User Guide

Application Modeller Conversion Tool

Document Revision 1.4

Revision History

Date	Revision	Description
30/07/2020	1.2	First release to Digital Exchange (DX)
02/09/2020	1.3	v1.1, with Blue Prism v6.9 release support
16/04/2021	1.4	Add instructions to generate *Application Manager Operations.html* file using Blue Prism set in English language

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Introduction

The Blue Prism® Application Modeller Conversion Tool has been designed to allow quick conversion of application modeller elements and attributes. The principal audience for this utility is those wishing to convert Internet Explorer objects to Chrome, Firefox or Edge Chromium browsers, but it also has the scope to support customized conversions between other application modes.

Although there are not one-to-one conversions possible for all Internet Explorer elements and attributes, this conversion tool will convert most cases, providing consistency and time savings over performing the conversion manually.

The application requires:

- An *Application Manager Operations.html* file specific to your version of Blue Prism. Some files are available from the Digital Exchange but instructions on how to easily create this file yourself will be covered in this document.

- A *Conversion Rules* file. A conversion file for Blue Prism v6.3 to v6.8 can be downloaded from the Digital Exchange for conversion from Internet Explorer to any Chromium browser. This rules file makes no changes to UIA or AA elements and attributes.

- A Blue Prism object or release file.

The application will output a new object or release file for you to import into Blue Prism and optionally, a log files describing all changes that have been made.

Care must be taken when importing the new object or release file as the application does not make any attempt to alter Business Object internal IDs during conversion. This means that unless you direct Blue Prism to Assign new internal IDs *then the original object will be overwritten.*

Once imported into Blue Prism, amended stages will contain breakpoints allowing you to see the full scope of the change, aid regression testing and the output report provides a record of all changes that have been made.
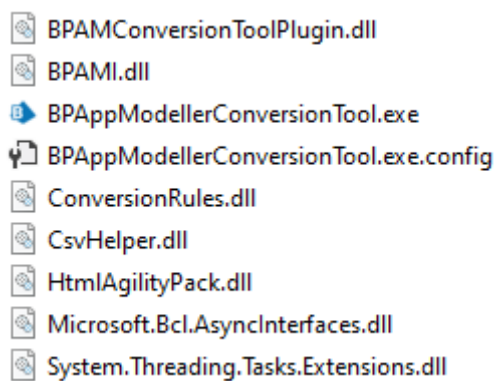
Installation and Setup

Pre-requisites

- 64bit Windows OS, Windows 7 or above

- .NET Framework v4.7.2

- Google Chrome browser installed on a machine where Blue Prism Interactive Client is deployed. Google Chrome is only needed to generate a version of *Application Manager Operations.html* file.

Application Setup

The application is distributed via a zip file called *BP_AM_Converter.zip*

Unpack the contents of the zip file to your chosen location.

```
BPAMConversionToolPlugin.dll
BPAMI.dll
BPAppModellerConversionTool.exe
BPAppModellerConversionTool.exe.config
ConversionRules.dll
CsvHelper.dll
HtmlAgilityPack.dll
Microsoft.Bcl.AsyncInterfaces.dll
System.Threading.Tasks.Extensions.dll
```

To start the Application Modeller Conversion Tool, click *BPAppModellerConversionTool.exe*

.NET Plugin Project

An optional .NET plugin project written in C# can be downloaded. Once compiled, the resultant DLL *BPAMConversionToolPlugin.dll* can be used to replace the file of the same name included in the tool. This plugin allows customised functions to be used in the conversion rules file.

Please follow the instructions as detailed in the plugin source code to determine the appropriate changes you may make there. Note that certain functions, for example, *SetPath*, are integral to the success of the conversion therefore should never be modified.

Conversion Process

Step 1: Load an "Application Manager Operations.html" File

The Application Manager Operations file contains a comprehensive list of all the actions, their attributes and element types that they work with for a specific version of Blue Prism. This file is required so that the conversion tool can convert for a specific version of Blue Prism.

> *It is important that an English version of the file is generated and subsequently feed into the conversion tool. This means Blue Prism must be launched using English language prior.*

If you do not already have an Application Manager Operations file for your version of Blue Prism please go to the end of this section to see how you can create your own file.

- Start *Blue Prism Application Modeller Conversion Tool* by double-clicking the executable "BPAppModellerConversionTool.exe".

- Click *Browse…* button as highlighted below
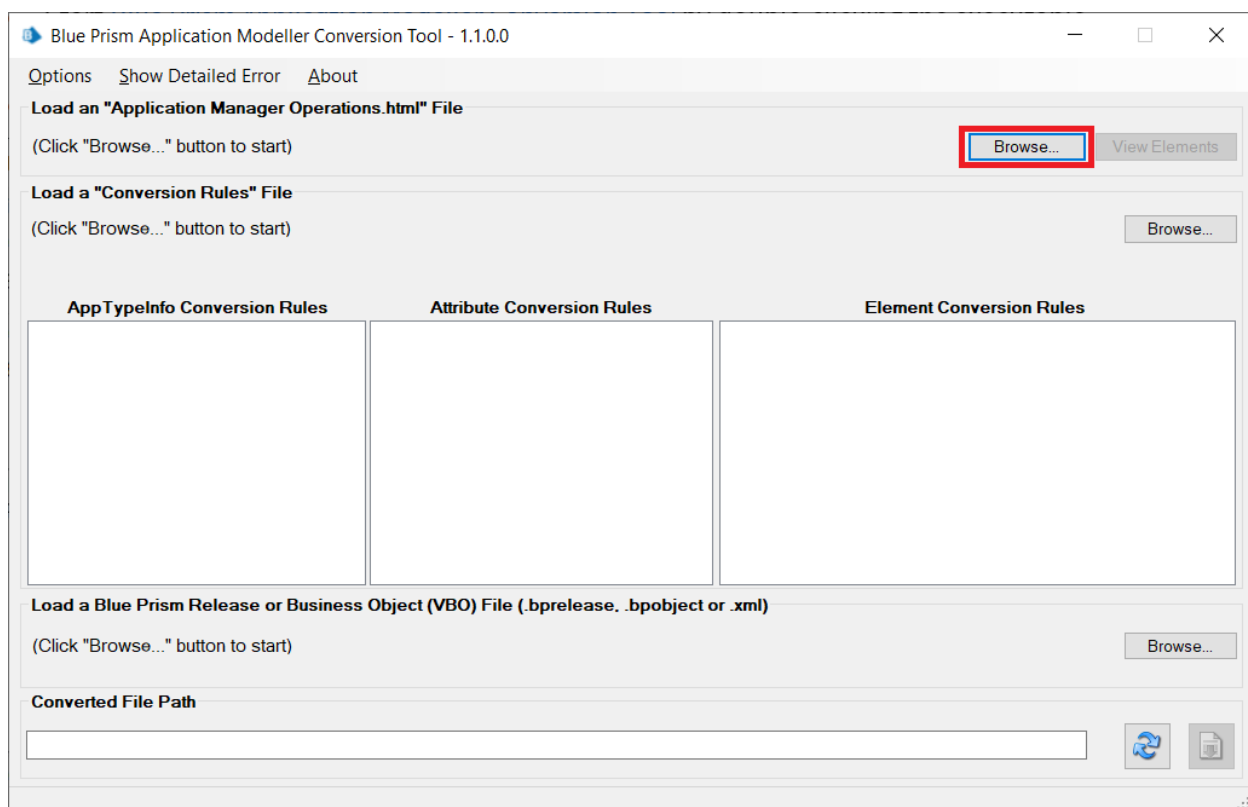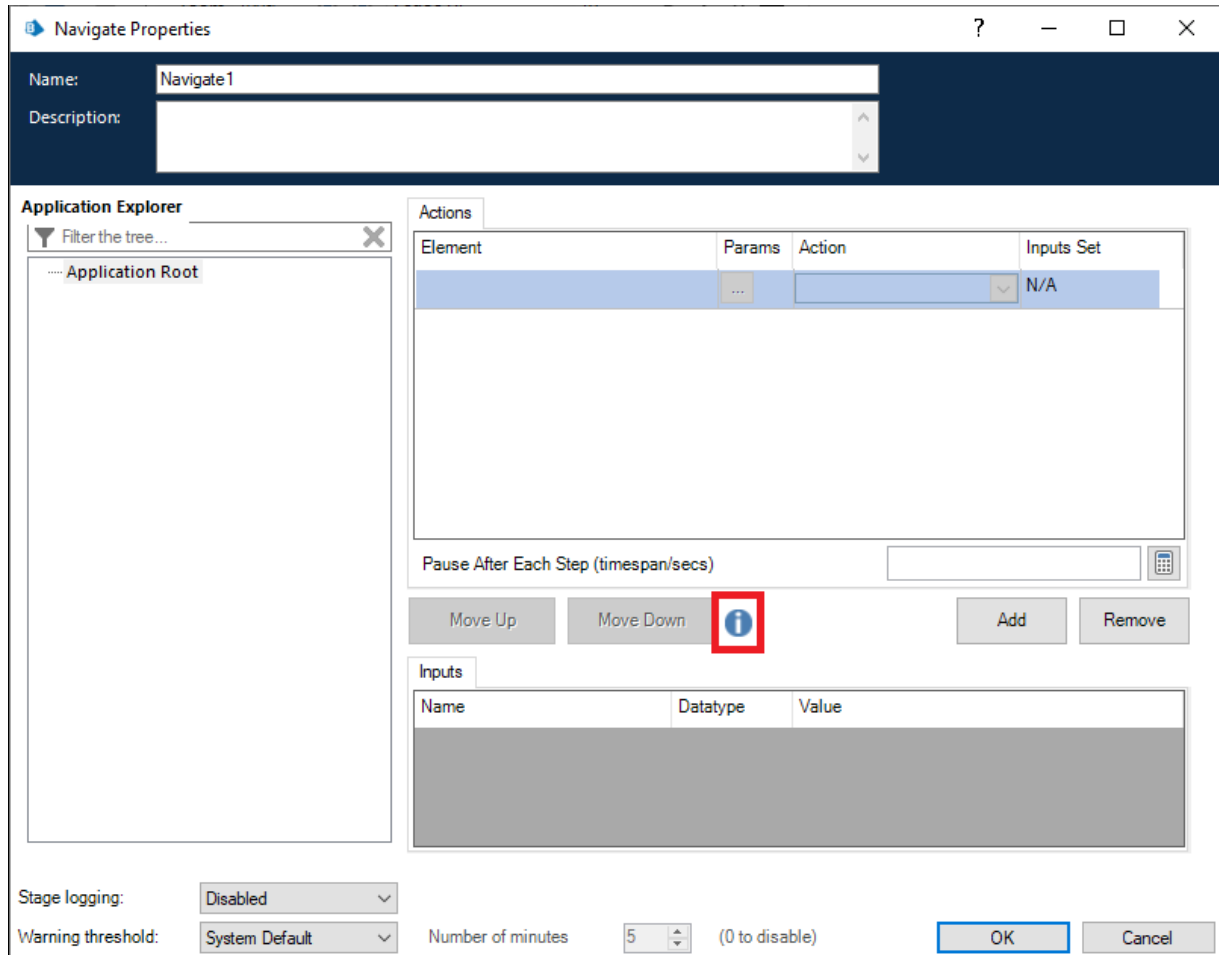
- Navigate to the "Application Manager Operations.html" file saved previously. Please note that the application only takes in a file with name *Application Manager Operations.html.*

- You should now see the full path to the file reflected to the left of the *Browse..* button.

- Optionally, you may click *View Elements* button to view the structure loaded from the file. If this button is not enabled then the file has not been imported correctly and is likely to be of an incorrect format.

How to Generate an "Application Manager Operations.html" File from Blue Prism

Please follow the steps below to generate your own "Application Manager Operations.html" file.

- Start your Blue Prism Interactive Client.

- Click *Studio* to arrive at the *Studio* screen with all accessible processes and objects presented in tree-like structures.

- If you do not have any existing object under the *Objects* tree, please create a new object now and give it a name.

- Open any existing object. Note that any changes made to the object will be discarded in the end.

- Add a *Navigate* stage onto any page and double click to open it. The following screen is shown:

- Click the blue round-shaped 🛈 icon as highlighted above.

- This will open your default browser loaded with a file titled "Application Manager Operations".

- If your browser opened is not Google Chrome, please start your Google Chrome while keeping the other browser open on the desktop.

- Copy the URL from your default browser to Google Chrome address bar and hit "Enter" key to load the page in Google Chrome. The URL should look similar like below:
  file:///C:/Users/{USER_NAME}/AppData/Roaming/Blue%20Prism%20Limited/Automate%20V3/Temp/AMI%20Documentation%20Version%206.6.0.15260-9.html

- Close your default browser but leave Google Chrome open.

- From Google Chrome, press Ctrl + S to bring up *Save As…* screen.

- Navigate to the folder you wish to save the file to.

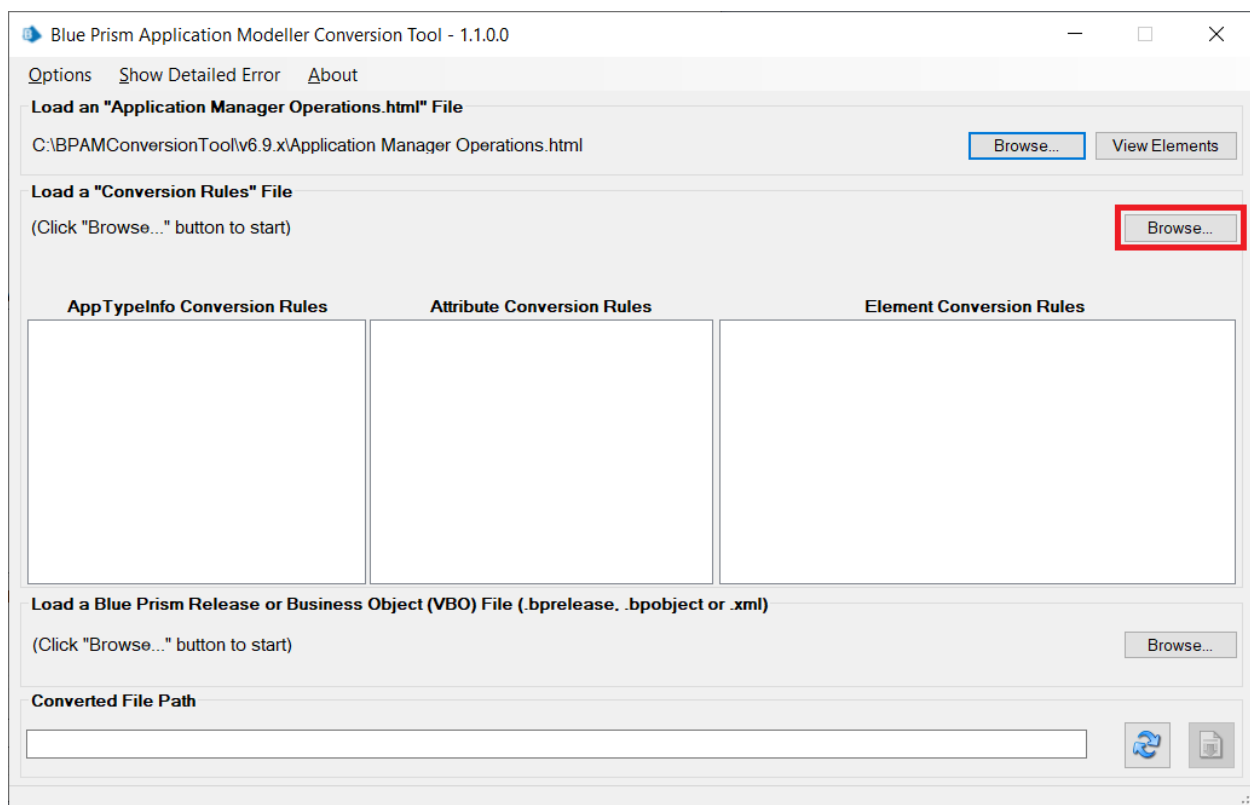- Make sure the "File name" is exactly as "Application Manager Operations.html".

- In the "Save as type…" dropdown, select **"Web Page, HTML Only (*.html;*.htm)"** option.

- Double check if you have "File name" and "Save as type" the same as shown below:

File name:	Application Manager Operations.html
Save as type:	Web Page, HTML Only (*.html;*.htm)

-

- Click *Save* button. This should result in a single HTML file saved to the destination, no associated folders.

- You may now close the object by discarding any changes made. If a new object is created to generate the file, you may delete the object as well.

- This should leave you with an HTML file that can be consumed by the application.

Step 2: Load a "Conversion Rules" File

- Click *Browse…* button as highlighted below. Please note that a *Conversion Rules* file cannot be loaded if an *Application Manager Operations.html* file has not already been loaded by the application.

- Navigate to a *Conversion Rules XML file*. It is possible to modify any Conversion Rules file to tweak the existing rules or create a new set of mapping between two application modes. Conversion rules files for converting Internet Explorer objects to Chrome or to Edge can be downloaded from the Blue Prism Digitial Exchange.

- You should now see the full path to the file reflected to the left of the *Browse..* button.

- Following information will be populated in the user interface

  o Internal name of the *Conversion Rules File*

  o Associated BP version

  o Object Name Suffix to Add

- o Three panes will be populated on the application, from left to right:

  - *AppTypeInfo Conversion Rules* from the loaded Conversion Rules file. This lists the conversion rules for the main application details in Application Modeller e.g. path to your browser, Window title, command line parameters,

  - *Attribute Conversion Rules* from the loaded Conversion Rules file. This lists all the changes that will be made during the conversion. New attributes are colored blue, changes colored black and deletions colored red.

  - *Element Conversion Rules* from the loaded Conversion Rules file. This list all the changes to the elements in Application Modeller.

Step 3: Load a Blue Prism Release or Object File

- Click *Browse…* button as highlighted below. You may select either a Blue Prism Release file (*.bprelease) or a Business Object (*.bpobject or *.xml) file to load into the application.
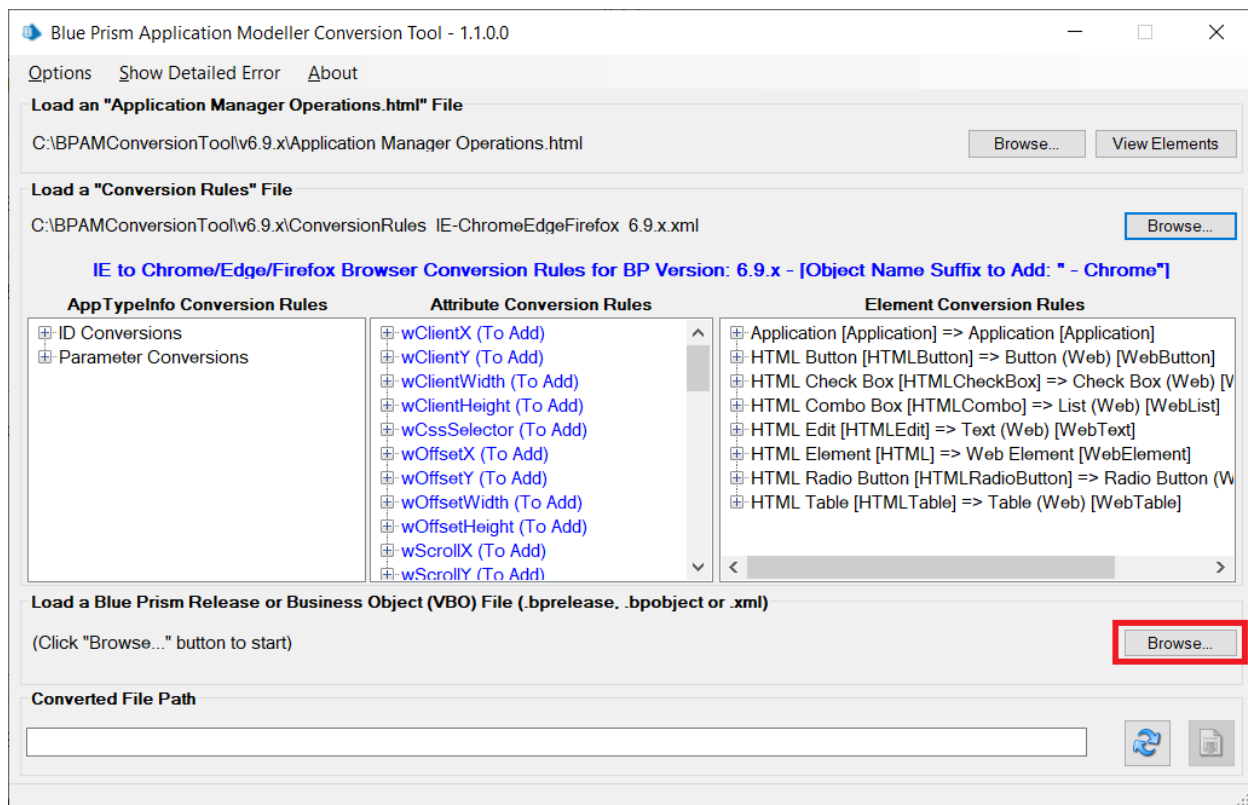
- You should now see the full path to the file reflected to the left of the *Browse..* button.

- *Converted File Path* is automatically populated with a converted file name, with a timestamp appended at the end of the file name but before the file extension. The file name can be altered if necessary. Once conversion is completed, the converted file will be saved into the file path as described there. Any existing file with the same name will be overwritten.

Step 4: Start Conversion

- Conversion is possible once a valid copy of all following three files are loaded into the application:

  - o Application Manager Operations.html

  - o Conversion Rules XML file

  - o Blue Prism Release (*.bprelease) or Business Object File (*.xml)

- Click the *Convert* button as highlighted below:
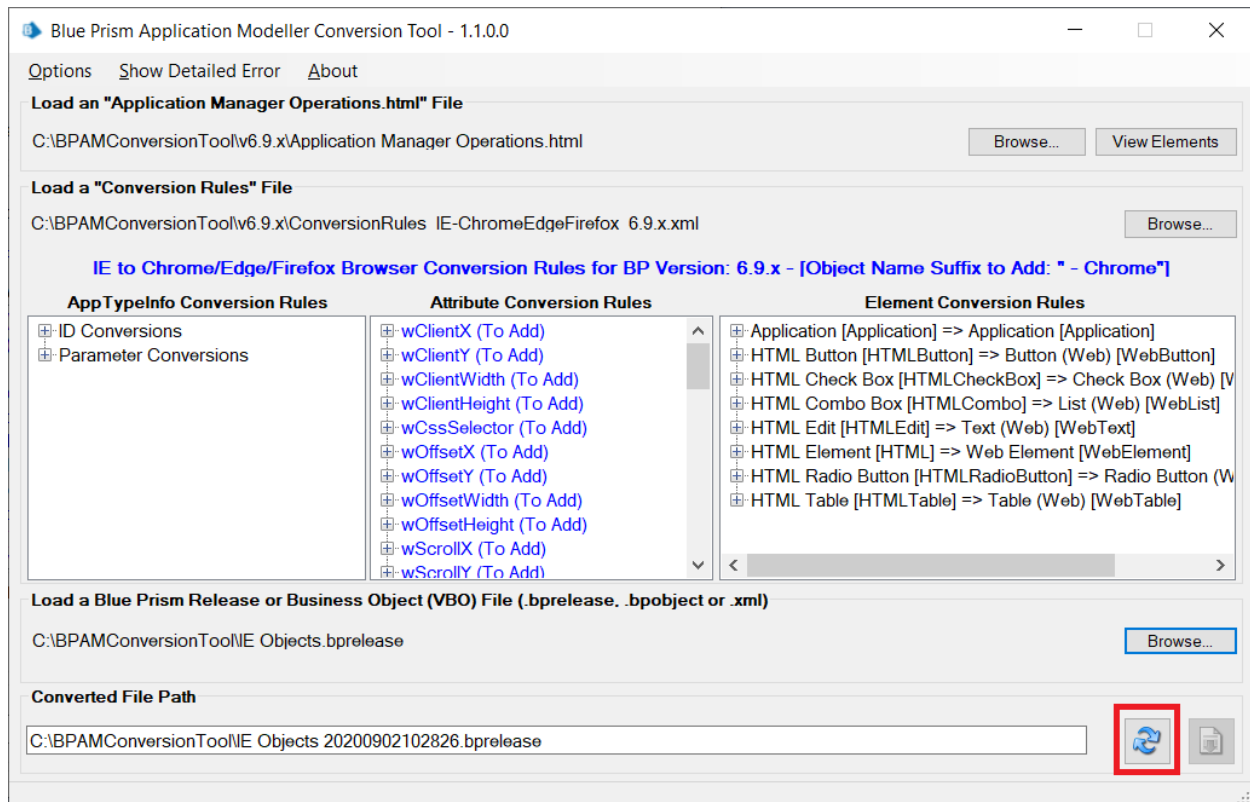
- A message should appear in the status bar at the bottom of the UI indicating the status of the conversion. The file will be saved into the *Converted File Path* textbox.

- To the right of the *Convert* button, a *Download Report* button will be activated when conversion is completed. It allows a conversion report in CSV format to be saved using the same file name and same destination folder as the converted release/object file.

Step 5: Import Converted BP Release or Business Object (VBO) File into Blue Prism

The application does not make any attempt to alter Business Object (VBO) internal IDs during conversion. This means upon reimporting the converted file to Blue Prism, existing objects are subject to be overwritten, even if they do not share the same object name.

If overwriting existing objects is not intended behaviour, please select *Assign a new internal ID to the incoming business object* option during importing process against every affected object, so that a new ID can be assigned to those objects, allowing objects before and after conversions to co-exist in the same Blue Prism environment.
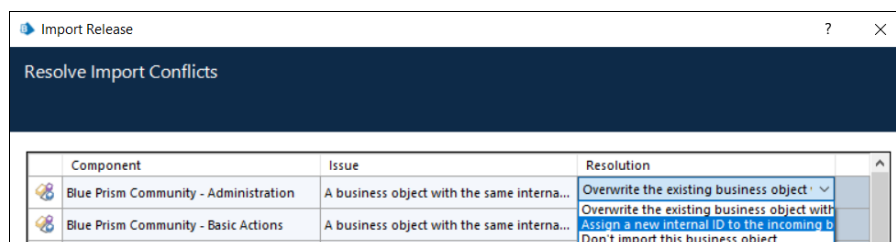
Step 6: Review the Conversion

Provided you have left the *Set Breakpoint on Stage Conversion* option checked, when you open your object you will see that all affected stages contain breakpoints. This will allow you to clearly see the impact of the changes and provide a useful aid in regression testing.

The *Operation* field in the Conversion Report will indicate where elements or attributes have been deleted, updated or added.

| Area	TargetObject	TargetObjectId	Operation	Severity	Details
Element	Attribute	Login - Button	Delete	Normal	'AncestorCount' is deleted
Element	Attribute	Login - Button	Delete	Warning	'Enabled' is deleted
Element	Attribute	Login - Button	Delete	Normal	'Checked' is deleted
Element	Attribute	Login - Button	Delete	Normal	'ScreenBounds' is deleted
Element	Attribute	Login - Button	Delete	Normal	'MatchReverse' is deleted
Element	Attribute.Name	Login - Button	Update	Normal	'X' is updated to 'wX'
Element	Attribute.Name	Login - Button	Update	Normal	'Y' is updated to 'wY'
Element	Attribute.Name	Login - Button	Update	Normal	'Width' is updated to 'wWidth'
Element	Attribute.Name	Login - Button	Update	Normal	'Height' is updated to 'wHeight'
Element	Attribute.Name	Login - Button	Update	Normal	'Path' is updated to 'wXPath'
Element	Attribute.Name	Login - Button	Update	Normal	'TagName' is updated to 'wElementType'
Element	Attribute.Name	Login - Button	Update	Normal	'ClassName' is updated to 'wClass'
Element	Attribute.Name	Login - Button	Update	Normal	'ID' is updated to 'wId'
Element	Attribute.Name	Login - Button	Update	Normal	'Link' is updated to 'wTargetAddress'
Element	Attribute.Name	Login - Button	Update	Normal	'InputType' is updated to 'wInputType'
Element	Attribute.Name	Login - Button	Update	Normal	'InputIdentifier2' is updated to 'wName'
Element	Attribute.Name	Login - Button	Update	Normal	'Value' is updated to 'wValue'
Element	Attribute.Name	Login - Button	Update	Normal	'pURL' is updated to 'wPageAddress'
Element	Attribute.Name	Login - Button	Update	Normal	'MatchIndex' is updated to 'MatchIndex'
Element	Attribute	Login - Button	Add	Normal	'wClientX' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wClientY' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wClientWidth' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wClientHeight' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wOffsetX' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wOffsetY' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wOffsetWidth' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wOffsetHeight' is added, [datatype=number], [value=0]
Element	Attribute	Login - Button	Add	Normal	'wScrollX' is added, [datatype=number], [value=0]

There is not always a one-to-one mapping of elements, attributes and associated actions and consequently you will need to provide manual fixes where these occur. For example, in Internet Explorer there is an action to *Navigate to URL*. This does not exist in Chrome. Hence, you will need to provide a workaround.

Filtering on the *Severity* field to display *Critical* items will direct you to the areas of your object that require immediate attention.

Area	TargetObject	TargetObjectId	Operation	Severity	Details
Stage	Action	Navigate to URL	None	Critical	'HTMLNavigate' is NOT processed due to lack of conversion rules
Stage	Condition	Wait for Page to Load	None	Critical	'DocumentLoaded' is NOT processed due to lack of conversion rules
Stage	Action	Navigate to URL	None	Critical	'HTMLNavigate' is NOT processed due to lack of conversion rules
Stage	Condition	Wait or Page to Load	None	Critical	'DocumentLoaded' is NOT processed due to lack of conversion rules
Stage	Action	Select PI	None	Critical	'SetChecked' is NOT processed due to lack of conversion rules
Stage	Action	Get Checkbox vaue	None	Critical	'GetHTMLIdentifier' is NOT processed due to lack of conversion rules
Stage	Action	Select Foundation	None	Critical	'SetChecked' is NOT processed due to lack of conversion rules

Application Options

Two options are currently available to the application via the *Options* tab.
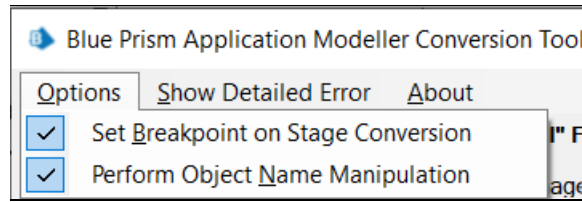
- *Set Breakpoint on Stage Conversion* This option adds a breakpoint to the relevant Blue Prism stage if a condition or action has been converted as part of the process. This forces user to review the stage in Studio post conversion.

- *Perform Object Name Manipulation* This option activates manipulation logic for object names, it can either invoke a customised function, or append suffix to object names post conversion completion. Relevant configurations are defined in the *Conversion Rules* file.

Configuration File

The following application keys are available in *BPAppModellerConversionTool.exe.config* file that ships with the application. They can be used to tailor the behaviour of the application, resulting in a smoother user experience. However, care should be taken in altering some of the keys as they may result in the application failing to work.

Key Name	Default	Description
ApplicationManagerOperationsHTMLFilePath	Empty	Full file path to "Application Manager Operations.html", to allow preloading of the file.
ConversionRulesFilePath	Empty	Full file path to "Conversion Rules", to allow preloading of the file.
SortElementsByName	False	If a list of elements loaded from "Application Manager Operations.html" file is sorted by element name.
SetBreakPointOnStageConversion	True	The default value to "Set Breakpoint on Stage Conversion" UI option.
PerformObjectNameManipulation	True	The default value to "Perform Object Name Manipulation" UI option.
LoadSourceBPFileUsingEncoding	utf-8	The encoding used to load the source BP release file or business object VBO. For a complete list of possible values, please refer to https://docs.microsoft.com/en-us/dotnet/api/system.text.encoding?view=netframework-4.7.2
XPathFromReleaseToObject	.//bpr:release/ bpr:contents/ object:object/ object:process	[DO NOT CHANGE OR DELETE UNLESS INSTRUCTED] XPath expression from BP Release to containing BP Object.

XPathProcessNamespacePrefix	process:	[DO NOT CHANGE OR DELETE UNLESS INSTRUCTED] XPath Process Namespace Prefix. Used in BP Release conversion.
BPReleaseNameSpace_bpr	Empty	[DO NOT CHANGE OR DELETE UNLESS INSTRUCTED] XPath Namespace mapping for **bpr** prefix. Used in BP Release conversion.
BPReleaseNameSpace_object	Empty	[DO NOT CHANGE OR DELETE UNLESS INSTRUCTED] XPath Namespace mapping for **object** prefix. Used in BP Release conversion.
BPReleaseNameSpace_process	Empty	[DO NOT CHANGE OR DELETE UNLESS INSTRUCTED] XPath Namespace mapping for **process** prefix. Used in BP Release conversion.

Troubleshooting

Error in loading "Application Manager Operations.html"

Possible Solution: have you generated the "Application Manager Operations.html" using "Web Page, HTML Only (*.html;*.htm)" option instead of "Web Page, Complete (*.html;*.htm) which is the default option offered by Chrome."

Error in loading "Blue Prism Release or Business Object (VBO) File".

Possible Solution: UTF-8 is used to read the BP file from file system. If you believe your file requires a different encoding, please adjust the value associated with the application key "LoadSourceBPFileUsingEncoding" accordingly to see if it helps. Details of the application key can be found in the "Appendix" section.

You are not certain about the nature of the error encountered, or that the error message itself is ambiguous.

Possible Solution: please use "Show Detailed Error" menu option to reveal detailed error message associated. It may provide insights into the real reason behind the error. At a minimum, detailed error message offers sufficient details for developer of the application to understand the error you have encountered.