of interest in the Ultrasound display.

   The name of the organ or structure is displayed on the screen.

Coloring Options

Different coloring options are available on the Ultrasound display, which correspond to the 3D map color index. You can display the contour of the organ or color the whole organ. When filtering organs on the 3D map display, selective structure coloring on the ultrasound is displayed accordingly.

To color the contour of organs:

1. In the **Helpers** panel, press the **Contour** button. The color contour of the organs, with the same color displayed in the 3D map, is displayed on the Ultrasound display.

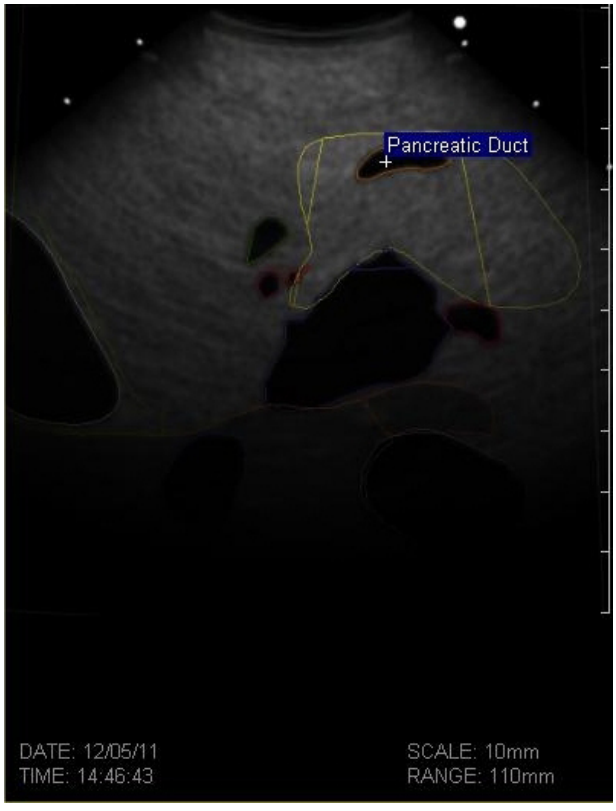


Figure 7-26: Color contour of organs on Ultrasound display

To color the entire organ:

1. In the **Helpers** panel, press the **Colored**  button. The organs are colored on the Ultrasound display as they are colored on the 3D map.

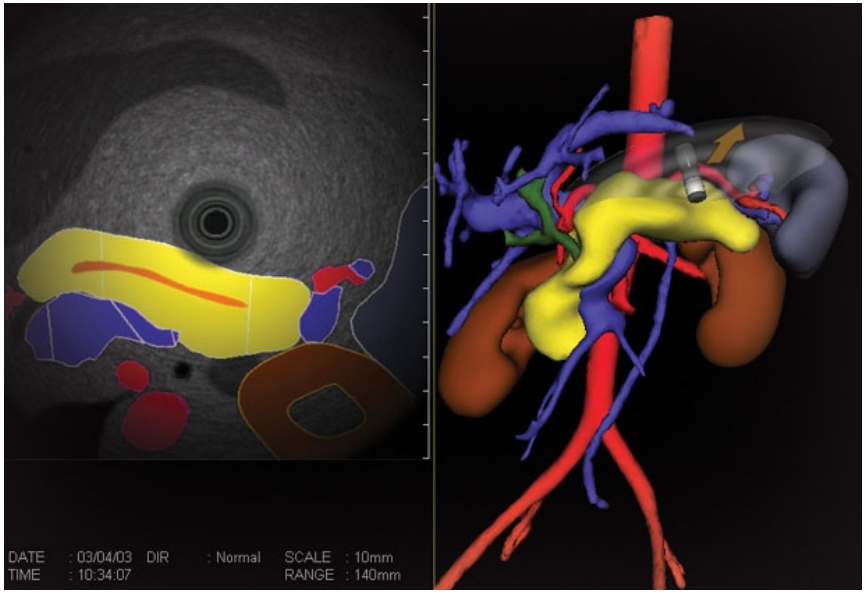


Figure 7-27: Organs colored on the Ultrasound display

To remove the contours and colors:

1. In the **Helpers** panel, press the **Normal**  button. The colors and contours are removed from the organs in the Ultrasound display.

Filtering anatomical structures and organs

To access the Filter sub-panel:

1. In the **Helpers** panel, press **Filter**  button.

   A sub-panel with an alphabetical list of organs and structures is displayed.

Note: The same **Filter** sub-panel is available in the 3D-Map Controls panel. The filtered organs are displayed on both the 3D Map and the Ultrasound colored organs displays.

Figure 7-28: Filter sub-panel

To hide anatomical structures or organs

1. Press to unselect the check box next to those organs you wish to hide.

   The selected organs are removed from the 3D Map display and are not colored on the Ultrasound display.

To show anatomical structures or organs

1. Press to select the check box next to those organs you wish to show.

   The selected organs are added to the 3D Map display and are colored on the Ultrasound display.

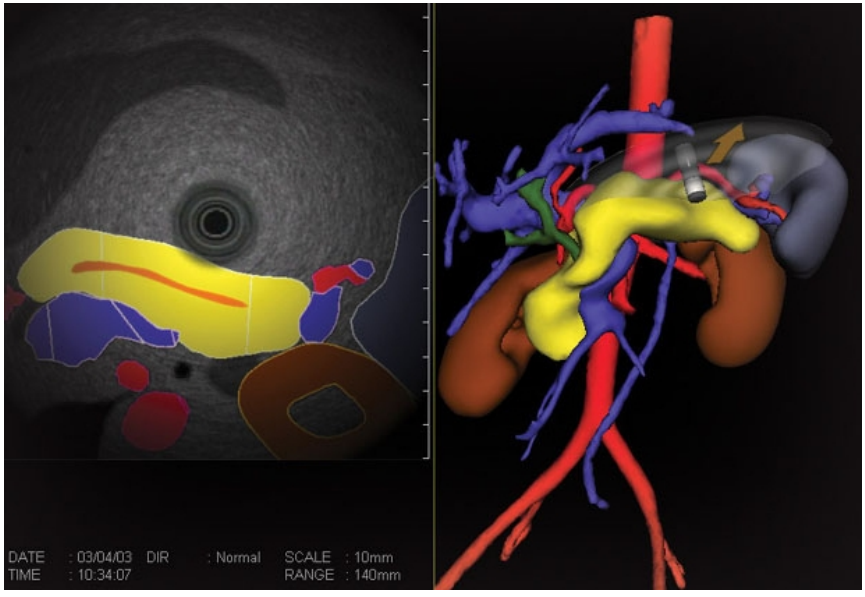


Figure 7-29: Selective organs display on 3D Map and Coloring option

To select all of the organs/structures:

1. Press **All** in the **Filter** panel.

To unselect all organs/structures:

1. Press **None** in the **Filter** panel.

When the organs/structures selection fits your currently desired configuration, press **Close**.

Switching Between Ultrasound Modes

You can select a different ultrasound mode during the simulation using the options in the Helpers panel.

Note: In the EUS tasks module, the ultrasound mode is not selectable but set according to the practiced case.

To select Linear EUS:

1. Press the **Linear**  button. The Linear ultrasound becomes active.

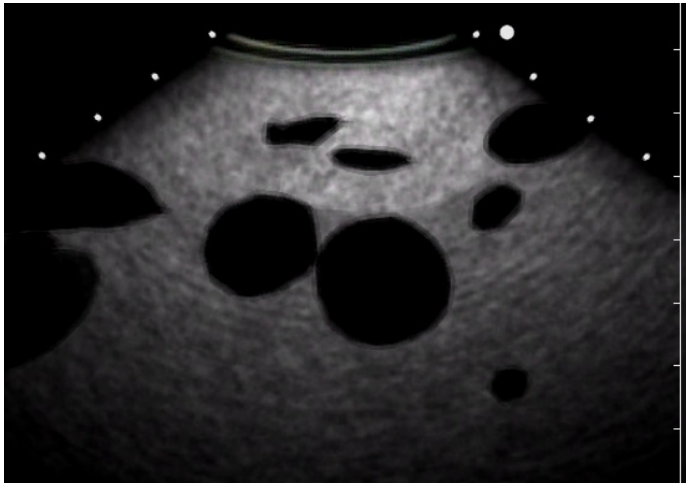


Figure 7-30: Linear Ultrasound

To select Radial EUS:

1. Press the **Radial**  button. The Radial ultrasound becomes active.

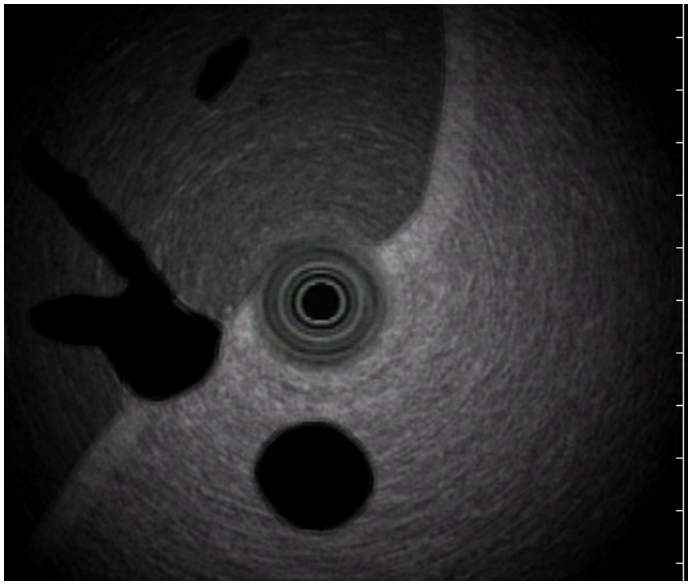


Figure 7-31: Radial Ultrasound

Settings Panel

You can use the Settings panel to flip the ultrasound display.

Note: This panel is available for both the educational and task environments.

Press the **Settings** function button above the right display pane.

The **Settings** Panel is displayed.

Figure 7-32: Settings panel

Flipping the Ultrasound Display

To flip the ultrasound display:

1. Press the left **Flip**  button to flip the display horizontally to the left.
2. Press the right **Flip**  button to flip the display horizontally to the right.

Working with 3D Map Display

Figure 7-33: 3D Map display in focus

Display of Ultrasound Plane on 3D Map

The ultrasound plane is dynamically displayed on the 3D map, offering correlation between the anatomical location of the scope and the structures demonstrated in the ultrasound view.

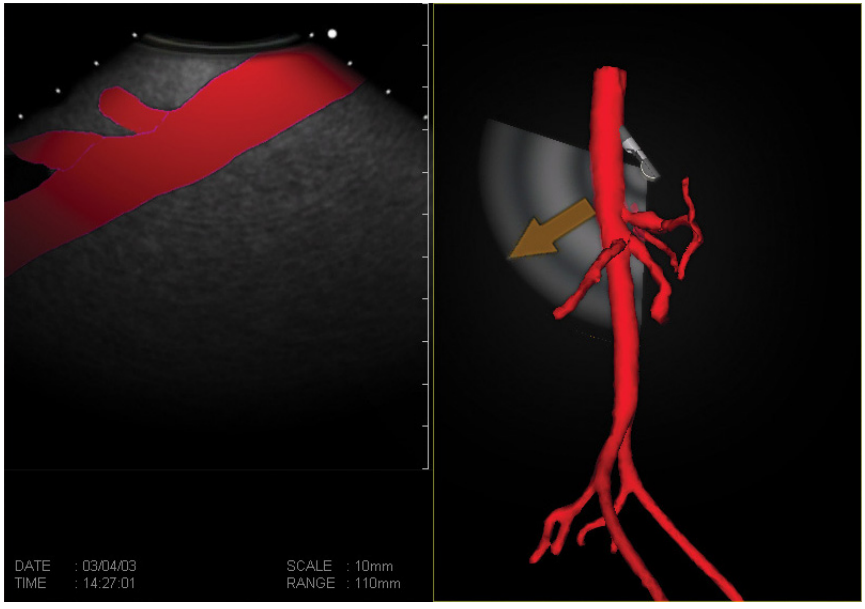


Figure 7-34: Ultrasonography beam on 3D Map

3D Map Controls Panel

The 3D Map display has no function buttons as it only has one panel.

Whenever the 3D map display is in focus, its controls panel is displayed:

Figure 7-35: 3D Map controls panel

Panning the 3D Map

To pan the 3D Map:

1. Press an arrow button. The display is shifted in the direction of the arrow.

Figure 7-36: Pan controls

Rotating the 3D Map

To rotate the 3D Map:

1. Press one of the Rotate  arrows. The 3D Map rotates on its axis in the direction of the arrow.

Zooming the 3D Map Display

To enlarge the 3D Map display:

1. Press the **Zoom In**  button in the **Controls** panel.

To reduce the 3D Map display:

1. Press the **Zoom Out**  button.

Reseting the 3D Map Display

To reset the 3D Map display:

1. Press the **Reset**  button. The display returns to its original settings.

Filtering Anatomical Structures or Organs

You can use the filtering option to show or hide anatomical structures and organs.

Note: The same filter sub-panel is available in the Helpers panel. The filtered organs are displayed on both the 3D Map and the Ultrasound colored organs displays.

To access the Filter sub-panel:

1. In the **Controls** panel, press the **Filter**  button. An alphabetical list of organs and structures is displayed.

Figure 7-37: Filter sub-panel

For a detailed explanation how to use the filter option, see Filtering anatomical structures and organs on page 83.

Chapter 8 Working with Endoscopic Tools

The Master Tool is used to simulate multiple tools. For a detailed explanation on the Master Tool, see Master Tool on page 19.

Working with Tools

Upon inserting the Master Tool into the working channel of the scope, a tools menu opens from which you can select the desired tool. The selected tool will be the active tool in the simulation. The tool is manually manipulated using the handle of the Master Tool, to control the desired behavior of the simulated tool.

To select a tool:

1. Insert the Master Tool slowly into the working channel until the Tools menu appears.

   The Tools menu opens with pictures of all available tools for the current case.

2. Press to select the desired tool.

   The Tools menu closes and the tool is displayed in the primary view.

Note: Unlike in an actual procedure, the selected tool is simulated already at the far end of the working channel upon initial tool insertion. Thus, after introducing and selecting a tool, you only need to slightly insert it to have it already inside the anatomy.

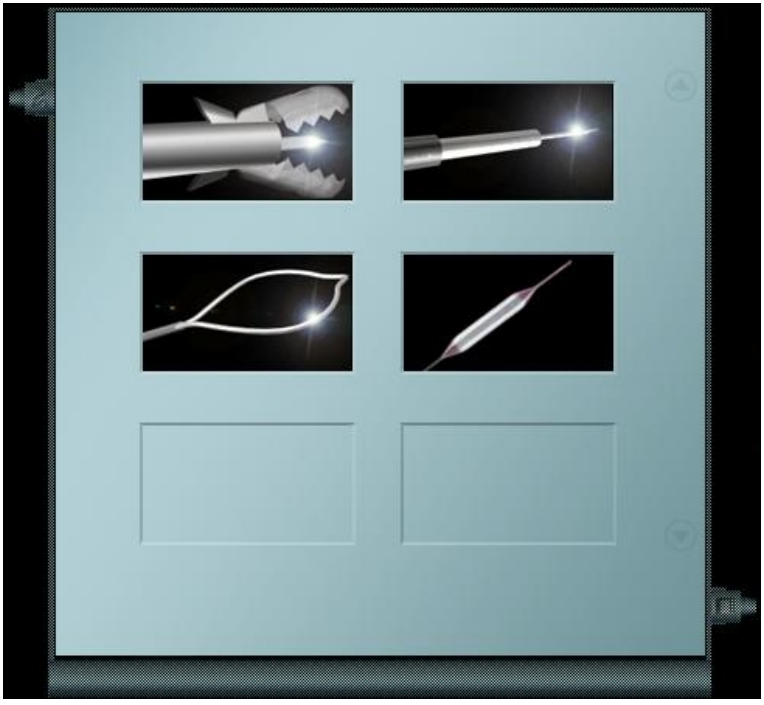


Figure 8-1: Tools menu

To work with Master Tool handle:

- Pull the Master Tool handle back to open, inflate, or fill the tool.
- Push the Master Tool handle forward to close, deflate, or inject with the tool.

To finish working with a selected tool, or change your tool selection:

1. Remove the Master Tool from the working channel of the colonoscope.
2. Upon reintroducing the Master Tool, you will again be prompted to select the endoscopic tool you wish to use.

Working with Tools Requiring Electrosurgical Current

When a tool requiring an electrosurgical current is selected from the Tools menu, electrical power settings are displayed either beside or below the primary display. These settings allow you to select the electric mode and values for activating the tool.

To work with a tool requiring electricity:

1. Select the tool. The tool mode and power settings are displayed.

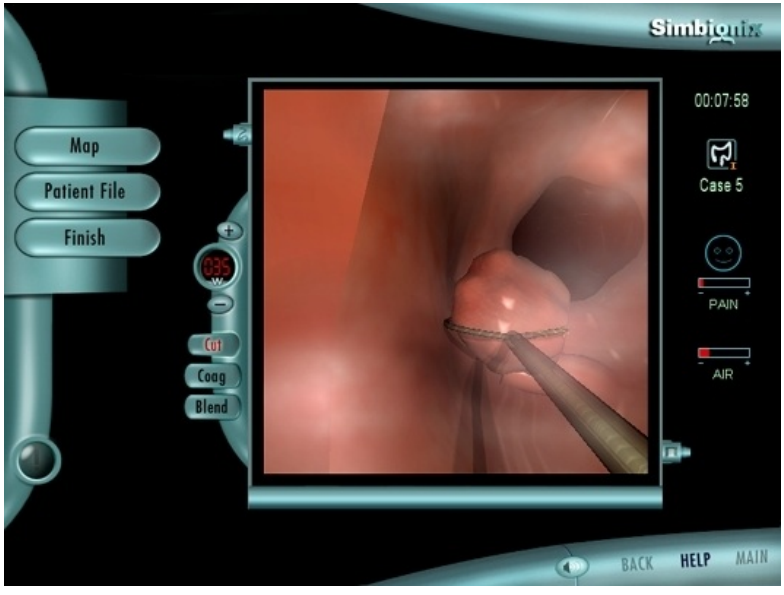


Figure 8-2: Electrosurgical settings (and polyp extraction) in General Endoscopy display mode

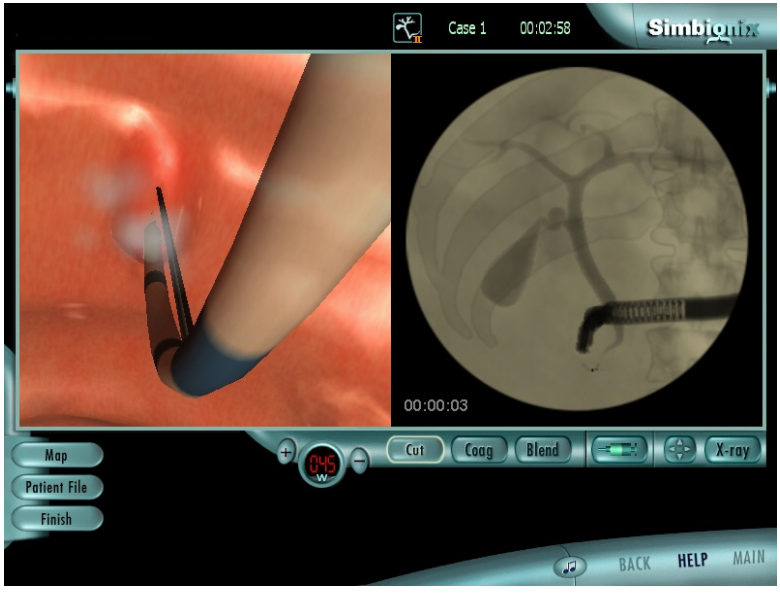


Figure 8-3: Electrosurgical settings for Endoscopy and Fluoroscopy display mode

2. Select the desired mode (Cut, Coag or Blend).
3. Adjust the desired electrical power settings by pressing the **+** or **–** control buttons.

   The selected value appears within the circular display  .
4. Press the **left** foot switch to apply electricity.

Working with Multiple Tools and Wires

Note: The duodenoscope allows for working simultaneously with three tools and wires, inserted through three separate working channel openings.

1. Insert the Master Tool into the white-marked working channel and select from the Tool menu (see Working with Tools on page 93).
2. When there is a tool in the white working channel, the red wire, simulating the guide wire, can be inserted into the red-marked working channel.

Note: The red wire always simulates the guide wire and need not be selected from a menu.

The guide wire appears in both the endoscopic and the fluoroscopic views.

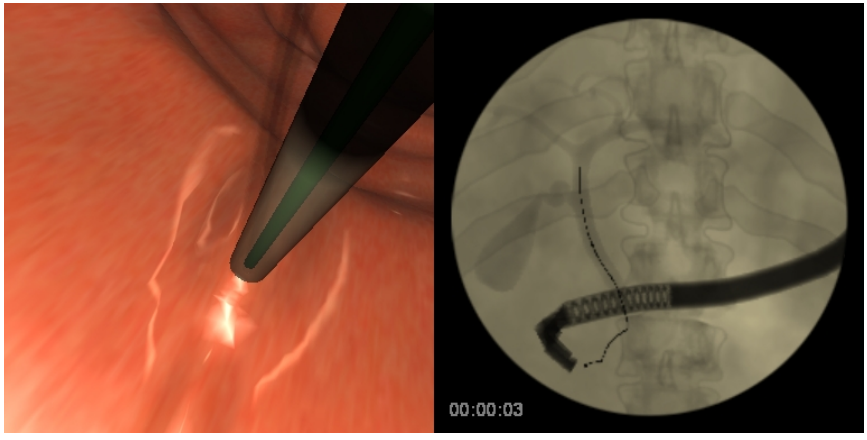


Figure 8-4: Guide wire

Note: When inserted into its channel, the guide wire is simulated already at the far end of the working channel. Thus after introducing it, you only need to slightly insert it to have it already inside the anatomy. You can press on the **About Guide Wire** option, at the bottom of the Tools menu, to review additional information.

3. When the Master Tool is simulating a guiding catheter and the guide wire is inserted, insert the blue wire into the blue-marked working channel to simulate stent placing.

A menu providing a list of stents is displayed.

The blue wire always simulates the pushing catheter and need not be selected from the menu. However, the stent type and size needs to be selected upon inserting the blue wire.

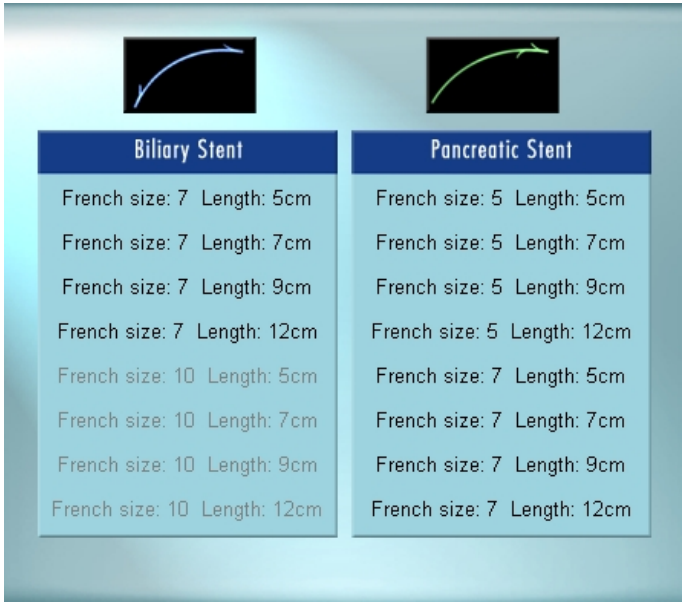


Figure 8-5: Stent selection menu

4. Select the desired type and size of stent.

The stent is displayed at the tip of the pushing catheter and can be seen in the endoscopic view and on the fluoroscopic view.

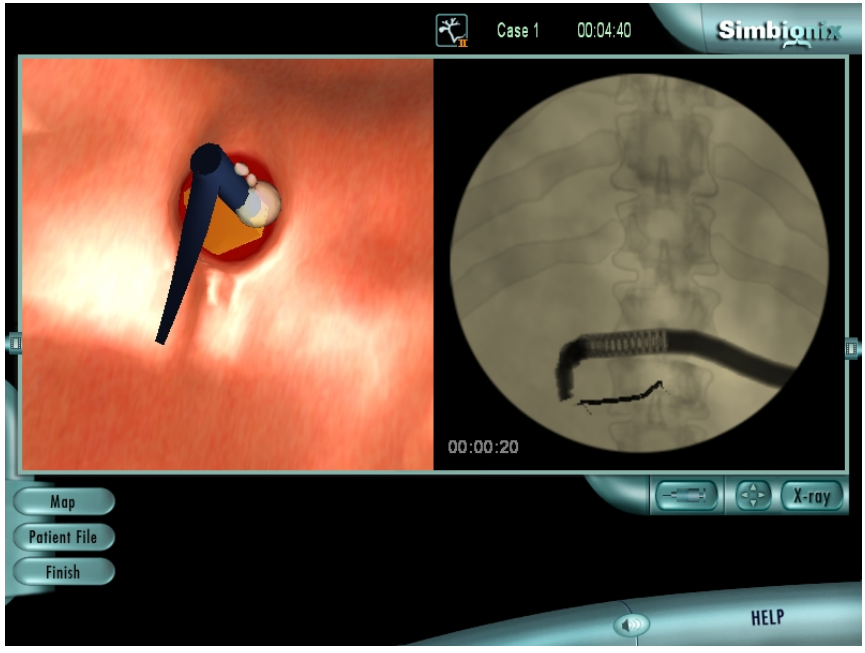


Figure 8-6: Stent displayed in Endoscopic and Fluoroscopic views

Note: Unlike an actual procedure when inserted into the working channel, the catheter is simulated already at the far end of the working channel. Thus after introducing it, you only need to slightly insert it to have it already inside the anatomy.

Chapter 9 Viewing Performance Reports

Performance reports are displayed after each simulation case or task, allowing you to monitor and track your training progress.

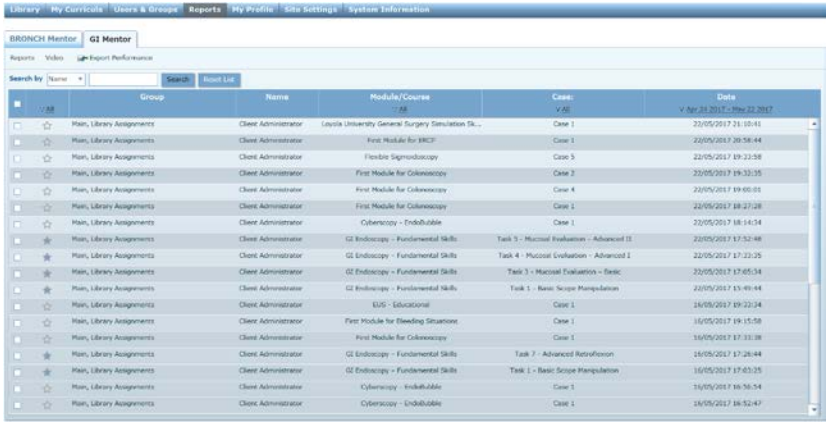
Note: MentorLearn produces reports for simulation cases only; reports are not produced relating to the completion of any didactic material included in a course.

When you press **Finish** to end a task or case, your performance report is displayed automatically. All of your reports are listed in the **Reports** tab.

Viewing Reports

To view performance reports:

1. On the menu bar, press **Reports**.



The Reports table appears, displaying a list of your reports. The entries in the Reports table appear in chronological order – your most recently performed sessions appear at the top of the list. Each row in the reports table represents a single session, meaning that if you

completed a particular simulation case three times, three entries (rows) for that case are displayed.

2. To display a shorter, more focused list of sessions in the Reports table, use the search at the top of the table or press  to filter.
3. To restore the full, unfiltered list of reports, press **Reset List**.
4. To bookmark a report, click the star  to the left of its name. You can then easily return to the report when needed. To remove the bookmark, click the star  again. If desired you can filter only starred reports or only unstarred reports. Click the  above the star and select **Starred** or **Unstarred** to view only those reports.
5. To open a single-case report, in the **Reports** tab, press its row.

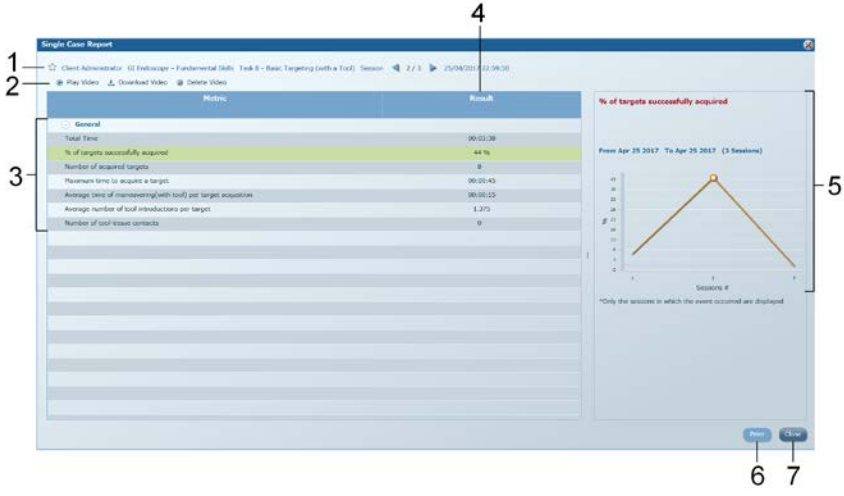


Figure 9-1: Viewing performance reports

1 The **Report Header** displays information about the report, including your user name, the name of the case performed, and the Simbionix module that contains the performed case. The session number is also displayed in the report header.

2 **Video options** display options for viewing, downloading and deleting the recorded video of your simulation performance. For more information, see Viewing Recorded Videos on page 104.

3 **Metric** column: the metrics included in the report. The metrics are divided into categories, such as Time & Economy, Safety Parameters, Knowledge of Procedure, and Handling of Instruments. The available categories and metrics vary between simulators and simulation modules and cases.

Press an underlined metric to display details about the metric. The metric is underlined only if there is additional information to display about how it is measured.

Press the **Hide** icon to the left of a category name to hide the associated metrics; press the **Show** icon to display the metrics.

4 **Result** column: the result of the metrics as recorded during the user's performance of a simulation case. If a metric is highlighted, press to display additional information such as a snapshot.

5 **Graph** column: A learning-curve is displayed on the right side of the Reports page for cases where you have completed two or more sessions of the specific simulation case. The graph shows the values for the metric as recorded in each session you performed.

6 **Print**: press to print the report.

7 **Close:** to close the report window.

6. If a metric is highlighted, press to display additional information such as a snapshot.

Figure 9-2: Report Metric's Additional information

Browsing between Sessions

Use the Previous and Next arrows to browse between different report sessions.

MentorLearn allows you to browse between the sessions performed of the same case within a certain course/module. Therefore if a learner performed a case independently 3 times for a module listed in the Library and then performed the same case an additional two times within the framework of a course, these sessions will not be linked together. The learner would need to browse separately between the sessions performed in the module and sessions performed within the framework of the course.

Viewing Recorded Videos

You can view a video of your simulation performance. You can download the video to review your performance at a later time or delete the recorded video.

To view the performance video:

1. Click **Play Video** under the Report Header on the top of the report.

   The recorded video of your performance of the simulation case is displayed.

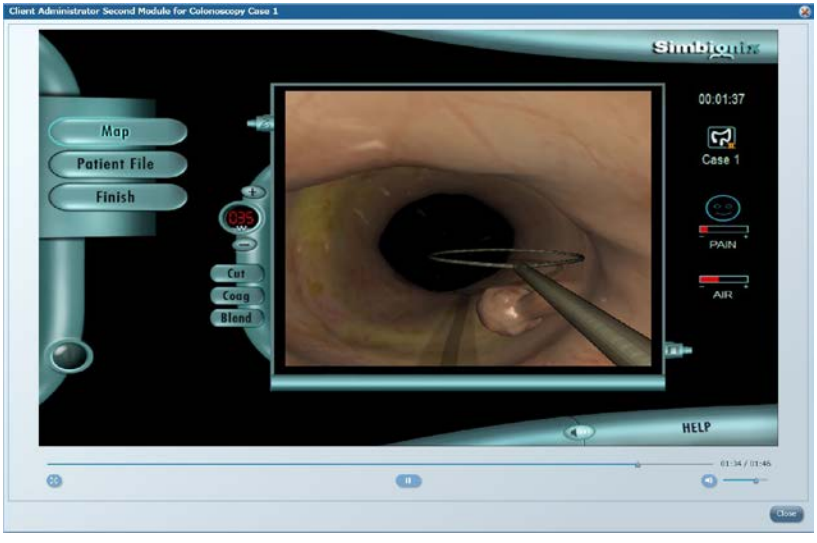


Figure 9-3: Viewing video of simulation performance

2. Use the buttons under the video to play, pause, or view in full screen.
3. Click **Close** to close the video and return to the performance report.

To download the performance video:

1. Click **Download Video** under the Report Header.
2. Browse to select the file location where you want the video to be downloaded.
3. Press **Save**.

   The video is downloaded to the selected location.

To delete the performance video:

1. Click **Delete Video** under the Report Header.

   The recorded video is deleted.

Note: A message will appear when there is no more storage space for the recorded videos on your local drive. It is recommended to download those videos you wish to save to another drive on the computer or to an external drive (e.g. USB stick or external hard disk) and then delete them.

Additional Report Types

Viewing User Saved Snapshots

You can view saved snapshots and your comments relating to snapshots.

1. Press the underlined blue value in the result column of the **Trainee Report and Snapshots**.
2. If upon completing a case and saving its performance, you entered and saved comments relating to snapshots you took, you can later view them and decide whether to delete any of these snapshots. No editing of the text is possible at this stage.
3. Use the arrows to browse through the snapshots.
4. Press **Delete Snapshot** to delete those snapshots you do not want.
5. Press **Close**.

Viewing Performance Playback

You can view a recording of your complete performance of the procedure.

Note: Playback can be reviewed only on the simulator station on which it was performed.

1. Press the underlined blue **PLAY** in the result column of the **Playback of performed procedure**.

   The performance procedure playback begins playing.

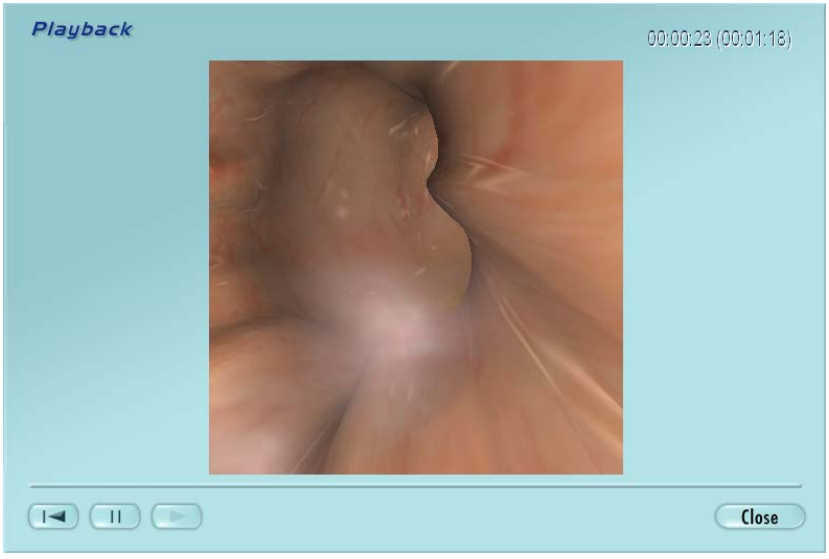


Figure 9-4: Playback screen

2. The following actions are available in the Playback screen:

- To pause the recording, press the **Pause** button.
- To play the recording, press the **Play** button.
- To play the recording from the beginning, press the **Back** button.

3. Press **Close** to return to the Report page.

Viewing EUS Reports

The performance reports for the EUS modules differ from the other modules in that they are picture-based, containing information about captured landmarks and structures identification.

EUS Educational Reports

1. Click **Info** in the **Values** column of the single EUS education module report to display a thumbnail list of all captured landmarks.

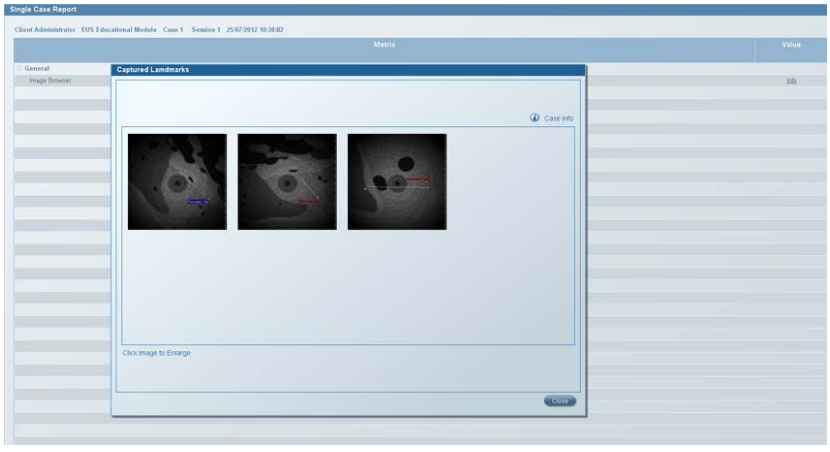


Figure 9-5: Thumbnail list of captured landmarks

2. Click one of the thumbnails. The captured image is enlarged and details about the correctness of labeling the organs are displayed.

Note: You can click **Case Info** to view the expected result for each landmark.

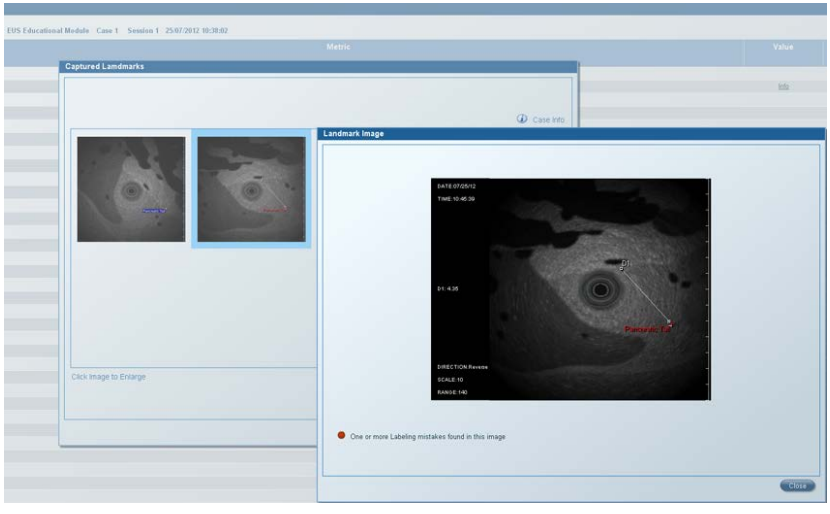


Figure 9-6: A captured landmark

3. Click **Close** to return to the Report page.

EUS Task Reports

The EUS Task reports display a summary of the landmarks recognized during performance.

1. Click **Info** in the **Values** column of the single EUS Task report to display a summary of landmarks recognized.

   The **Task Summary** is displayed.

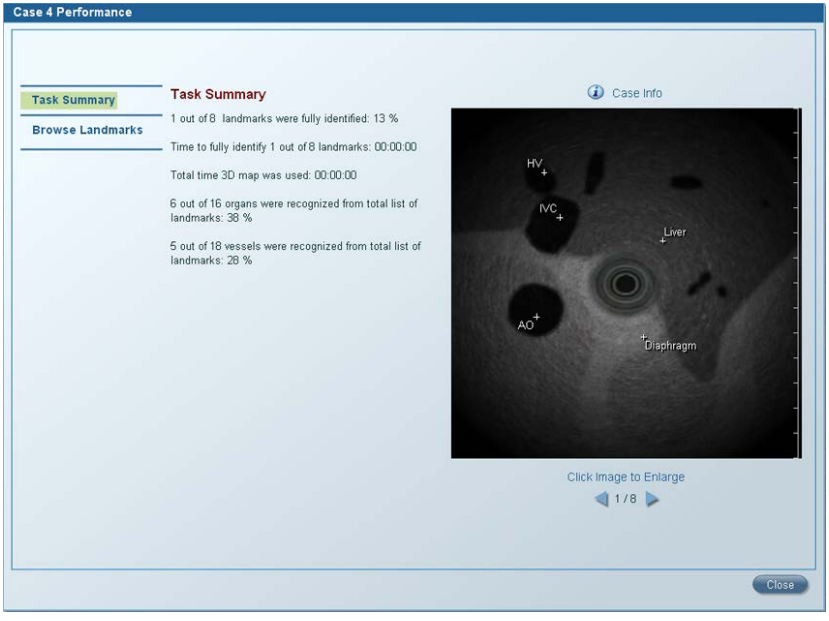


Figure 9-7: Task Summary of a EUS Task

2. Use the arrows under the image to browse through captured images.
3. Press **Browse Landmarks** and select a landmark from the drop-down list to see its detailed performance report.

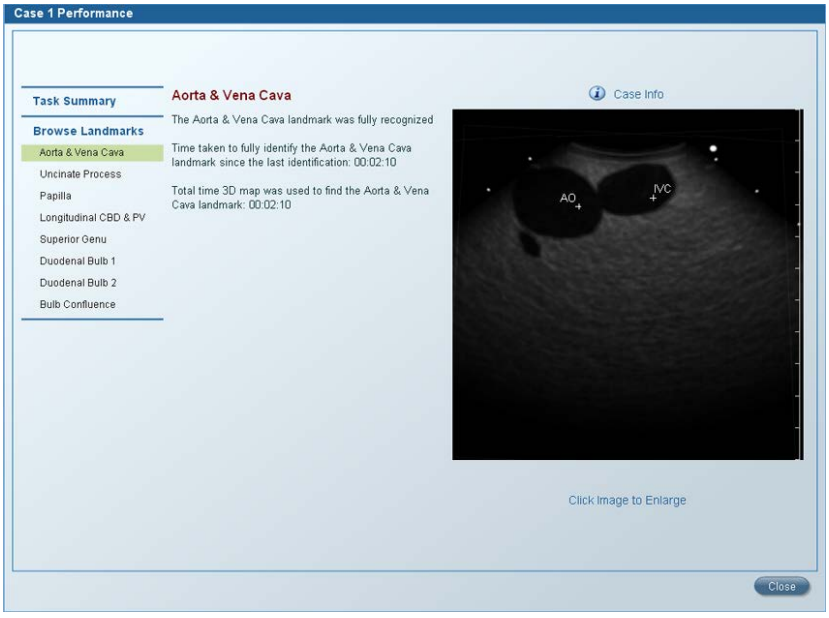


Figure 9-8: Detailed performance report of landmark

Details regarding the completeness of capturing and labeling the landmark are displayed alongside the captured image. Click to enlarge the image.

Note: You can click **Case Info** to view the expected result for each landmark.

4. Click **Close** to return to the Report page.

Exporting Data

Performance results can be exported to a file. The data is saved as CSV (comma separated values) file, which can be viewed using Microsoft Excel or Access.

To export data:

1. Select the **Users & Groups** tab. The **Users & Groups** page is displayed.

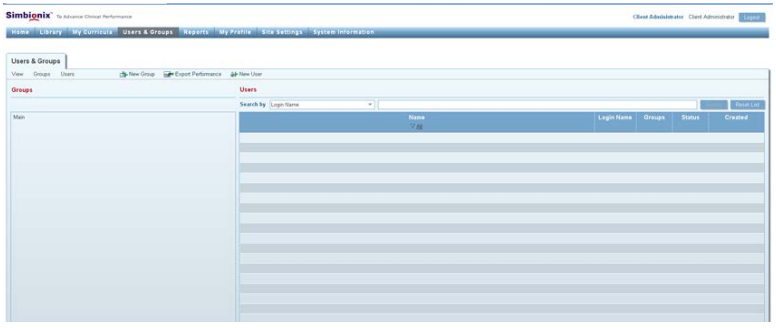


Figure 9-9: Users & Groups page

OR

Select the **Reports** tab. The **Reports** page is displayed.

Select the reports you want to export.

2. Click the **Export Performance** button.

The **Export Performance** dialog box is displayed.

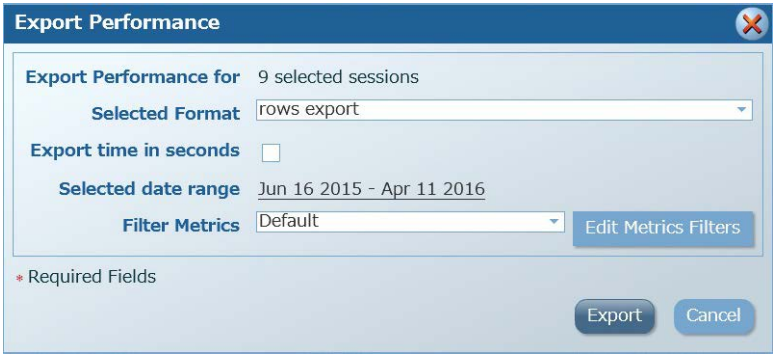


Figure 9-10: Export Performance dialog box

3. Click **Export**.

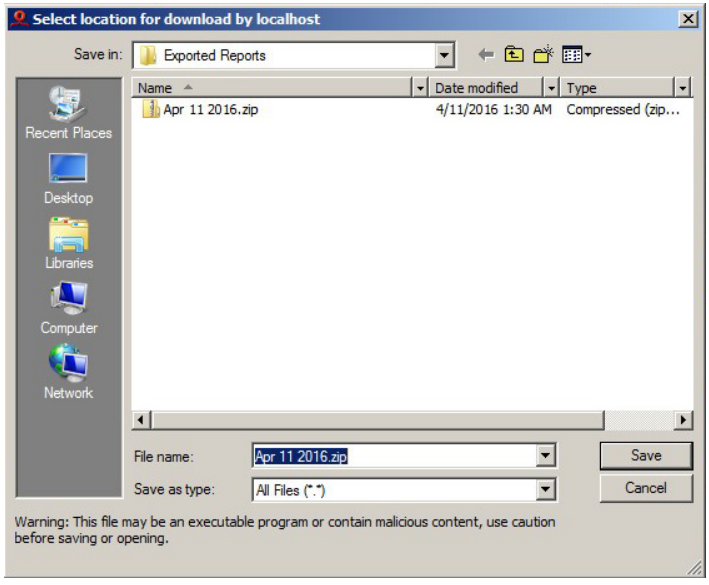


Figure 9-11: Select file location for export

4. Browse to select the file location where you want the files to be exported.

Note: The file name of all the reports for the selected group is already entered in the **File Name** box.

5. Click **Save**.

All the reports for the group are exported to the selected location.

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