

# Smartsims Accessibility and Assistive Technology Guide

For MikesBikes – Introduction to Business, Music2Go Marketing, AdSim Advertising

Revision A



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## Smartsims Accessibility and Assistive Technology Guide Introduction

This guide explains the accessibility features in our Business Simulations that are helpful for users with visual, hearing, or mobility impairments and how these interact with assistive technologies such as screen readers and pointing devices.

If you require assistance with a screen reader such as JAWS or NVDA, then [jump to the screen reader section below](#).

Smartsims provides Business Simulations which run in a web-browser and are used for teaching in tertiary or higher education courses.

These are 'period' or 'turn' based simulations where you make decisions for an entire year, and then the simulation performs a 'rollover' to calculate the results of your decisions. You will then analyze the reports to see how well your company performed, make new decisions, and then the simulation rolls over again.

### Smartsims Support Team provides extra support for people with disabilities

If you have a physical or learning disability and require additional assistance with your business simulation, then please email the Smartsims Support Team [help@smartsims.com](mailto:help@smartsims.com)

Our team will find out what sort of assistance you require and help you understand how to use your simulation, or just be there to answer any questions you may have. We can also arrange a phone call to answer your questions if that is easier for you.

### Hearing Impairments / Disabilities

There are no sound effects or music used by the simulations.

However, the simulations have Product Support / Tutorial videos which demonstrate and describe different aspects of using the simulation. Each of these videos has English language closed captions which may be activated by pressing the letter C while the video is playing, or by clicking on the CC icon on the video player.

Each simulation also has a Player's Manual PDF which explains how to use the simulation.

### Mobility Impairments / Disabilities

Some people have difficulty using a mouse and find it easier to use a keyboard to navigate. All our simulations can be operated solely via the keyboard without using a mouse.

This also allows users with more specific requirements such as speech recognition, eye-tracking technology, or mouth / head pointer technology to operate the simulation because these usually work by sending a combination of keyboard and mouse navigation commands to the web browser. So, if you can normally use your chosen pointing device to navigate a webpage, then you will be able to use it with our simulations.

Some users may prefer to use a touch-based device such as a tablet or mobile phone. We recommend a full-size tablet of 10 to 12 inches for the best experience. However, our simulations also work on smaller mobile devices.

There are no time sensitive operations in our simulations. So, you can take as much time as you like to navigate the simulation and update your decisions.

## Visual Impairments / Disabilities – Zoom, Contrast, and Screen Readers

Visual impairments include blindness, low level vision, and color blindness.

Users with very low levels of vision or total blindness will likely require a screen reader such as JAWS or NVDA. If you require assistance to use a screen reader with your simulation, then [jump to the screen reader section below](#).

Accurate perception of color is not required to use our simulations. All screen controls have text labels. Pie and Line Charts in reports are followed by a data table containing the data used to draw the chart.

We have an optional higher contrast color scheme that we can activate for individual users which increases the contrast between the text and background colors and provides a more obvious indication of the current keyboard focus location.

Users who prefer larger text can use their web browser zoom feature to increase the text size:

- Ctrl + increases the zoom level
- Ctrl – decreases the zoom level
- Ctrl 0 sets zoom level back to 100%

Our responsive layout will reflow the screen to fit the enlarged content. Note that this works best on a larger screen. So, if your screen is too small or you increase the zoom too far then our responsive design may render the page in the 'Mobile' view with a single 'Hamburger' style menu at the top of the screen.

You may also use a third-party magnification application such as ZoomText to highlight and enlarge parts of the screen display and to read out portions of the screen.

The simulations have Product Support / Tutorial videos which demonstrate and describe different aspects of using the simulation. The audio in these videos describes the action being taken on screen, so these may still be of benefit to users who cannot see the video images.

## Using a Screen Reader with a Smartsims Business Simulation

This section explains how screen readers interact with our simulations and summarizes some useful keyboard shortcuts and techniques for the JAWS and NVDA screen readers.

Our simulations are web-based applications that run in your web browser. So, your screen reader can navigate the applications in the same way you would navigate a webpage, and all the application features are accessible by using a keyboard. As you navigate your way around the application, the screen reader will announce the menus and decision form controls and will read out any reports, help topics, or popup windows that you open.

- [Jump to Application Keyboard Shortcut Summary](#)
- [Jump to JAWS Keyboard Shortcut Summary](#)
- [Jump to NVDA Keyboard Shortcut Summary](#)

### Menu, Navigation, and Help Systems

This section summarizes the keyboard commands for the main menu navigation and help systems.

#### Top Menu Navigation Bar

The application always has a menu bar at the top of the window which lets you access the different parts of the application. Your screen reader will announce this as a Menu or Menu Bar and it will read out the currently selected menu item as you move through it.

- Use the Left / Right cursor keys to move left and right through the Top Menu Navigation Bar options
- Use the Enter or Space key to select the current top menu option and load that screen. If the current top menu option contains a submenu, then this will open the submenu.
- Use the Up / Down cursor keys to navigate through the submenu options
- Use the Enter or Space key to select the current submenu option
- Esc key will close an open submenu and return you to the Top Menu Navigation Bar
- Ctrl + M will perform a quick jump back to the Top Menu Navigation Bar from anywhere else in the application, or you can press the TAB key until you return to the Top Menu.

#### Left Menu Tab List

All screens apart from the Home Screen have a Left Menu containing sub tasks for that screen. Once you have selected a menu option from the Top Menu, the Left Menu will reload, and the browser focus will shift to the Left Menu.

This left menu contains a Tab List. You change the selected Tab by using the up / down cursor keys. Each time you change the selected tab, the screen content will reload, and your screen reader will read out a description of the currently displayed tab content.

Use the TAB Key on the keyboard to move from the Left Menu to the currently displayed Tab content.

## Mobile / Hamburger Menu

You may be presented with a Mobile or Hamburger style menu button instead of the Top Menu and Left Menu if you use our simulations on a mobile device, on a smaller laptop or tablet screen, or if you significantly increase your browser zoom level.

The Mobile Menu combines the Top Menu and Left Menu into a single deeper menu system which contains all the available screen choices.

- Use the space bar or enter key to open the Mobile Menu and display all the menu options
- Use the Up / Down cursor to move between the menu options
- Use the Right cursor key, space bar, or enter key to open a sub menu
- Use the Left cursor key or Esc key to close a sub menu level and return to the parent menu level
- Use the space bar or enter key to activate choose a menu option
- Ctrl + M will perform a quick jump back to the Mobile Menu button from anywhere else in the application, or you can press the TAB key until you return to the Mobile Menu button.

## Popup Help with F A Q and Help Topic Search

Press the F1 key on your keyboard to open the popup help window for the current screen. Close the popup help window with the Esc key or by tabbing to the Close window button.

The help window has a list of frequently asked questions (F A Q) which change for each screen. Once the help window is open, use the TAB key to move between the available FAQ topics and use the space bar or enter key to open the FAQ topics.

There is also a search bar where you can search for help topics. Be aware that any help topics you find with the search will be opened in a new browser tab.

## Navigating by TAB Key

Use the TAB key on your keyboard to jump between items which can receive the browser focus like the Top Menu Navigation Bar, the Left Tab Menu, the decision screen form fields, and buttons.

Pressing the TAB key moves forwards through these items and pressing Shift + TAB moves backwards. Your screen reader will announce these controls as you move the browser focus around the screen.

Use the space bar or enter key to activate buttons like Report buttons, or the Undo Changes / Save buttons on the decision screens.

## Navigating by Heading

The JAWS and NVDA screen readers allow you to quickly jump around a webpage using the letter H key on your keyboard to jump to any headings on the page (you can go move backwards through the headings with Shift + H). This is a useful way of quickly navigating large amounts of text when you open a Report Window, but it is less useful on the decision screens.

## Navigating by Region / Landmark

The JAWS and NVDA screen readers allow you to quickly jump around the main regions of a webpage using the letter R key on your keyboard for JAWS, or the letter D on your keyboard for NVDA. This may help you find what you are looking for more quickly than just using the TAB key.

The Home page and the Decision screens are broken down into multiple regions including:

- Top Menu Navigation Bar
- Left Menu Tab List
- Mobile Menu
- Decision Form.  
A Decision Form is the region of a Decision Screen where you update / save your decisions.
- Live Forecast.  
The Live Forecast area updates every time you save a decision, and it gives you an estimate of what your Profit and Cash will be next year based on your current decisions.
- Key Results.  
Every decision screen has 2 or 3 important results which will help you make your decision.  
Examples: Market Average Price, Total Demand Last Year, Awareness Index, Market Average Awareness Index.
- Key Reports.  
Every decision screen has 3 or 4 Key Reports which contain the information to help you make your decision.

## JAWS Forms Mode vs Virtual Cursor and NVDA Focus Mode vs Browse Mode

You may find it easier to use our simulations if you understand the difference between JAWS Forms Mode and Virtual Cursor mode, or between NVDA Focus Mode and Browse Mode.

This is a difficult concept to explain, so hopefully you are already familiar with this. But the short summary is that JAWS and NVDA usually behave slightly differently when you move the focus to a data entry form or to the Top Menu Navigation Bar or Left Menu Tab List.

Screen readers like JAWS and NVDA provide lots of keyboard shortcuts and different ways of navigating the screen content to make it easier for you to quickly navigate a screen.

For instance, if you have a long webpage, it is useful to be able to quickly read out all the headings and subheadings on a page to look for relevant content and jump to it quickly. This is the standard JAWS Virtual Cursor mode or NVDA Browse mode and there are lots of keyboard shortcuts you can use like the H key to jump between headings, or the R / D key to jump between Regions, or the T key to jump to the next data table, or the up / down cursor keys for reading the next / previous line of text etc.

However, when you use the TAB key to move into a data entry form or a screen widget like a menu or tab list, then JAWS and NVDA automatically enter Focus / Forms mode. This passes all the keypresses through to the current screen control like a text field, or our Top Menu Navigation Bar, or our Left Menu Tab List etc. When this happens, you cannot use the JAWS / NVDA keyboard shortcuts to navigate the webpage, and the up / down cursor keys will operate the menu systems instead of reading the next /

previous line of text. JAWS and NVDA will also read out more detailed descriptions of the current screen control in Forms / Focus mode.

It possible for you to manually switch in and out of Forms / Focus mode in JAWS and NVDA. If the current browser focus is on a Form control like a text entry field, or on the Top Menu Navigation Bar or the Left Menu Tab List, then pressing the Enter key will switch to Forms / Focus mode in JAWS and NVDA, and pressing the Esc key will exit Forms / Focus mode. JAWS and NVDA usually play a short tone each time they switch modes.

Don't worry too much if you did not understand this explanation. The main thing to understand is that many of the JAWS and NVDA keyboard shortcuts do not work when you use the TAB key to move the browser focus to a data entry field, or to the Top Menu Navigation Bar or the Left Menu Tab List. So, if the Top Menu Navigation Bar or the Left Menu is not behaving quite like you expect, then try pressing the Enter key to force Forms / Focus mode in JAWS and NVDA. You will also hear more detailed descriptions of the current screen control when in Forms / Focus Mode than you will in Virtual Cursor / Browse Mode.

## [Decision Screens, Report Windows, and Other Screen Regions](#)

This section describes the main types of screens and regions in the simulation.

### [Decision Screens](#)

The decisions in our simulations are usually grouped into functional areas like Marketing, Operations, and Finance. Each Decision screen allows you to make a small set of decisions for one of these areas.

See the [Top Menu Navigation Bar](#) and [Left Menu Tab List](#) sections above for more information about how to navigate to each decision screen.

For instance, you might choose your Mountain Bike product from the Marketing Menu in the Top Menu Navigation Bar, and you will then have three choices in the Left Menu Tab List: Pricing & Production, Advertising, and Development.

JAWS and NVDA will announce the current Left Menu option as you use the up / down cursor keys, and it will sound something like this:

*“Left Menu Navigation. Mountain Bike. Tab Control. Pricing and Production Decision Screen. Enter your Retail Price, Sales Forecast, and number of Units to Produce. Tab. Selected.”*

Then press the TAB key to move across from the Left Menu Tab List to the Pricing & Production Decision Screen.

You will usually find that [JAWS and NVDA will automatically enter Forms / Focus mode](#) as required. You can use [Virtual Cursor / Browse Mode](#) to view the decision screens instead if you wish. But Forms / Focus mode works best for most screens because most form fields have some extra information embedded in the description of the form field which will not be read out in Virtual Cursor / Browse mode.



For instance, when you use the tab key to move to the Retail Price field on the Pricing and Production screen, JAWS and NVDA will announce something like the following in Forms / Focus Mode:

*"Retail Price (\$). Edit. Focused. Decision last year was \$700. Minimum price is \$400. Maximum price is \$1000. \$750. Type in Text"*

Each Decision Screen has an Undo Changes button and a Save Button.

Important - you must TAB to and activate the Save button to save your changes before leaving the decision screen. You can also press the enter key on the keyboard when the keyboard focus is inside the decision form to trigger the Save button. Note that the Save button will not be active unless you have changed something on the decision screen.

The Undo Changes button will discard any changes you have made on the current screen. You can press the Escape key on the keyboard to trigger the Undo Changes button (although the Undo Changes button will not be active unless you changed something on the decision screen). You may also have to press the Escape key twice because the first time you press it JAWS / NVDA may drop out of Forms mode, and you will need to press it a second time to cancel your changes.

You can also press [F1 to open the popup help window for each decision screen](#).

## Report Windows

Each decision screen has a Key Reports region that has Report buttons for 2 or 3 reports that contain information to help you make your decision. There is also a Reports option in the Top Menu Navigation Bar which contains all the Reports available in the simulation.

When you click on a Report button, a popup Report Window will open. Depending on the report, this may contain a combination of text, data tables, and chart images.

You can close a Report Window with the Esc key, or by tabbing to the Close Report Window button.

JAWS and NVDA will remain in [Virtual Cursor / Browse](#) mode by default while the Report Window is open.

You can use the Up / Down cursor keys to have JAWS and NVDA scroll through and read out the report. Note you will have to go past the buttons at the top of the page before you get to the report content.

We recommend using the H key to quickly jump between the headings in each report to preview what the report contains.

Many reports contain data tables. We recommend you use the [JAWS Table Keyboard Shortcuts](#) or [NVDA Table Keyboard Shortcuts](#) to navigate your way around the data tables as this will read out the Row and Column headers and make it easier to understand the information in the tables.

## Open Report in New Browser Tab Button

There are several buttons at the top of each Report Window. One of these is the 'Open Report in New Browser Tab' button.

This is very useful. One of the issues you will find with using a screen reader to navigate the simulation is that you often must refer to another report to find some information that you need. The Open Report in New Browser Tab button allows you to open the reports that you commonly use like the Market Summary report and Product Summary Report when you first launch to the simulation. You can then switch across to these browser tabs by using the web browser Ctrl + Page Up and Ctrl + Page Down commands without having to leave your current screen in the simulation.

## Chart Report Data Tables

The simulations have many graphical reports including line charts, pie charts, perceptual map etc. All Chart Reports have a data table underneath the chart graphic that gives the data points used to draw the chart. JAWS and NVDA will read these out so you can hear the information used to draw the chart.

## Live Forecast Region

The Live Forecast region gives you an estimate of what your Profit and Cash will be next year after the coming Rollover based on your current decisions. It is displayed on every decision screen, and it updates every time you save a decision.

This is a useful way of evaluating how well balanced your decisions are and catching obvious mistakes. But just be aware it is only as accurate as your product Sales Forecast decisions. If you sell a lot more or a lot less units than you expected, then your actual result after the rollover may be very different to the Live Forecast. The Live Forecast also does not take your competitors' actions into account.

When you TAB to the Live Forecast area, your screen reader will announce the current forecast Profit and Cash for next year. You can also press the space bar or enter key to open a short report showing more details.

## Popup Information Screens on first application Launch and after Rollovers

When you first launch your simulation, and after each rollover, you will be presented with a short sequence of popup screens telling you about important results or things to do this year.

- You can move forward / backwards through these screens by tabbing to the Next / Previous buttons.
- You can close these screens with the Esc key, or by tabbing to the Close button.
- JAWS and NVDA will announce and read out each screen automatically. You can also use the up / down cursor keys to have JAWS or NVDA read the text again one line at a time.
- If you want to view these screens again once you have closed them, then go to the Top Menu and use the left / right cursor keys until you reach the 'Alerts and Notifications' menu. Then press the space or enter key to reopen the most recent messages.

## Keyboard Shortcuts

This section summarizes the keyboard shortcuts that you can use to operate the simulations.

### Application Keyboard Shortcut Summary

Description	Key Command
Open Popup Help window with FAQs for screen	F1
Jump to Top Menu or Mobile Menu	CTRL + M
Move to the next screen control	TAB
Move to the previous screen control	SHIFT + TAB
Activate a button	Space bar or Enter
Close popup window	Esc
Top Menu Navigation bar move left and right through menu options	Left and Right Arrow
Top Menu Navigation bar move through submenu options	Up and Down Arrow
Top Menu Navigation bar choose menu option	Space bar or Enter
Left Menu Tab List move up and down through the tab options	Up and Down Arrow
Browser Back / History. Return to the previous screen.	Alt + Left Arrow
Move to Web Browser Address Bar	Alt + D
Move to Next Web Browser Tab	Ctrl + PageDown
Move to Previous Web Browser Tab	Ctrl + PageUp
Increase Browser Zoom Level	CTRL +
Decrease Browser Zoom Level	CTRL -
Return Browser Zoom Level to 100%	CTRL 0

### Support Video Keyboard Shortcuts

- C open / close captions menu
- Up / Down cursor keys increase / decrease volume
- Left / Right cursor keys move video backwards / forwards
- F to enter fullscreen and Esc to exit fullscreen

### JAWS Screen Reader Keyboard Shortcut Summary

This section summarizes some of the most useful application and JAWS keyboard shortcuts. Note that the JAWS key is usually the INSERT key, but you may have chosen to use a different key like CapsLock.

Description	Key Command
Read the currently focused browser control	JAWS + TAB
Read the current page title, or title of the currently open popup dialog	JAWS + T
Jump to Next Heading	H
Jump to Previous Heading	SHIFT + H
Jump to Next Region	R
Jump to Previous Region	SHIFT + R
Move to Next Web Browser Tab.	CTRL + TAB
Move to Previous Web Browser Tab	SHIFT + CTRL + TAB

<b>Description</b>	<b>Key Command</b>
Read the current web browser address bar	JAWS + A
Read previous line of text	Up Arrow
Read next line of text	Down Arrow
Read current line of text again	JAWS + Up Arrow
Read everything on the page from the current virtual cursor position	JAWS + Down Arrow
Enter Forms Mode	Enter
Exit Forms Mode and return to Virtual Cursor mode	Esc or Num Pad Plus
Search for JAWS command. This will open a window allowing you to search all of the available JAWS commands.	JAWS + Space Bar followed by the J key
Pass next keypress through to browser without JAWS intercepting it. This is useful if JAWS has overridden a key combination you need to use (like CTRL + F for browser find / search)	JAWS + 3
Toggle Speech Mode	JAWS + Space Bar followed by the S key
Say Active Cursor. This tells you if you are in JAWS Forms mode or Virtual Cursor mode.	ALT + DEL
Show Virtual HTML Features. This shows a list of all headings and form controls on the page.	JAWS + F3

#### JAWS Table Commands (useful for Report Windows)

The JAWS Table Commands are very useful for reading reports with large data tables because you can move through the table quickly, and JAWS will also announce the Row and Column headers to help you understand the information.

<b>Description</b>	<b>Key Command</b>
Move to Next Table	T
Move to Previous Table	SHIFT + T
Read the current table cell. This includes the current row and column header to provide extra context. Example JAWS output: "row 3 column 5 Net Profit Firm 3 \$1,200,000"	CTRL + ALT + NUM PAD 5
Move to and Read Next Cell	CTRL + ALT + RIGHT ARROW
Move to and Read Previous Cell	CTRL + ALT + LEFT ARROW
Move to and Read Cell Above	CTRL + ALT + UP ARROW
Move to and Read Cell Below	CTRL + ALT + DOWN ARROW
Move to and Read First Cell	CTRL + ALT + HOME
Move to and Read Last Cell	CTRL + ALT + END
Read from Beginning of Row to Current Cell	JAWS + SHIFT + HOME

## NVDA Screen Reader Keyboard Shortcut Summary

This section summarizes some of the most useful application and NVDA keyboard shortcuts. Note that the NVDA key is usually the CapsLock key, but you may have chosen to use a different key like INSERT.

Description	Key Command
Read the currently focused browser control	NVDA + TAB
Read the current page title	NVDA + T
Jump to Next Heading	H
Jump to Previous Heading	SHIFT + H
Jump to Next Region	D
Jump to Previous Region	SHIFT + D
Read previous line of text	Up Arrow
Read next line of text	Down Arrow
Read current line of text again	NVDA + Up Arrow
Read everything on the page from the current browse mode position	NVDA + Down Arrow
Enter Focus Mode	Enter
Exit Focus Mode and return to Browse mode	Esc
Toggle Focus Mode / Browse Mode	NVDA + Space
Stop Speech	CTRL
Pause or Resume Speech	SHIFT
Pass next keypress through to browser without NVDA intercepting it. This is useful if NVDA has overridden a key combination you need to use.	NVDA + F2
Toggle Speech Mode between Off / Beeps / Talk	NVDA + S
Show Elements List. This is a list of all links, headings, form fields, buttons, and landmarks (regions) on the page.	NVDA + F7
Increase Voice Speed	CTRL + NVDA + Up Arrow
Decrease Voice Speed	CTRL + NVDA + Down Arrow
Show Browse mode settings dialog. We like to untick the option titled 'Audio Indication of focus and browse modes'. When this is unticked, NVDA will announce "Focus Mode" or "Browse Mode" whenever it changes between modes instead of playing a short tone.	CTRL + NVDA + B

## NVDA Table Commands (useful for Report Windows)

The NVDA Table Commands are very useful for reading reports with large data tables because you can move through the table quickly, and NVDA will also announce the Row and Column headers to help you understand the information.

<b>Description</b>	<b>Key Command</b>
Move to Next Table	T
Move to Previous Table	SHIFT + T
Read the current table cell including the current row and column header to provide extra context. Example JAWS output: "row 3 column 5 Net Profit Firm 3 \$1,200,000"	NVDA + NUM PAD 5
Move to and Read Next Cell	CTRL + ALT + RIGHT ARROW
Move to and Read Previous Cell	CTRL + ALT + LEFT ARROW
Move to and Read Cell Above	CTRL + ALT + UP ARROW
Move to and Read Cell Below	CTRL + ALT + DOWN ARROW