Hop Tips for Advanced Scenario Programming Workshop
Agenda

• Overview of Advanced Programming Tips
  1. Using Trends
  2. Setting time delays on Actions
  3. Frame Time
  4. Using Handlers
  5. Displaying alternate views on the Instructor Monitor and Patient Monitor
  6. Adding Comments
  7. Setting Trend Parameter Limits
  8. Using Parameter cutoffs as Event triggers
  9. Editing the Events Menu
  10. Patient Time

• Video Presentation

• Practice Hot Tips using SimMan Scenario Editor and GUI (Graphic User Interface)

• Debrief/ Summary
Case Study

The University of New York has a state of the art Simulation lab that is primarily dedicated to training Medical and Allied Health students. Dr. Davide is the director of the Center and is very passionate about Simulation and is always looking for new ways to instruct. The lab is managed by a SimTech, John who is responsible for everything from maintaining and running the simulators to scheduling groups to writing scenarios.

Dr. Davide has just returned from a SUN, Simulation User Network meeting, where he attended a session on “Hot Tips for Advanced Programming”. He is very excited and has numerous ideas that he wants to put into action.

Scene:

Dr. Davide enters the Sim Lab where John is working. He starts rambling out ideas for how they can redo an Asthma scenario they have. Dr. Davide has learned that there are at least 5 ways in which the programming can be improved. John is tasked with capturing these new ideas and putting them into the programming. He has written scenarios and programmed with the SimMan scenario editor. He feels his skills are good but could really use help to improve the quality of the programming.

Task:

Watch the video and write down what Dr. Davide wants added to the Asthma scenario. Try to think of what Advanced Programming tips may accomplish what is requested.
What does Dr. Davide want in his scenario?

What HOT TIPS may help John with his programming?

<table>
<thead>
<tr>
<th>Scenario Wants</th>
<th>Hot Tips</th>
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Trends permit SimMan and SimBaby to physiologically model a number of factors including:
- Heart rate
- Respiration rate
- SpO2
- Blood pressure
- CO2
- Other invasive measurements

Multiple factors may be included in a single Trend.

For example: you may create a Trend that lowers blood pressure and slightly increases pulse in response to a dose of sublingual Nitro.
Trends (continued)

- From the Scenario Editor, navigate your mouse to the Edit menu. A menu of items appears upon left-click.
- Select (left-click) Edit Trend.
- To create a new Trend, select the desired parameters by placing a checkmark in front of the option(s) and click OK.
- To open and edit an existing Trend, select Open.
- After selecting a new or existing Trend, the Trend Editor opens in a new window (see next page).
- Turn page for directions on editing Trends.
Trends (continued)

The Trend Editor opens with all values being relative to the patient’s physiologic state prior to starting the Trend. The bold horizontal line, currently valued at zero (0) deviations from the baseline parameter, may be increased or decreased to raise or lower the patient parameter.

To increase / decrease a value:
- Navigate cursor to bold horizontal line. Note cursor as it changes to a crosshair sign +
- Left-click (and hold) cursor on bold horizontal line. Note cursor as it changes to a finger.
- While holding left mouse, drag the line to desired position. The line may be dragged in any position. Release left mouse to set the Trend Point.
- After setting the Trend Point, note the Trend Value in the top right of screen.
- Repeat above steps for other parameters.
- When complete, select File\Save.
Trends (continued)

To insert trend into a frame:

1. Single left-click on the Trend Button from the list of Action Icons located in the left screen.

2. Single left-click in the Action Field of the Frame to open menu of Trends.

3. Select the appropriate Trend and click OK – this will insert the Trend into the Frame.
Trends (continued)

Exercise

Dr. Davide has an Asthma scenario and he wants the SimMan’s physiology to be programmed with a trend. The

Steps:

1. Open the SimMan Scenario Editor
2. Open the Trend Editor
3. Create a trend that includes: SpO2, RR, HR to run over 10 minutes
4. SpO2 will decrease by 10, RR will increase by 7, HR will increase by 10
5. Insert the trend in the Initial Frame

NOTE: You have this trend and 2 other trends on the jumpdrive (O2 Desaturation, Asthma desaturation worsening), Asthma recovery)
Setting Time Delays on Actions

Scenarios consist of one or more Frames that contain Actions. Actions provide direction to the simulator.

The Frame’s large upper field is known as the Actions Field.

Action Field.

Actions set the simulator’s vital signs, vocal sounds, physiological responses, and display of data on the patient monitor.

Most Actions start as soon as the Frame is activated. There are a few Actions which can have a Time Delay so that they start after the beginning of the frame.

For example, a Trend may be inserted into a Frame and you may choose to have a Time Delay so that it starts 1 minute after the start of the Frame.
There are other ways to control trends running in scenarios.
- You may offset the start time.
- The trend will not start immediately. It will only start after the designated time lapse.
You may also do this with other Actions eg. Media files
Setting Time Delays on Actions (continued)

Exercise

Dr. Davide wants the first trend to start after 1 minute.

Steps:
1. Choose the trend that will be inserted into the first frame
2. Set the time delay on the trend; the trend is not to start for 1 minute.
Frame Time

Scenarios consist of one or more **Frames** that contain **Actions** and **Events**.

**Frame Time** is an event that is used primarily as a triggering event. That is, Frame time allows you to control how long a scenario will stay in one Frame before progressing to another Frame. **Add Actions to Frames:**

- Single left-click on the desired Action. Choose Action from the appropriate list of Action Icons located in the left screen.

- Single left-click in the Action Field of the Frame to place the selected Action.

**Reminder:** Actions include vital signs, physical findings, trends and event handlers
Frame Time (continued)

A dialogue box will appear that will allow you to choose either Patient Time or Frame Time

- IF you choose “Frame Time”, this starts a timer which counts up to the time you set
- In this example, the Frame Time (FT) is set for 10 minutes
- The frame will advance when the time reaches 10 minutes
Frame Time (continued)

Exercise

Dr. Davide wants the scenario to worsen after 10 minutes.

Steps:
1. Set the frame time in the Initial Frame.
2. Frame Time will equal 10 minutes
Handlers

Event Handlers enable Events to be linked to Actions, including:

✓ Vocal sounds.
✓ Changes in vital signs and physiologic **Trends**.
✓ Comments (inserted in debrief log).
✓ Display of images (X-rays, charts, etc.) on patient monitor.

Event Handlers may be used within a scenario to trigger actions, regardless of when the event occurs within the simulation.

- For example: You may create an Event Handler for a scenario that requires vocal sounds or physiological trends to play when a learner demonstrates a particular skill.

- Let’s say the learner is checking the patient’s I.D. bracelet against the chart. An Event contained in the Event Handler may be programmed play a vocal sound from the simulator that says, “Hello, my name is William.”

- An Event Handler may contain one or many independent events.
Handlers (continued)

The Handler may be used as a template for processes or events that occur frequently (history taking, medication administration, airway management, etc.). Unlike Events that are contained in Frames, Events within a Handler may be triggered at any time regardless of when the event occurs during the simulation.

To create a new Handler:

- From the Scenario Editor, navigate your mouse to the Edit menu. A menu of items appears upon left-click.
- Select (left-click) Edit Handler
- The Handler Editor opens in a new window.
- Turn page for directions on editing Handlers.
Handlers (continued)

Editing the Handler:

- Left-click on the desired Event. Choose Events from the appropriate Event Icon located in the left-lower screen.
- Left-click in the Event Field of the Frame to place the selected Event.
- Choose the Action(s) that the Event will cause by left-clicking on the desired Action from the appropriate Action icon.
- Left-click inside the Action Field to place the desired Action.
- Repeat as desired. Additional Frames may be added as necessary.
- When complete, select File\Save then Exit from the Handler Editor.

**Note:** Roll cursor over an icon for a description of the Action or Event.
Handlers (continued)

Exercise

Dr. Davide wants an ABG to appear on the Patient monitor when the learners ask for it.

Steps:
1. Open the SimMan Scenario Editor
2. Open the Handler Editor
3. Create a Handler: Action = Review ABG, Event = Labs Available
   ABG.jpeg (this is on the jumpdrive) Immediate display
Displaying Alternate Views of the Instructor and the Patient Monitor

There are instances when you will want the Instructor Monitor and the Patient Monitor to have alternate views. In many instances you will not want the learners to have all Vital Sign parameters displayed however, you as an Instructor will need to have control over them so as to reflect changes in the Simulators physiology. One example of this is Blood Pressure. BP can be taken manually on SimMan.

From the SimMan GUI (Graphic User Interface) you can configure the profile so alternate views of the Instructor and Patient monitor will occur.
Displaying Alternate Views of the Instructor and the Patient Monitor (continued)

In the Configuration tool, you may choose if you would like the Instructor Monitor and the Patient Monitor to be identical or different

In this case the Instructor’s monitor would display different information (more information) than the Patient Monitor
Displaying Alternate Views of the Instructor and the Patient Monitor (continued)

Instructor Monitor

Patient Monitor
Displaying Alternate Views of the Instructor and the Patient Monitor (continued)

*Exercise*

Dr. Davide does not want the BP to be displayed on the Patient Monitor.

Steps:
1. Open the SimMan GUI
2. Configure a Patient Monitor so that it only displays the EKG and SpO2; save it with a unique name.
3. Configure the profile so that the Instructor Monitor and the Patient’s Monitor are not equal
4. Choose the Instructor Monitor
5. Choose the Patient Monitor that you have saved.
Adding Comments

Comments serve many purposes. They are primarily used to insert key information related to the scenario for teaching purposes. Comments show up in the Debrief Log.

Comments can be inserted in three different ways.

1. They may be inserted into the Scenario Editor.
2. They may be inserted into the debrief log “on-the-fly” as the scenario is running
3. They may be inserted into the Debrief File.

Inserting Comments into the Scenario Editor

These comments will show up on the Debrief log.

- Left Click On Exclamation Point Icon under the Action Tabs in the scenario editor.
- Then Left Click in the action area of the frame where you would like to place a comment.
Adding Comments (continued)

This comment was automatically inserted into the debrief log from the programming. Having comments in the scenario programming is useful for teaching.

**Inserting Comments “On-the-Fly”**

There may be times when the Instructor running the simulation wants to make a comment about something in the scenario. It may be a simple notation about something that was seen and needs to be addressed during the debrief.

From the Debrief Log on the GUI select the exclamation icon.
Adding Comments (continued)

A comment box will open up that will allow you to type a comment.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00</td>
<td>Scenario started: &quot;Healthy patient&quot;</td>
</tr>
<tr>
<td>00:00:00</td>
<td>Summary of vital signs:</td>
</tr>
<tr>
<td>00:00:13</td>
<td>Simulation paused</td>
</tr>
<tr>
<td>00:00:13</td>
<td>Simulation resumed</td>
</tr>
<tr>
<td>00:01:00</td>
<td>Summary of vital signs:</td>
</tr>
<tr>
<td></td>
<td>awRR: 12, HR: 80, BP: 126/84, SpO2: 96</td>
</tr>
<tr>
<td>00:01:54</td>
<td>Learner broke sterile field.</td>
</tr>
</tbody>
</table>

The comment will be inserted into the Debrief log.
Adding Comments (continued)

Inserting Comments into the Debrief File

Instructors may choose to add comments after the scenario is completed into the Debrief File.

You may insert a comment anywhere in the debrief log.

- Highlight any line that you would like to make a comment about
- Right click and a comment box will appear
- Type the comment
- You may also tag the comment as to the “Comment Type”
- The comment will be inserted into the Debrief ing file
Setting Trend Parameter Limits

Trend Parameter Limits allow for control over trends. This is an Action. A generic Hypoxia trend may be written so that it lowers the SpO2 20 points and increased the RR 15 points over 10 minutes. You can use this trend in a scenario and control the parameter values by setting the Parameter Limits.

- A dialogue box will open allowing you to set the limits for the maximum and minimum values each parameter in a trend may reach.
- The limits you set are reflected in the scenario editor.
- NOTE: No matter how a trend is designed to run you create control over specific scenarios by editing the “Trend Parameter Limits”. This will allow you to use a generic trend in more than one scenario.
Using Parameter Cutoffs as Event Triggers

Utilizing Parameter Cutoffs is another way to control a scenario that has a trend running. You may have a trend that starts with a respiratory rate of 24 and will continue to run until it reaches 32. However you may want to advance the scenarios intensity before the respiratory rate reaches this limit.

- Select the “Parameter Limit” icon and insert into an event lookout.
Using Parameter Cutoffs as Event Triggers (continued)

- Once you have selected the Parameter Limit Icon a dialogue box will appear that will allow you to set the cutoff limit.

- This frame will advance when the parameter (in this case, Resp. Rate) reaches the set cutoff; regardless of the running trend.

- The triggering event in this frame is "RR < 12"
Events

The term “Event” is used to describe a behavior demonstrated by the learner. For example, insertion of a peripheral IV is an event. The instructor may customize the default Event Menu by adding events that support their program goals.

- From the Scenario Editor, navigate your mouse to the Edit menu. A menu of items appears upon left-click.
- Select (left-click) Edit Event Menus...
- The Edit Menu opens in a new window.
- Right-click on a folder or free space to reveal options.
- Select (single left-click) Add Event to create a new event.
- Type the title of the event. Events are obtained from the Scenario Planning Checklist.
- When finished entering events, click Save as Default Menu.
- Click OK when asked, “Are you sure you want to replace the current default menu for all new scenarios and handlers?”

Then click Save.
Events (continued)

Customizing events is a great way to save time for an Instructor. A scenario should have no more than 10 – 15 events. There is not a lot of time to be checking off more events than this. The more time you spend looking for an event to check off is more time taken away from watching the scenario.

**Remember:** The computer does not have intelligence built into it’s programming to recognize a specific event. In other words, the software for the events does not know the difference between Albuterol and Inhaled Drug. Events only gain meaning when they are programmed to trigger a change.

So...a trick in customizing events is to make them generic. Choose events like Oxygen Therapy as opposed to O2 Cannula. This way you don’t have to have a specific event for every possible oxygen delivery method.

**TIP:** The Events menu is set-up into 3 lists. You do not have to use all 3 lists. Once again, the software does not recognize whether an event is an ABC event or a medication. You may choose to have only one list of events in a scenario.
Patient Time

Events are used to trigger progression of frames in scenarios. One event is “Time”. There are 2 choices; Patient Time or Frame Time.

- Click the Clock to choose Timed Events
- A dialogue box will appear that will allow you to choose either Patient Time or Frame Time
Define the Action “Patient Time” in Frame
- This time defines the amount of time you want for a participant to accomplish a set of events
- Define the event “Patient Time” in the frames Event Output
- In this example the patient time starts with 10 minutes. When 3 minutes have elapsed the frame will progress.

IF Patient Time reaches 7 minutes the frame will progress to Frame 2
- The Patient time will continue to count down while in Frame 2
Patient Time (continued)

- The Patient Time is reflected during the scenario