

1.1 Tosca TBox Automation Tools

1.1.1 TBox Take Screenshot

This Module creates and saves a screenshot of the currently active screen.

The Module TBox Take Screenshot contains the following attributes:

ModuleAttribute	Description																								
Environment	This attribute defines whether a screenshot is taken by the desktop or the mobile device. If no value is entered,the screenshot is taken by the desktop. Possible values: empty, Desktop and Mobile																								
Directory	The path to the screenshot is specified under Directory. Defining this attribute is optional. If no path is specified, Tosca uses the storage path defined in the Settings dialog (TBox->Logging->Screenshots->Screenshot directory). The ActionMode Input is used here.																								
Filename	This attribute defines the screenshot name without an extension. The file format is defined via the setting TBox->Logging->Screenshots->Screenshot image format.																								
Sample Screenshot	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td><New TestCase></td><td></td><td></td><td></td></tr><tr><td>TBox Take Screenshot</td><td></td><td></td><td></td></tr><tr><td>Environment</td><td></td><td>Input</td><td>String</td></tr><tr><td>Directory</td><td>D:\Screenshots</td><td>Input</td><td>String</td></tr><tr><td>Filename</td><td>Test01</td><td>Input</td><td>String</td></tr></table>	Name	Value	ActionMode	DataType	<New TestCase>				TBox Take Screenshot				Environment		Input	String	Directory	D:\Screenshots	Input	String	Filename	Test01	Input	String
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Filename	Test01	Input	String																						

1.1.2 TBox Send Key

This Module allows keyboard commands to be sent to a window. The input is made on the respective control.

The Module contains two ModuleAttributes:

ModuleAttribute	Description
Caption	The caption of the window to be steered is entered under Caption. Tosca uses this caption to identify the window and to bring it to the foreground. Defining a caption is optional. The ActionMode Input is used. You can specify either a leading or trailing wildcard along with the Caption value.
Keys	This attribute specifies the value to be used for steering. The ActionMode Input is used here. Keyboard commands in curly brackets must be put between inverted commas.



In the example below a value is sent to the text editor **Example_Send_Key.txt** along with several keyboard commands.

Key combination	Description	Value (key)
Text	The value is written to the input field as a text.	This is an example text for Module TBox Send Key
Ctrl + A	This sends the command Select all to the window.	^(a)
Del	This sends the command Delete to the window.	"{DEL}"
Ctrl + S	This sends the command Save to the window.	^(s)
Alt + F4	This sends the command Close window to the window.	%"{F4}"













Sample Screenshot

Name	Value	ActionMode	DataType
TBox Send Keys			
TBox Send Keys			
Caption	Example*	Input	String
Keys	This is an example text for Module TBox Send Key	Input	String
TBox Send Keys			
Caption			String
Keys	^(a)	Input	String
TBox Send Keys			
Caption			String
Keys	"{DEL}"	Input	String
TBox Send Keys			
Caption			String
Keys	^(s)	Input	String
TBox Send Keys			
Caption			String
Keys	%"{F4}"	Input	String

1.1.3 TBox Window Operation

This Module is used to send specific commands to a window.



















The Module TBox Window Operation contains the following ModuleAttributes:

ModuleAttribute	Description																									
Caption	The caption of the window to be steered is entered under Caption. This caption serves to identify the window.																									
Operation	<p>The command to be used for steering the control.</p> <p>The following commands are supported:</p> <table><tr><th>Command</th><th>Description</th></tr><tr><td>Bring To Front</td><td>The selected window is put to the foreground.</td></tr><tr><td>Close</td><td>The selected window is closed.</td></tr><tr><td>Maximize</td><td>This maximizes the selected window.</td></tr><tr><td>Minimize</td><td>This minimizes the selected window.</td></tr><tr><td>Normal</td><td>The selected window is restored to its original size.</td></tr><tr><td>Verify Window Exists</td><td>The system verifies if a specific window is open.</td></tr><tr><td>Wait On Close</td><td>The system waits for a specific period until a window is closed.</td></tr><tr><td>Wait On Open</td><td>The system waits for a specific period until a window is opened.</td></tr></table>	Command	Description	Bring To Front	The selected window is put to the foreground.	Close	The selected window is closed.	Maximize	This maximizes the selected window.	Minimize	This minimizes the selected window.	Normal	The selected window is restored to its original size.	Verify Window Exists	The system verifies if a specific window is open.	Wait On Close	The system waits for a specific period until a window is closed.	Wait On Open	The system waits for a specific period until a window is opened.							
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Sample Screenshot	<table><tr><th>Name</th><th>ActionProperty</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td> TBox Window Operation</td><td></td><td></td><td></td><td></td></tr><tr><td> Caption</td><td></td><td>Test*</td><td>Input</td><td>String</td></tr><tr><td> Operation</td><td></td><td>Close</td><td>Input</td><td>String</td></tr><tr><td> Operation</td><td></td><td></td><td></td><td>String</td></tr></table>	Name	ActionProperty	Value	ActionMode	DataType	 TBox Window Operation					 Caption		Test*	Input	String	 Operation		Close	Input	String	 Operation				String
Name	ActionProperty	Value	ActionMode	DataType																						
 TBox Window Operation																										
 Caption		Test*	Input	String																						
 Operation		Close	Input	String																						
 Operation				String																						

1.1.4 TBox Set Buffer










This Module can be used to either create or verify buffer values.

The Module TBox Set Buffer contains the following attributes:

ModuleAttribute	Description																
Buffer	Name of the buffer. The ActionMode Input is used here.																
Value	The value to be buffered, or the value to be used for verifying the buffer value. The ActionModes Input or Verify are used here.																
Sample 1	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td> TBox Set Buffer</td><td></td><td></td><td></td></tr><tr><td> Buffer_1</td><td>I am a sample text</td><td>Input</td><td>String</td></tr><tr><td> <Buffername></td><td></td><td></td><td>String</td></tr></table>	Name	Value	ActionMode	DataType	 TBox Set Buffer				 Buffer_1	I am a sample text	Input	String	 <Buffername>			String
Name	Value	ActionMode	DataType														
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Sample 2	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td> TBox Set Buffer</td><td></td><td></td><td></td></tr><tr><td> Buffer_1</td><td>I am a sample text</td><td>Verify</td><td>String</td></tr><tr><td> <Buffername></td><td></td><td></td><td>String</td></tr></table>	Name	Value	ActionMode	DataType	 TBox Set Buffer				 Buffer_1	I am a sample text	Verify	String	 <Buffername>			String
Name	Value	ActionMode	DataType														
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 Buffer_1	I am a sample text	Verify	String														
 <Buffername>			String														

1.1.5 TBox Name To Buffer



















This Module allows the name of a TestCase that uses the Module to be used as a buffer value. The Module contains the following ModuleAttribute:

ModuleAttribute	1.1.6 Description																
Buffer	<p>Name of the buffer where the TestCase name should be saved as a value. If the specified buffer name does not yet exist, this is newly created. The ActionMode Input is used here.</p> <p>TBox Name To Buffer TestCases must be run via an ExecutionList in the Execution section since the scratchbook does not deliver the expected result.</p>																
Sample	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td> TBox Buffer Operations</td><td></td><td></td><td></td></tr><tr><td> TBox Name To Buffer</td><td></td><td></td><td></td></tr><tr><td> Buffer</td><td>Test01</td><td>Input</td><td>String</td></tr></table>	Name	Value	ActionMode	DataType	 TBox Buffer Operations				 TBox Name To Buffer				 Buffer	Test01	Input	String
Name	Value	ActionMode	DataType														
 TBox Buffer Operations																	
 TBox Name To Buffer																	
 Buffer	Test01	Input	String														

1.1.7 TBox Partial Buffer

This Module is used to either buffer or verify parts of a value.

The Module TBox Partial Buffer contains the following ModuleAttributes:

ModuleAttribute	Description																												
Buffer	Buffer name. The ActionMode Input is used here.																												
Value	Value to be buffered or verified. You can also read out the value of an existing buffer. The ActionModes Input or Verify are used here. If the values Buffer and Value are the only ones set, the functionality is similar to the one in the Module TBox Set Buffer.																												
Start	This indicates the character from which the system should start buffering or verifying the value. The ActionMode Input is used here																												
End	Indicates the character that should end the value to be buffered or verified. The ActionMode Input is used here.																												
Last	Indicates the number of characters to be buffered or verified, starting from the last character. If this value is set, the ModuleAttributes Start and End will be ignored. The ActionMode Input is used here.																												
Sample	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td colspan="4"> TBox Partial Buffer</td></tr><tr><td> Buffer</td><td>Partial_Buffer</td><td>Input</td><td>String</td></tr><tr><td> Value</td><td>{B[Buffer_1]}</td><td>Input</td><td>String</td></tr><tr><td> Start</td><td></td><td></td><td>Numeric</td></tr><tr><td> End</td><td>5</td><td>Input</td><td>Numeric</td></tr><tr><td> Last</td><td></td><td></td><td>Numeric</td></tr></table>	Name	Value	ActionMode	DataType	 TBox Partial Buffer				 Buffer	Partial_Buffer	Input	String	 Value	{B[Buffer_1]}	Input	String	 Start			Numeric	 End	5	Input	Numeric	 Last			Numeric
Name	Value	ActionMode	DataType																										
 TBox Partial Buffer																													
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 Value	{B[Buffer_1]}	Input	String																										
 Start			Numeric																										
 End	5	Input	Numeric																										
 Last			Numeric																										

1.1.8 TBox Start Program

This Module is used to open an application or an executable file that is stored in the Microsoft Windows® file system. The Module TBox Start Program contains the following attributes:

ModuleAttribute	Description																																
Path	Path to the application that should be opened. Environment variables can also be used. If the value contains an empty string, this must be put between inverted commas. The ActionMode Input is used here.																																
Directory	You can optionally define a working directory here for the program. The home directory of the registered user is used by default (C:\Documents and Settings<user name>). The ActionMode Input is used here.																																
Arguments	An application can optionally be started via arguments. The arguments are defined beneath this structural element by using the TestStepValue Argument. The ActionMode Select is used here.																																
Argument	You can define individual arguments here which should be used to open an application. The ActionMode Input is used here.																																
WaitforExit	Optionally you can define here whether the system should wait until the process is terminated. The value must be set to True. TestStepValues that are located beneath can be defined along with this TestStepValue. The ActionMode Select is used here.																																
StandardOutputFile	The path and the file name for a log file can be defined here (optional).																																
TimeoutForExit	Here you can define the maximum time to be waited until the process is terminated (optional).																																
ExitCode	The ExitCode of an application can optionally be verified here.																																
Sample 1	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>Data Type</th></tr><tr><td>TBox Start Program</td><td></td><td></td><td></td></tr><tr><td>Path</td><td>C:\Windows\notepad.exe</td><td>Input</td><td>String</td></tr><tr><td>Directory</td><td></td><td></td><td>String</td></tr><tr><td>Arguments</td><td></td><td></td><td>String</td></tr></table>	Name	Value	ActionMode	Data Type	TBox Start Program				Path	C:\Windows\notepad.exe	Input	String	Directory			String	Arguments			String												
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Sample 2	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>Data Type</th></tr><tr><td>TBox Start Program</td><td></td><td></td><td></td></tr><tr><td>Path</td><td>C:\Windows\notepad.exe</td><td>Input</td><td>String</td></tr><tr><td>Directory</td><td>C:\Temp</td><td>Input</td><td>String</td></tr><tr><td>Arguments</td><td></td><td>Select</td><td>String</td></tr><tr><td>Argument</td><td>D:\Test01.xml</td><td>Input</td><td>String</td></tr><tr><td>Argument</td><td></td><td></td><td>String</td></tr></table>	Name	Value	ActionMode	Data Type	TBox Start Program				Path	C:\Windows\notepad.exe	Input	String	Directory	C:\Temp	Input	String	Arguments		Select	String	Argument	D:\Test01.xml	Input	String	Argument			String				
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Sample 3	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>Data Type</th></tr><tr><td>TBox Start Program</td><td></td><td></td><td></td></tr><tr><td>Path</td><td>C:\Program Files\Internet Explorer\iexplore.exe</td><td>Input</td><td>String</td></tr><tr><td>Directory</td><td></td><td></td><td>String</td></tr><tr><td>Arguments</td><td></td><td>Select</td><td>String</td></tr><tr><td>Argument</td><td>-private</td><td>Input</td><td>String</td></tr><tr><td>Argument</td><td>www.friemba.com</td><td>Input</td><td>String</td></tr><tr><td>Argument</td><td></td><td></td><td>String</td></tr></table>	Name	Value	ActionMode	Data Type	TBox Start Program				Path	C:\Program Files\Internet Explorer\iexplore.exe	Input	String	Directory			String	Arguments		Select	String	Argument	-private	Input	String	Argument	www.friemba.com	Input	String	Argument			String
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Sample 4	<table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>Data Type</th></tr><tr><td>TBox Start Program</td><td></td><td></td><td></td></tr><tr><td>Path</td><td>%TRICENTIS_HOME%\TestCommander\TCS\test.exe</td><td>Input</td><td>String</td></tr><tr><td>WaitforExit</td><td>True</td><td>Select</td><td>String</td></tr><tr><td>StandardOutputFile</td><td>%TEMP%\test.txt</td><td>Input</td><td>String</td></tr><tr><td>ExitCode</td><td>0</td><td>Verify</td><td>String</td></tr></table>	Name	Value	ActionMode	Data Type	TBox Start Program				Path	%TRICENTIS_HOME%\TestCommander\TCS\test.exe	Input	String	WaitforExit	True	Select	String	StandardOutputFile	%TEMP%\test.txt	Input	String	ExitCode	0	Verify	String								
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WaitforExit	True	Select	String																														
StandardOutputFile	%TEMP%\test.txt	Input	String																														
ExitCode	0	Verify	String																														

1.1.9 TBox Start/Stop Timer







The Modules TBox Start Timer and TBox Stop Timer can be used to measure time. Both Modules must be used in a TestCase since the functionality does not exist across several TestCases.

Module	Description																																				
TBox Start Timer	<p>This Module starts time measurement. The Module TBox Start Timer contains the following attribute:</p> <table><tr><th>ModuleAttribute</th><th>Description</th></tr><tr><td>ID</td><td>Defines a name for a timer. Several timers of various names can be started and stopped in any order. The ActionMode Input is used here.</td></tr></table>	ModuleAttribute	Description	ID	Defines a name for a timer. Several timers of various names can be started and stopped in any order. The ActionMode Input is used here.																																
ModuleAttribute	Description																																				
ID	Defines a name for a timer. Several timers of various names can be started and stopped in any order. The ActionMode Input is used here.																																				
TBox Stop Timer	<p>This Module stops time measurement. The timing result can be seen in the Loginfo column of an ExecutionEntry, and the result is additionally buffered with the name of the timer.</p> <p>The Module TBox Stop Timer contains the following attributes:</p> <table><tr><th>ModuleAttribute</th><th>Description</th></tr><tr><td>ID</td><td>Specifies the name of the timer that should be stopped. The time measured from the point where the timer was started is saved. Several timers of various IDs can be started and stopped in any order. The ActionMode Input is used here.</td></tr><tr><td>Maximal Duration</td><td>This attribute can be optionally used to compare time measurements with the value entered here. The value is specified in milliseconds. The ActionMode Verify is used here.</td></tr></table>	ModuleAttribute	Description	ID	Specifies the name of the timer that should be stopped. The time measured from the point where the timer was started is saved. Several timers of various IDs can be started and stopped in any order. The ActionMode Input is used here.	Maximal Duration	This attribute can be optionally used to compare time measurements with the value entered here. The value is specified in milliseconds. The ActionMode Verify is used here.																														
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Maximal Duration	This attribute can be optionally used to compare time measurements with the value entered here. The value is specified in milliseconds. The ActionMode Verify is used here.																																				
Sample	<p>In the example, the timer SubProcess1 is started. When the time is being measured, Tosca verifies whether this process does not exceed the duration of one second.</p> <table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td>Timing</td><td></td><td></td><td></td></tr><tr><td> Timing</td><td></td><td></td><td></td></tr><tr><td> TBox Start Timer</td><td></td><td></td><td></td></tr><tr><td> ID</td><td>SubProcess1</td><td>Input</td><td>String</td></tr><tr><td> Perform subprocess 1 here</td><td></td><td></td><td></td></tr><tr><td> TBox Stop Timer</td><td></td><td></td><td></td></tr><tr><td> ID</td><td>SubProcess1</td><td>Input</td><td>String</td></tr><tr><td> Maximum Duration</td><td>1000</td><td>Verify</td><td>Numeric</td></tr></table>	Name	Value	ActionMode	DataType	Timing				Timing				TBox Start Timer				ID	SubProcess1	Input	String	Perform subprocess 1 here				TBox Stop Timer				ID	SubProcess1	Input	String	Maximum Duration	1000	Verify	Numeric
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TBox Stop Timer																																					
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Maximum Duration	1000	Verify	Numeric																																		

1.1.10 TBox Wait

During test execution, some TestCases require certain wait times or delays to be observed before continuing with the next TestStep. This Module allows wait times to be defined at any position in the TestCase.

The Module TBox Wait contains the following ModuleAttribute:

Module	Description												
Duration	The time to be waited between two TestSteps is indicated here in milliseconds. The ActionMode Input is used.												
Sample	<p>In this example, the system waits five seconds prior to continuing with the next TestStep.</p> <table><tr><th>Name</th><th>Value</th><th>ActionMode</th><th>DataType</th></tr><tr><td> TBox Wait</td><td></td><td></td><td></td></tr><tr><td> Duration</td><td>5000</td><td>Input</td><td>Numeric</td></tr></table>	Name	Value	ActionMode	DataType	 TBox Wait				 Duration	5000	Input	Numeric
Name	Value	ActionMode	DataType										
 TBox Wait													
 Duration	5000	Input	Numeric										

1.2 Useful Functions

1.2.1 Calc

Simple calculations are carried out in TOSCA as follows:

Syntax:{CALC[FIXED(CALC[<Operand 1><Operator><Operand 2>..<Operator><Operand n>])]}

The sequence in which the operations are processed follows the PEMDAS rule and can be modified with brackets.

If numbers with a thousands separator (digit grouping) are used, these must be placed between quotation marks (e.g. "1,234.56").

1.2.2 Random Number

TOSCA allows to use random numbers as test values.

Syntax: {RND[<x>]}

X lies between **1** and **32000** and indicates the number of digits of the random number.

Example: {RND[3]}

→ Generate random number between 100-999

1.2.3 SENDKEYS

SENDKEYS will simulate user's keyboard typing. Useful on

Syntax: {SENDKEYS[value]}

1.2.4 Random Text

It is possible to also enter a random text as test value.

Syntax: {RANDOMTEXT[<X>]}

X specifies the number of characters.

Example: {RANDOMTEXT[3]}

→ Generates any random 3 character text such as "abc", "kkc", "bcb", "ddd"

1.2.5 Dynamic Dates

This will generate date less than 5 years from today with dd/mm/yyyy standard toska format.

{DATETIME[[-5y]][dd.MM.yyyy]}

1.2.6 Int

Tolerances are sometimes set for calculation results within which the results are regarded as correct (e.g.: difference of rounding up or down for the calculation of insurance premiums). For this purpose value intervals can be indicated instead of precise values.

Value intervals can be entered as follows:

Syntax: <number>{INT[+/-<number>]}

DataType must be Numeric

Example:

123.6 {INT[+/-5]}

→ values ranges from 118.6 to 128.6 are valid

1.3 Object Identification and Steering

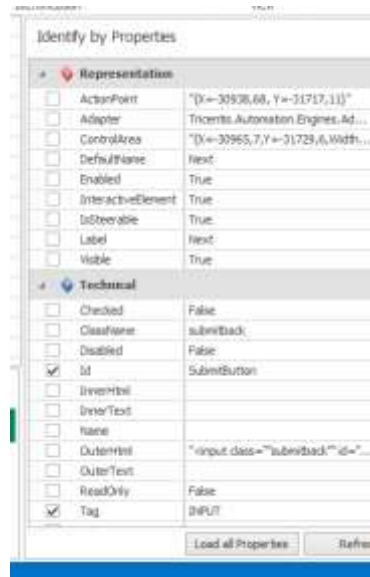
There are instances where the default scan setting cannot steer the control under test as the captured control property is either dynamic (property always change) or not unique. Option is to try one of the following identification criteria to steer controls:

1.3.1 Identify by Properties

This window contains all the technical information and properties of the selected control.



By clicking the Load all Properties button, all technical properties will be loaded for the selected control.



From the loaded properties, select the ones that will uniquely identify the object by checking and unchecking the preceding checkbox.

1.3.2 Identify by Index

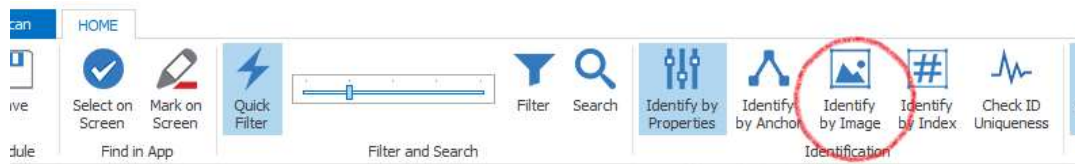
If a selected control does not have a unique ID, you can select an index to be used upon test execution to identify the control.



The index is calculated dynamically and on the basis of already selected identification criteria.

1.3.3 Identify by Image

Here, you can define an image to used for identifying controls.



Tosca is able to identify controls from an image by creating a screenshot for a specific control.

1.3.4 Identifying controls via anchors

In Tosca, you are able to use technical properties of controls in order to identify other controls, for instance if you copy a textbox Label to the Textbox. In this case, Tosca copies the identification criteria from the anchor control to the selected control.



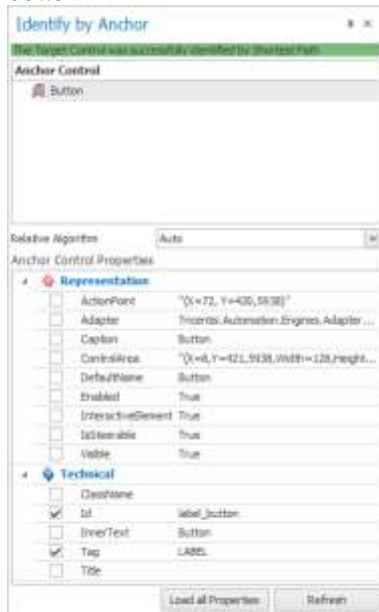
To use identify by anchor, follow steps below:

1. Scan the required test object by using Tosca XScan.
2. Open the Identify by Anchor window by clicking on the corresponding button in the HOME menu.



3. Select the control which should be identified.

4. Use drag and drop to move the control, whose identification criteria should be copied, to the Anchor Control field. The control is shown in this field as soon as you release the mouse button.



5. The Anchor Control Properties field shows the properties that were transferred along with the control.

1.3.5 Steering Parameter

1.3.5.1 ScrollingBehavior

ScrollingBehaviour allows you to define where the control should be positioned on the screen in order to steer it. This function is for instance used if the header of a page overlaps the control to be steered.

Valid values are:

- Top (standard)
- Bottom
- Center – Tosca drag the object/field being tested to the center of the screen. This solves the challenges on clicking a button which is located in the top or bottom of the page.

1.3.5.2 UserSimulation

Click events or keyboard commands can be triggered with the ActionMode Input.

Possible events:

- Selecting/Deselecting CheckBoxes and RadioButtons
- Pressing PushButtons
- Selecting links
- Entering text into TextBoxes

Valid values or examples:

- true
- false (default)

If the value of this property is True, an input can for instance be made, by clicking on a PushButton.