

CTC Smart Client Generator

Version 1.0.6

ReadMe

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Prerequisites

The following software levels are required for the CTC Smart Client Generator version 1.0.4 and the generated user interface application.

Developer/Generate Workstation

Microsoft Software requirements:

- .NET 4.5.1 or higher
- IIS 8.0 or higher (see note below on IIS 7 Configuration)
- Visual Studio 2013, Visual Studio 2015, Visual Studio 2017, Visual Studio 2019 or Visual Studio 2022
 - Visual Studio 2013 requires .NET 4.5.1
 - Visual Studio 2015 requires .NET 4.5.1
 - Visual Studio 2017 requires .NET 4.7.2
 - Visual Studio 2019 requires .NET 4.8
 - Visual Studio 2022 requires .NET 4.8
- Internet Explorer 8 or higher

Open-Source Software requirements:

The following open-source libraries are included with the CTC Smart Client Generator as redistributable files.

- jQuery 3.5.0 (reference: <http://jquery.com/>)
- jQuery UI 1.12.1 (reference: <http://jqueryui.com/>)
- Knockout 3.4.1 (reference: <http://knockoutjs.com/>)

Unisys Software requirements:

- EAE 3.3 with CE IC 3240 or higher with support for VS2005 and .NET 2.0.
 - Users of EAE 3.3 IC3270 or later must be using CE5.0, CE 6.1, CE7.0 or CE8.0 with the CE .NET Generate Environment enabled.

or

- AB Suite 5.0 with CE 5.0

or

- AB Suite 6.1 with CE 6.1

or

- AB Suite 7.0 with CE 7.0

or

- AB Suite 7.0 with CE 8.0

Note: CE 5.0 requires .NET 4.5.1. This means Visual Studio 2013 with .NET 4.5.1 is required for projects generated with the CTC Smart Client Generator (see Upgrading to CE 5.0/AB Suite 5.0 below).

Note: CE 6.1 requires .NET 4.5.1. This means Visual Studio 2015 with .NET 4.5.1 is required for projects generated with the CTC Smart Client Generator (see Upgrading to CE 6.1/AB Suite 6.1 below).

CTC Software requirements:

- Users of EAE 3.3 IC 3260 or earlier must download and install the CTC Generate Gateway 1.0 software. The CTC Generate Gateway allows generators, such as the CTC generators, written in .NET and C# to be run from EAE Developer.

End User Client

The End User Client Machine requires an internet browser that supports HTML5 and JavaScript. The generated CTC Smart Client Runtime Application has been tested with the following browsers:

- Microsoft Internet Explorer 11
- Mozilla Firefox 10
- Google Chrome 79
- Microsoft Edge 89

The CTC Smart Client Runtime Application is based on a fat client architecture where most of the form processing occurs on the client side. Depending on the client machine configuration, some users may get a better experience with browsers such as Chrome and Edge than IE 11.

Install Instructions

Download the installation package CTCSmartClientGeneratorSetupV1.0.5.xxx.zip to your computer and save. Unzip and run the installation package and follow the instructions to install this release.

When generating a new bundle for the first time, all infrastructure files required will automatically be copied to the bundle views directory.

When upgrading from a previous version of the generator and local changes have been made to any of the generator infrastructure files, ensure you have a recent backup before installing the new version, as the generator infrastructure files may have changed.

When generating a bundle for the first time after upgrading to a newer version of the generator, all infrastructure files that have been changed since the last release, will automatically be copied to the bundle views directory. If local changes have been made to any of the infrastructure files of the bundle, ensure you have a recent backup before generating the bundle.

Administrator privileges are required for installing the software.

Depending on the anti-virus software being used, it may be necessary to disable the anti-virus software while installing the generator.

Uninstall Instructions

Uninstall this package from Control Panel/Add or Remove Programs, select "CTC Smart Client Generator 1.0.5" and follow the instructions.

If you have made changes to any of the infrastructure files or the sample Custom Controls project, ensure you have a recent backup of these files before you uninstall the CTC Smart Client Generator.

Getting Started

To start the generator, set up a bundle in EAE 3.3 or a folder in AB Suite for Component Enabler and specify "**CTCSmartClientGenerate.dll**" as the name of the generator. For further instructions on how to setup a bundle/folder for Component Enabler, refer to the **Component Enabler User Guide** or the **CTC Smart Client Generator** documentation.

When building the folder/bundle from the AB Suite Developer, it is recommended the 'Rebuild' option is always chosen, to ensure the configuration setting of the CTC Smart Client Generator takes effect on all specs in the folder/bundle.

When performing partial builds (i.e. using the Build option rather than the Rebuild option) from AB Suite Developer, certain methods on the User Interface generator are not invoked by the AB Suite build environment. This means the CTC Smart Generator is not able to automatically reset IIS and compile the generated solution. In this case, the MSBuildSolution.bat file, located in the views directory of the generated bundle, must be run manually.

When starting the generator for the first time, a dialog prompting for a License Key will open. Cut and paste the License Key exactly as received from CTC, into the dialog. The License Key can also be entered using the CTC Configurator.

To configure the generator, start the **CTC Configurator** from the desktop shortcut created during the installation of the generator, or from the Start Menu/All Programs/CTC Software/CTC Configurator 2.0.3.

To start the generated Smart User Interface Application, open the browser and enter the URL of the application. The URL which is created by default by the generator is:

[http://\[MachineName\]/\[ApplicationName\]_\[BundleName\]/default.aspx](http://[MachineName]/[ApplicationName]_[BundleName]/default.aspx) (i.e. http://localhost/Sample_Inquiry/default.aspx).

To request a License Key from CTC, start the CTC Configurator, navigate to 'Help/How To Obtain a License Key...' and follow the instructions.

When creating a new bundle, the generator defaults to the current installed Visual Studio version. This can be changed using the CTC Configurator to set the Visual Studio Version property to the appropriate value.

Upgrading to CE 5.0/AB Suite 5.0

Users with existing bundles must make the following configuration changes when upgrading to CE 5.0/AB Suite 5.0:

1. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2013'.

New bundles must be created for Visual Studio 2013 when using CE 5.0/AB Suite 5.0. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2013'.

Upgrading to CE 6.1/AB Suite 6.1

Users with existing bundles must make the following configuration changes when upgrading to CE6.1/AB Suite 6.1:

1. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2015'.

New bundles must be created for Visual Studio 2015 when using CE 6.0/AB Suite 6.0. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2015'.

Upgrading to CE 7.0/AB Suite 7.0

Users with existing bundles must make the following configuration changes when upgrading to CE7.0/AB Suite 7.0:

1. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2017'.

New bundles must be created for Visual Studio 2017 when using CE 7.0/AB Suite 7.0. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2017'.

Upgrading to CE 8.0/AB Suite 8.0

Users with existing bundles must make the following configuration changes when upgrading to CE8.0/AB Suite 8.0:

1. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2019'.

New bundles must be created for Visual Studio 2019 when using CE 8.0/AB Suite 8.0. Using the CTC Configurator, set option 'VisualStudioVersion' to 'VS2019'.

IIS Reset on AB Suite 4.0 or Higher

On AB Suite 4.0 or higher, when using Multithreaded builds, it is necessary to reset iis before starting a build of a CE bundle/folder. This is to avoid compile errors during the build of ispec model files that are in use by iis at the time of doing the build.

On multithreaded builds, the sequence of events during the build process are such that ispec model files are generated and compiled before the CTC Smart Client Generator is invoked and therefore before the CTC Smart Client option 'Reset IIS' is performed.

The work around for this is to either use single threaded generates with AB Suite or run the IISReset.bat file manually before starting the generate of the folder. IISReset.bat file is located in the Views folder of the generated output. With AB Suite 5.0 or higher the command line interface for starting builds can be used. An ABSuiteBundleRebuild.bat file is provided as an example of the command line interface. This bat file is located in the Views folder of the generated output.

Multiple Generates Issue on AB Suite 4.0 or Higher

When starting a generate process that include multiple bundles using different CE generators (such as CTCSmartClientGenerate and GenerateFormASPdotNET), the CE Generate Environment does not invoke the PostGenerate method on the CTCSmartClient generator. When this happens, the generated Smart Client project is not automatically build/compiled. To work around this issue, it is recommended to specify the MSBuildSolution.bat script in to the 'CE Post Build Script' property of the bundle. The MSBuildSolution.bat file is located in the views folder of the generated bundle.

Microsoft.WebApplication.targets not found issue

When generating a bundle from Visual Studio 2017 targeting a Visual Studio 2019 solution, the following error message may occur when the generate process runs the MSBUILD process of the generated VS 2019 solution:

"Microsoft.WebApplication.targets was not found"

The workaround is to copy the following folder with content:

C:\Program Files (x86)\Microsoft Visual Studio\2017\Professional\MSBuild\Microsoft\VisualStudio\v15.0\WebApplications
to:

C:\Program Files (x86)\Microsoft Visual Studio\2019\Professional\MSBuild\Microsoft\VisualStudio\v15.0\WebApplications

Downgrading to a Previous Version

When installing a previous/older version of the CTC Smart Client Generator, you must first uninstall the current version from 'Programs and Features' or 'Add/Remove Products' in the Control Panel.

Installed Files

The following directories and files are installed:

[CEROOT]

- Bin
 - CTCConfigurator.chm
 - CTCConfigurator.exe
 - CTCGeneratorConfig.xml
 - CTCSmartClientConfigurator.chm
 - CTCSmartClientConfigurator.dll
 - CTCSmartClientCustomControls.dll
 - CTCSmartClientGenerate.dll
 - CTCSmartClientInfrastructureFiles.xml
 - CTCSmartClientStandardControls.dll
 - CTCSmartClientStandardControls.xml
 - CTCSmartClientUserControls.dll
- CTC-Software
 - CTC Smart Client Generator
 - CustomControls
 - Properties
 - AssemblyInfo.cs
 - CalculatorControl.cs
 - ClearFieldsButtonControl.cs
 - CopyFromListControl.cs
 - CTCSmartClientCustomControls-VS2013.csproj
 - CTCSmartClientCustomControls-VS2015.csproj
 - CTCSmartClientCustomControls-VS2017.csproj
 - CTCSmartClientCustomControls-VS2019.csproj
 - CTCSmartClientCustomControls-VS2022.csproj
 - DataGridControl.cs
 - DatePickerControl.cs
 - HyperlinkControl.cs
 - InputMaskControl.cs
 - KendoChartControl.cs
 - KendoComboBoxControl.cs
 - MaintButtonsControl.cs
 - MaintComboBoxButtonsControl.cs
 - MaintListBoxButtonsControl.cs
 - MapPopupControl.cs
 - SliderControl.cs
 - CustomMetadata
 - CTCSmartClientCustomMetadata.snk
 - CTCSmartClientCustomMetadata-VS2013.csproj
 - CTCSmartClientCustomMetadata-VS2015.csproj
 - CTCSmartClientCustomMetadata-VS2017.csproj

- CTCSmartClientCustomMetadata-VS2019.csproj
- CTCSmartClientCustomMetadata-VS2022.csproj
- CustomMetadata.cs
- Documentation
 - CTC Smart Client Configurator.pdf
 - CTC Smart Client Generator License.pdf
 - CTC Smart Client Generator.pdf
 - CTC Smart Client Generator ReadMe.pdf
- UserControls
 - Properties
 - AssemblyInfo.cs
 - CTCSmartClientUserControls-VS2013.csproj
 - CTCSmartClientUserControls-VS2015.csproj
 - CTCSmartClientUserControls-VS2017.csproj
 - CTCSmartClientUserControls-VS2019.csproj
 - CTCSmartClientUserControls-VS2022.csproj
 - GenericUserControl.cs
- Views
 - Bin
 - CTCSmartClientServices.dll
 - CTCSmartClientServices.xml
 - SmartClientApplication
 - Fonts
 - FontAwesome.otf
 - fontawesome-webfont.eot
 - fontawesome-webfont.svg
 - fontawesome-webfont.ttf
 - fontawesome-webfont.woff
 - fontawesome-webfont.woff2
 - Images
 - Arrow-down.png
 - arrow-up.png
 - blank.gif
 - calculatorIcon.png
 - calendarIcon.gif
 - dashboard-icon.png
 - Icon16x16.ico
 - Icon48x48.png
 - mapPopupIcon.gif
 - ui-bg_glass_50_3baae3_1x400.png
 - ui-bg_highlight-soft_75_cccccc_1x100.png
 - waitIcon.gif
 - windowIcons.gif
 - windowLoading.gif
 - Popups
 - CommandConsole.html
 - CommandConsole.js
 - Language.html
 - Language.js
 - LoginForm.html
 - LoginForm.js
 - SelectIspec.html
 - SelectIspec.js

- SplashScreen.html
- SystemMessage.html
- SystemMessage.js
- TransactionError.html
- TransactionError.js
- Dashboard-Popups
 - AddDashboard.html
 - AddDashboard.js
 - AddDashboardItem.html
 - AddDashboard.js
 - DashboardLogin.html
 - DashboardLogin.js
 - EditDashboard.html
 - EditDashboard.js
 - EditDashboardItem.html
 - EditDashboardItem.js
- Properties
 - AssemblyInfo.cs
- Scripts
 - SmartClientExtendedRuntime
 - CTCSmartClient.IspecViewExtended.js
 - CTCSmartClient.List_Row.js
 - CTCSmartClient.MessageStrings.js
 - CTCSmartClient.ViewModelExtended.js
 - Build-MainUIApp-Script.bat
 - CTCSmartClientRuntime-min.js
 - emptyFile.js
 - jquery.calculator.min.js
 - jquery.history.v1.8b2.js
 - jquery.inputmask-3.1.53.bundle.min.js
 - jquery.window.min.js
 - jquery-3.5.0.js
 - jquery-ui-1.2.1.custom.min.js
 - knockout-3.4.1.js
 - MIT-License-jQuery.txt
 - MIT-License-jQueryUI.txt
- SmartClientViews
 - Lang
 - IspecView.custom.js
- Styles
 - Themes
 - Base
 - Images
 - ui-bg_flat_0_aaaaaa_40x100.png
 - ui-bg_flat_75_ffffff_40x100.png
 - ui-bg_glass_55_fbf9ee_1x400.png
 - ui-bg_glass_65_ffffff_1x400.png
 - ui-bg_glass_75_dadada_1x400.png
 - ui-bg_glass_75_e6e6e6_1x400.png
 - ui-bg_glass_95_fef1ec_1x400.png
 - ui-bg_highlight-soft_75_cccccc_1x100.png
 - ui-icons_2e83ff_256x240.png

- ui-icons_222222_256x240.png
- ui-icons_454545_256x240.png
- ui-icons_888888_256x240.png
- ui-icons_cd0a0a_256x240.png
- jquery-ui.css
- Build-MainUIApp-Style.bat
- CTCStyleSheet.css
- CustomStyleSheet.css
- emptyFile.css
- font-awesome.min.css
- JQuery.calculator.js
- jquery.window.css
- Dashboard.html
- Dashboard.js
- CTCSmartClientServices.aspx
- CTCSmartClientServices.aspx.cs
- CTCSmartClientServices.aspx.designer.cs
- Default.aspx
- Default.aspx.cs
- Default.aspx.designer.cs
- Global.asax
- Global.asax.cs
- MainUIPage.html
- MainUIPage.js
- MainUIPage_MultiIspecs_Tabs.html
- MainUIPage_MultiIspecs_Tabs.js
- MainUIPage_MultiIspecs_Windows.html
- MainUIPage_MultiIspecs_Windows.js
- SmartClient_App-VS2013-451.csproj
- SmartClient_App-VS2015-451.csproj
- SmartClient_App-VS2017-472.csproj
- SmartClient_App-VS2019-48.csproj
- SmartClient_App-VS2022-48.csproj
- Web-35.config
- Web-40.config
- ABSuiteBundleRebuild.bat
- CTCSmartClientApplication-VS2013.sln
- CTCSmartClientApplication-VS2015.sln
- CTCSmartClientApplication-VS2017.sln
- CTCSmartClientApplication-VS2019.sln
- CTCSmartClientApplication-VS2022.sln
- DeploySolution.bat
- DeploySolutionStart.bat
- IISReset.bat
- MSBuildSolution-35.bat
- MSBuildSolution-40.bat
- SetActiveConfiguration.bat
- SetActiveConfiguration.js

Images Directory

Images used by the generated solution are located in the **Images** directory of the [application]_[bundle]_app folder within the views folder of the generated solution (i.e. views\sample_bundle_App\Images).

Open Source Libraries

The CTC Smart Client solution is based on the free open source libraries listed below. These libraries are redistributed under the MIT license agreement.

- jQuery: JavaScript library providing cross-browser compatibility for popular browsers including IE, Chrome, Firefox and Safari.
MIT License: <https://github.com/jquery/jquery/blob/master/MIT-LICENSE.txt>
- jQuery UI: JavaScript library built on top of jQuery providing User Interface controls such as Menu Bar, Date Picker and Themes.
MIT License: <http://jquery-ui.googlecode.com/svn/tags/latest/MIT-LICENSE.txt>
- Knockout: JavaScript library providing data binding by applying the Model-View-ViewModel pattern.
MIT License: <http://www.opensource.org/licenses/mit-license.php>

Third Party UI Controls

The CTC Smart Client Generator is designed to add integration to third party control libraries. Integration to the following third party libraries is included by default and integration to additional libraries can be added on request:

- Google Maps
- Kendo UI by Telerik (www.kendoui.com).
- Wijmo by ComponentOne (www.wijmo.com).
- jqWidgets (www.jqwidgets.com).

Kendo UI for jQuery is the copyright of Progress Software Corporation.

Google Maps

The CTC Smart Client Generator includes the following Custom Control that integrates with the Google Map control:

- Map Popup – creates a popup window showing an address location on the Google Map.

For conditions on using the Google Map control, see:

<https://developers.google.com/maps/documentation/javascript/tutorial>

To use the Google Map control, follow the steps below:

1. Edit the **MainUIPage.html** file located in the `_App` folder in the generated bundle as follows:
 - a. Add the following script reference right after the line 'Additional Third Party Script Tags here':

```
<script src="
http://maps.googleapis.com/maps/api/js?key=YOUR-API-KEY"
type="text/javascript"></script>
```

Kendo UI

Kendo UI is a licensed product developed by Telerik. The CTC Smart Client Generator currently includes integration with the following Kendo UI Controls:

- Kendo Chart – creates a chart (column, bar, line or pie) from a list when substituting the standard ListBox control.
- Kendo ComboBox – provides an alternative look and feel to the standard ComboBox control.
- Kendo Linear Gauge – creates a linear gauge from numeric data.
- Kendo Radial Gauge – creates a radial gauge from numeric data.

The Kendo UI libraries can be downloaded from www.kendoui.com. To install the libraries into the generated bundle(s), follow the steps below:

1. **Unzip** the downloaded file.
2. Copy **js\kendo.all.min.js** to the Scripts folder in the generated bundle.
3. Copy **styles\Default** folder to the Styles folder in the generated bundle.
4. Copy **styles\kendo.common.min.css** to the Styles folder in the generated bundle.
5. Copy **styles\kendo.default.min.css** to the Styles folder in the generated bundle.
6. Edit the **MainUIPage.html** file located in the `_App` folder in the generated bundle as follows:
 - a. Add the following style reference right after the line 'Additional Third Party CSS Link Tags here':

```
<link href="styles/kendo.common.min.css" rel="stylesheet"
type="text/css" />
<link href="styles/kendo.default.min.css" rel="stylesheet"
type="text/css" />
```
 - b. Add the following script reference right after the line 'Additional Third Party Script Tags here':

```
<script src="scripts/kendo.all.min.js"
type="text/javascript"></script>
```

Wijmo

Wijmo is a licensed product developed by ComponentOne. The CTC Smart Client Generator currently includes integration with the following Wijmo Controls:

- Wijmo Chart – creates a chart (column, bar, line or pie) from a list when substituting the standard ListBox control.
- Wijmo Linear Gauge – creates a linear gauge from numeric data.

- Wijmo Radial Gauge – creates a radial gauge from numeric data.

The Kendo UI libraries can be downloaded from www.wijmo.com. To install the libraries into the generated bundle(s), follow the steps below:

7. **Unzip** the downloaded file.
8. Copy **js\jquery.wijmo-open.all.2.3.5.min.js** to the Scripts folder in the generated bundle.
9. Copy **js\jquery.wijmo-complete.all.2.3.5.min.js** folder to the Scripts folder in the generated bundle.
10. Copy **js\knockout.wijmo.js** to the Scripts folder in the generated bundle.
11. Copy **css\jquery.wijmo-complete.all.2.3.5.min.css** to the Styles folder in the generated bundle.
12. Edit the **MainUIPage.html** file located in the _App folder in the generated bundle as follows:

- a. Add the following style reference right after the line 'Additional Third Party CSS Link Tags here':

```
<link href="styles/jquery.wijmo-complete.all.2.3.5.min.css" rel="stylesheet" type="text/css" />
```
- b. Add the following script reference right after the line 'Additional Third Party Script Tags here':

```
<script src="scripts/jquery-migrate-1.1.0.js" type="text/javascript"></script>
<script src="scripts/jquery.wijmo-open.all.2.3.5.min.js" type="text/javascript"></script>
<script src="scripts/jquery.wijmo-complete.all.2.3.5.min.js" type="text/javascript"></script>
<script src="scripts/knockout.wijmo.js" type="text/javascript"></script>
```

jqWidgets

jqWidgets is a licensed product developed by jqWidgets. The CTC Smart Client Generator currently includes integration with the following jqWidgets Controls:

- jqWidgets Chart – creates a chart (column, bar, line or pie) from a list when substituting the standard ListBox control.
- jqWidgets Linear Gauge – creates a linear gauge from numeric data.
- jqWidgets Radial Gauge – creates a radial gauge from numeric data.

The Kendo UI libraries can be downloaded from www.jqwidgets.com. To install the libraries into the generated bundle(s), follow the steps below:

13. **Unzip** the downloaded file.
14. Copy **jqwidgets\jqx-all.js** to the Scripts folder in the generated bundle.
15. Copy **jqwidgets\jqxknockout.js** folder to the Scripts folder in the generated bundle.
16. Copy **styles\jqx.base.css** to the Styles folder in the generated bundle.

17. Edit the **MainUIPage.html** file located in the `_App` folder in the generated bundle as follows:
 - a. Add the following style reference right after the line 'Additional Third Party CSS Link Tags here':

```
<link href="styles/jqx.base.css" rel="stylesheet" type="text/css" />
```
 - b. Add the following script reference right after the line 'Additional Third Party Script Tags here':

```
<script src="scripts/jqx-all.js" type="text/javascript"></script>
<script src="scripts/jqxknockout.js" type="text/javascript"></script>
```

IIS 8 Configuration

When using IIS 8, the CTC Smart Client Generator requires the IIS 6 Management Compatibility Component to be installed in order for the generator to set up the virtual directory for the generated solution.

To install the IIS 6 Management Compatibility Components by using the Windows Control Panel:

1. Click **Start**, click **Control Panel**, click **Programs and Features**, and then click **Turn Windows features on or off**.
2. Open **Internet Information Services**.
3. Open **Web Management Tools**.
4. Open **IIS 6 Management Compatibility**.
5. Select the check box for **IIS 6 Metabase and IIS 6 configuration compatibility**.
6. Select the checkbox for **IIS 6 Management Console**.
7. Click **OK**.

Copy To Clipboard Constraint

The 'Copy To Clipboard' option on the Main Menu is available for users of Internet Explorer only. If 'Copy To Clipboard' functionality is required for other browsers, contact CTC.

Missing Scrollbar on Touch Devices

Browsers on touch devices typically do not show scrollbars on scrollable items such as forms, lists and data grids. Scrollable items can be scrolled by swiping the item.

Double-Click on Touch Devices

Double-click on touch a device is not supported as touch devices do not have an equivalent to double click. Double-tab on a touch device is a gesture that means zoom in or zoom out.

Version History

V1.0.0.0/1	22/Apr/2012	Initial Release
V1.0.0.2/3	8/Jun/2012	Fixed issue occurring when doing multiple generated from AB Suite without closing Visual Studio between each generate.
V1.0.0.4/5	13/Jun/2012	Fixed issue causing new version of .js files not to be copied to the bundle output directory.
V1.0.0.6/7	14/Jun/2012	Fixed issue causing the value on a password field not to be transmitted when submitting the form with the enter key on the password field.
V1.0.0.8/9	16/Jun/2012	Enhanced runtime .js files to remove dependency on JavaScript version 1.8.5.
		Fixed issue causing unable to enter decimal point in numeric textbox.
		Fixed issue causing unable to clear value of ComboBox selection.
		Fixed issue aligning circle on radio button and square on checkbox vertically with the label text.
V1.0.0.10/11	18/Jun/2012	Fixed issue in CTC Configurator causing "invalid syntax" error message to be displayed when editing control template.
V1.0.0.12/13	19/Jun/2012	Fixed issue causing text entered in ComboBox not to be sent to the host.
V1.0.0.14/15	20/Jun/2012	Fixed issue causing text entered in ComboBox, which is not found in the list, not to be sent to the host.
V1.0.0.16/17	23/Jun/2012	Implemented new improved ComboBox. Note: Template for ComboBox control has changed. If ComboBoxes have been configured, resetting Control Properties in CTC Configurator is required.
		Qualified CTC Smart Client with IE 8.
		Added enhancements to the IspecView manager to improve efficiency of event handling.
V1.0.0.18/19	26/Jun/2012	Adjusted the padding property on textbox to avoid cursor appearing to disappear.
V1.0.0.20/21	27/Jun/2012	Fixed issue causing data entered in a field not to be transmitted to the host when submitting the form with the enter key positioned in the field.
		Adjusted the padding property on textbox to make 2px more space for data in very narrow fields.

		Note: Template for TextBox control has changed. If TextBoxes have been configured, resetting Control Properties in CTC Configurator is required.
V1.0.0.22/23	28/Jun/2012	Added external Custom Style Sheet file allowing adding custom CSS style specifications.
		Added new option RadioButton_DefaultFirst, which when true will select the first Radio Button in a group as selected when no default value has been specified for the field.
		Fixe issue causing label text containing the html < delimiter to disappear.
V1.0.0.24/25	28/Jun/2012	Fixed issue causing wrong .proj file to be added to the bundle.
V1.0.0.26/27	29/Jun/2012	Updated SelectIspec popup to use new ComboBox.
		Added enhancement to highlight first field in error.
V1.0.0.28/29	30/Jun/2012	Enhanced Push Button control to allow underlining the hot key character. Note: Template for Push Button control has changed. If Push Buttons have been configured, resetting Control Properties in CTC Configurator is required.
V1.0.0.30/31	2/Jul/2012	Enhanced MatchOnField DesignTimevalue property to ignore illegal characters in label text.
V1.0.0.32/33	6/Jul/2012	Enhanced MainUIPage to make Side Menu Ispec List optional.
		Enhanced client side logging to make it more efficient and sending less ajax requests to the web server.
		Enhanced MainUIPage to make Wait Indicator optional.
V1.0.0.34/35	10/Jul/2012	Enhanced the DataGrid to provide horizontal scrollbar when required. Note: Template for DataGrid control has changed. If DataGrids have been configured, resetting Control Properties of the DataGrids in CTC Configurator is required.
		Fixed issue causing response code OK_TRANSACTION_HAD_ERRORS (801) the ispec not be opened.
V1.0.0.36/37	25/Jul/2012	Enhanced the DataGrid to allow custom styling.
		Enhanced wait indicator to handle esc key to

		close the wait indicator.
		Added option for external custom connection and login to the host system.
		Added Calculator custom control.
		Added workaround to remove illegal characters from List Box and Combo Box inline list values.
		Fixed issue causing unfulfilled asynchronous list requests to give error 1015 "Bad value returned from server".
V1.0.0.38/39	26/Jul/2012	Remove internal test case causing a space to be replaced with an X in inline static lists.
V1.0.0.40/41	27/Jul/2012	Fixed issue causing ComboBox to not receive focus when set as the default cursor field control.
		Fixed issue causing ListBox to not unselect the current item when an empty field value is returned from the host. Note: Template for ListBox control has changed. If ListBoxes have been configured, resetting Control Properties of the ListBoxes in CTC Configurator is required.
		Fixed issue causing field to not be focused when receiving transaction error from the host system.
V1.0.0.42/43	28/Jul/2012	Enhanced ComboBox dropdown list to adjust the height according to number of item in the list. The height specified on the control is interpreted as the max height.
V1.0.0.44/45	2/Aug/2012	Fixed issue with the CTCStyleSheet.css causing printing to print blank page.
		Enhanced Smart Client to recognize URI specifications of images.
		Fixed issue related to setting default button causing a value for a button to be sent to the host.
		Fixed issue causing CheckBox to not default to the Un-Checked value.
V1.0.0.46/47	4/Aug/2012	Fixed issue with browser JavaScript difference causing wrong date calculation causing local storage not cleared and new forms not downloaded.
		Fixed browser incompatibility causing form print to print incorrect layout of the form. Note: Template for TextBox, Rectangles, and ComboBox control has changed. If any of these controls have been configured, resetting Control

		Properties of these controls in CTC Configurator is required.
V1.0.0.48/49	7/Aug/2012	Improved the opening and closing of the dropdown list of the ComboBox.
		Enhanced generator to not remove the default lang directory when it is not empty. The default lang directory is created by the internals of the CE generate environment. This is not needed by the Smart Client Generator.
V1.0.0.50/51	10/Aug/2012	Added workaround for specs that return the display value of a list entry in a ComboBox instead of the key of the list entry.
V1.0.0.52/53	24/Aug/2012	Fixed issue with dynamic attributes causing controls to not be hidden.
V1.0.0.54/55	26/Aug/2012	Fixed issue with dynamic attributes causing controls to not be hidden.
V1.0.0.56/57	28/Aug/2012	Fixed issue with width of DataGrid causing horizontal scrollbar to be too short.
V1.0.1.0/1	29/Aug/2012	Added 'Multiple Open Spec' capability including examples for: <ul style="list-style-type: none"> • Displaying Open Specs in Tabs • Displaying Open Specs in Windows
		Added 'Run Reports' to the Main Menu.
		Added 'Unsolicited Messages' to the Main Menu.
		Added 'Copy To Clipboard' to the Main Menu.
V1.0.1.2/3	31/Aug/2012	Fixed issue with width of DataGrid causing horizontal scrollbar to be too short.
		Fixed issue with SwitchTo causing the client to not do the switch when the startup spec is switching to another application.
V1.0.1.4/5	7/Sep/2012	Fixed issue with IE8 Emulation mode causing DataGrid to lose scrollbar.
V1.0.1.6/7	11/Sep/2012	Fixed issue with ComboBox causing text of selected item to be returned to the host.
		Added key up and key down function to DataGrid allowing to use arrow keys up/down to move in DataGrid.
		Fixed issue with image URI for a dynamically created URI.
V1.0.1.8/9	12/Sep/2012	Fixed issue with ComboBox causing text of selected item to be returned to the host.
		Fixed issue with List Box causing data in list to overlap other items on the form when printing.
V1.0.1.10/11	14/Sep/2012	Added option 'NumericZeroWithSign' to

		Web.config.
V1.0.1.12/13	20/Sep/2012	Added RequestID parameter to Custom Service method.
V1.0.1.14/15	21/Sep/2012	Enhanced generation of Push Buttons to preserve spaces in label.
V1.0.1.16/17	26/Sep/2012	Removed previous enhancement of Push Buttons to preserve spaces in label. To preserve space in labels on Push Buttons use the style attribute 'white-space:pre;' in CustomStyleSheet.css.
		Fixed issue when doing multiple generates within the same instance of AB Suite Developer.
V1.0.1.18/19	3/Oct/2012	Enhanced Data Grid to initially hide the grid until the true width of the data is known.
		Enhanced clearing Local Cache to capture exceptions and write information to log file.
V1.0.1.20/21	5/Oct/2012	Fixed issue with FireFox causing Combobox to return incorrect key.
V1.0.1.22/23	9/Oct/2012	Added enhancement to list box allowing Ctrl+Click to unselect the current item from the list box.
V1.0.1.24/25	12/Oct/2012	Added enhancement to make ListBox and DataGrid read-only. Note: Templates for ListBox and DataGrid controls have changed. If ListBoxes or DataGrids have been configured, resetting Control Properties of the ListBoxes and DataGrid in CTC Configurator is required.
		Enhanced elastic height on ComboBox to adjust better depending on the font-size being used.
		Enhanced elastic height on ComboBox to adjust better depending on the font-size being used.
		Fixed issue with ComboBox configured with Auto Complete causing it difficult to erase character using backspace key.
		Enhanced ComboBox to dropdown or up depending on how close the box is to the bottom of the current view panel.
V1.0.1.26/27	14/Oct/2012	Enhanced readonly ListBox and DataGrid to automatically unselect a list-entry that has been selected.
V1.0.1.28/29	16/Oct/2012	Enhanced ComboBox to validate entries against description column and key columns when validateEntry attribute is set to true.

V1.0.1.30/31	17/Oct/2012	Fixed issue with Rectangle control causing the control to be too wide and too high. Width and height of Rectangle control has been adjusted for border width.
V1.0.1.32/33	24/Oct/2012	Fixed issue with ComboBox causing entry to be ignored when data has not been entered in the correct case.
V1.0.2.0/1	6/Nov/2012	Enhanced retrieving all lists from the host in one transaction reducing the network requests resulting in better performance.
		<p>Implemented new ListBox control to replace existing list box control. The new ListBox control provides better navigation on touch devices and addition capabilities for styling and customizing the look and feel of the list entries.</p> <p>Note: The template for ListBox control has changed. If ListBoxes have been configured, resetting Control Properties of the ListBoxes in CTC Configurator is required.</p>
		Enhanced the ComboBox to use the new ListBox. This provides better navigation on touch devices and addition capabilities for styling and customizing the look and feel of the list entries.
		<p>Added device detection for touch devices.</p> <p>Added scrolling of DataGrid by swiping on touch devices.</p> <p>Prevented keyboard from opening when dropping down the list on ComboBox controls on touch devices.</p> <p>Prevented keyboard from opening when dropping down the Calendar on DatePicker controls on touch devices.</p>
		Added new MapPopup control utilizing the Google Map browser control. This allows adding Map Popup capability to address fields.
V1.0.2.2/3	15/Nov/2012	Added workaround for iOS 6.0.1 iPad problem preventing the same request (such as setCurrentIspec for the same ispec) to be sent to the web server.
V1.0.2.4/5	16/Nov/2012	Fixed issue causing inline lists being added to the

		list of lists to be retrieved from the server for Combo Box and List Box.
V1.0.2.6/7	22/Nov/2012	Fixed issue causing list box to generate incorrect syntax when receiving a blank background color value.
V1.0.2.8/9	23/Nov/2012	Fixed issue causing error when loading the DataGrid script.
V1.0.2.10/11	27/Nov/2012	Fixed issue causing Combo Box to not show scrollbars when in IE8 mode.
V1.0.2.12/13	31/Nov/2012	Fixed issue causing wrong HostDateFormat to be generated on DatePicker control.
		Added performance enhanced. Changes to how events such as mousedown/up, focus, keydown/up improves the initial loading of a form and the speed of cursor movements.
V1.0.2.14/15	4/Dec/2012	Fixed issue causing AutoTabbing to tab to wrong control.
V1.0.2.16/17	12/Dec/2012	Added workaround for browser behavior scrolling form into view when default focus is set on a button.
V1.0.2.18/19	7/Jan/2013	Added new web.config parameter "AllowMultiBrowserClients". When true, this will allow multiple Browser Clients on the same ASP.NET web session.
V1.0.2.20/21	11/Jan/2013	Added capability for individual clients/workstations to turn system tracing on/off. To turn trace on/off ensure focus is on the document (i.e. not on an input control) by clicking somewhere on the background, then enter the sequence Ctrl+Shift+PageUp or on a Touch Device tap 4 times on the header logo.
V1.0.2.22/23	24/Jan/2013	Added function for touch devices to detect multiple taps (2, 3, 4, etc) on a control.
		Fixed issue with workaround in v1.0.2.16 for browser behavior scrolling form into view when default focus is set on a button.
V1.0.2.24/25	28/Jan/2013	Enhanced forms on touch devices to handle double tap and submit the form on double-tap when the ListBox_SubmitOnDoubleClick option is set.
		Enhanced the Alternate Views feature to provide information about fields being added or removed since last generate.

		Added new Custom Control 'CopyFromListControl', which can substitute a CopyFrom region and provide a list of all row in the CopyFrom. The Control will automatically go back to the ispec on the host as many times as required to retrieve all CopyFrom rows and display them in a list using the DataGrid control.
V1.0.2.26/27/28	25/Feb/2013	Upgraded to new versions of the following JavaScript Frameworks: <ul style="list-style-type: none"> • jQuery v1.9.1 • jQuery UI v1.10.0 • Knockout v2.2.1
		Qualified Smart Client with CE 3.0.
V1.0.2.30/31/32	27/Feb/2013	Enhanced generator to automatically update Application Pool of the Virtual Directory for the generated bundle depending on the Visual Studio Version setting.
V1.0.2.36/37/38	8/Apr/2013	Added integration to Wijmo widgets and jQWidgets.
		Added Kendo Linear Gauge and Radial Gauge. Note: Template for Kendo Chart and Kendo ComboBox controls has changed. If any of these controls have been configured, resetting Control Properties of these controls in CTC Configurator is required.
		Fixed issue with Combo Box causing initial zeros to be shown in the input box.
		Fixed issue causing border on a read-only input box not to be generated.
		Fixed issue causing selection of item in List Box to jump to first entry in list when the list contains entries that have duplicated keys.
		Fixed issue causing items in list box starting with one space character to be out of alignment with other items in the list.
		Added AutoComplete option to List Box. This will search for a match on the first character on each item in the list and select the item that match.
V1.0.2.40/41/42	11/Apr/2013	Fixed issue causing Firefox to throw JavaScript exception in List Box.
V1.0.2.46/47/48	17/Apr/2013	Added Remote Diagnostics capability. This allows displaying the System Trace log file for the current session.

		To display the System Trace log file, ensure focus is on the document (i.e. not on an input control) by clicking somewhere on the background, then enter the sequence Ctrl+Shift+PageDown or on a Touch Device tap 5 times on the header.
V1.0.2.50/51/52	30/May/2013	Fixed issue with Combo Box. When the host returns a value for the combo box that does not exist in the list and Validate Entry is false, the value is not displayed in the combo box input field.
V1.0.2.56/57/58	30/May/2013	Fixed issue with Combo Box. When the host returns a value for the combo box that does not exist in the list and Validate Entry is false, the value is not displayed in the combo box input field.
V1.0.2.60/61/62	26/Jun/2013	Fixed issue observed using Combo Box. When the list being retrieved from the host does not exist, a list containing a dummy row with a key value of 'Key1' is returned.
		Enhanced Console to submit on Enter key in input box.
V1.0.2.66/67/68	26/Jul/2013	Added function ToXml() for serializing the ISpecModel/ViewModel to an Xml string.
		Fixed issue causing fixed inline list to not display blank row.
V1.0.2.70/71/72	28/Jul/2013	Fixed issue causing field with cursor to not be cleared when submitting the form using the Enter Key.
V1.0.2.76/77/78	30/Jul/2013	Fixed issue causing fixed inline list to not display blank row.
V1.0.2.80/81/82	31/Jul/2013	Fixed issue causing fixed inline list to not display blank row.
V1.0.2.86/87/88	7/Aug/2013	Applied workaround for Firefox v22 on some machines loosing focus on ComboBox.
V1.0.2.90/91/92	10/Oct/2013	Fixed issue with auto-complete/type-ahead for Combo Box dropdown-list style.
		Applied workaround for Firefox v22 on some machines loosing focus on ComboBox.
V1.0.2.96/97/98	17/Oct/2013	Added customization for the title of the Transaction Error popup message.
		Fixed issue with IE10 causing horizontal scrollbar to appear on DataGrid control when not necessary.

		Added enhancement to remove JavaScript comments from Control properties.
V1.0.3.0	10/Nov/2013	CTC Smart Client Generator upgrade to be qualified with Visual Studio 2012.
		CTC Smart Client Generator upgrade to be qualified with jQuery 1.10.2, jQuery-UI 1.10.3 and Knockout 3.0.0.
		Client side ValidateNumeric has been enhanced to prevent keyboard input of invalid numeric character, validate if sign characters (+, -, CR or DR) are entered correctly as prefix or suffix and validate for max number of digits including before and after decimal point.
		Added enhancement to create a Shortcut to the URL of the generated application to the Views Directory.
		Added enhancement to identify IE 11. The UserAgent string for IE 11 has changed and is different from previous IE versions, hence this enhancement.
V1.0.3.6/7/8	22/Nov/2013	Fixed issue with DatePicker causing the calendar to close and open when using ShowOn option set to 'focus'.
V1.0.3.10/11/12/13	20/Jan/2014	Qualified Smart Client with CE 3.0.
		Added new option for specifying Custom Icons on Check Boxes and Radio Buttons.
		Enhanced DatePicker to zero fill the Date Field in cases when the date is stored on the host as a numeric value rather than as a date.
		Enhanced the generator to preserve space character on text fields generated as label controls when the option Preserve White Space is on.
V1.0.3.16/17/18/19	28/Jan/2014	Added workaround for Chrome v32 for detecting Touch Device.
V1.0.3.20/21/22/23	5/Feb/2014	Fixed issue with option 'NumericZeroWithSign'. The second and subsequent time the same ispec is accessed in the same session the numeric zero loses the sign.
V1.0.3.26/27/28/29	7/Feb/2014	Added workaround for Firefox when entering + and - signs in numeric fields. Firefox use different keycode values for + and - sign.
V1.0.3.30/31/	14/Feb/2014	Added check for and remove non valid xml

32/33		characters in data being returned from the host to the screen.
		Fixed focus issue with the Combo Box causing data entered into the field from which the Enter Key is pressed not to be sent to the server.
V1.0.3.36/37/ 38/39	23/Feb/2014	Enhanced DataGrid to recognize numeric and date columns. Columns containing numeric or date values can be identified as 'numeric' or 'date' for the purpose of sorting on these columns.
		Updated CTCStyleSheet.css to fix issue causing blank row not to show in Combo Box dropdown list. Also, default value of 'AddBlankRow' attribute on Combo Box has been changed to false.
V1.0.3.40/41/ 42/43	28/Feb/2014	Fixed issue with Combo Box and inline fixed list causing item in list to be selected but the text of that item is not shown in input box.
V1.0.3.46/47/ 48/49	11/Mar/2014	Upgraded to Knockout Repeat v2.0.0 custom binding module.
		Fixed an issue causing Visual Studio version to not change when upgrading to new version of the generator and changing the Visual Studio version at the same time.
		Added compatibility check of the CE version and Visual Studio version.
		Fixed issue with the VS2012 project file. Reference to Microsoft.CSharp is missing.
V1.0.3.50/51/ 52/53	12/Mar/2014	Fixed issue with blank empty line in Combo Box causing a space character to be inserted in empty line.
V1.0.3.56/57/ 58/59	24/Mar/2014	Added 'afterListReceived' method to the Custom Code Module template.
V1.0.3.60/61/ 62/63	26/Mar/2014	Fixed issue causing Ctrl C, Ctrl V and Ctrl X to not be processed by the browser when numeric validation of fields is enabled.
V1.0.3.66/67/ 68/69	02/Apr/2014	Added runtime configuration option for highlighting fields in error with CE response code 933 (err_bad_field_value).
V1.0.3.70/71/ 72/73	25/Apr/2014	Enhanced the style of the Combo Box dropdown button to look like a button including hover effect.
		Enhanced the style of the Data Grid sortable

		column header to include hover effect.
		Enhanced licensing to allow for temporary license keys.
V1.0.3.76/77/78/79	31/Aug/2014	Enhancement added to allow a User Control to be configured multiple times.
		Enhancement Combo Box to emulate Presentation Client to return empty field to the host when selecting an empty row in the list.
V1.0.4.0/1/2/3/4	5/Jan/2015	CTC Smart Client Generator upgrade to be qualified with Visual Studio 2013.
		Qualified Smart Client with CE 5.0.
		Added MAINT Button Custom control which generate customized group of MAINT buttons.
		Enhanced MainUIPage to include example of how to add search capability to the User Interface application using the jQuery Autocomplete control.
		Enhanced MainUIPage to allow opening multiple browser tabs/windows each with their own separate connection to the host system.
		Enhanced MainUIPage to allow opening specs in new tab/window from the right click context menu.
		Enhanced MainUIPage to automatically open the current active spec when hitting the browser Reload/Refresh button (F5 key).
		Upgraded to latest versions of the following JavaScript frameworks: <ul style="list-style-type: none"> - jQuery v1.11.1 - jQuery UI v1.11.2 - knockout v3.2.0
		Added InputMask Custom control for adding input mask to text input requiring special formatting such as: SSN: ____ - ____ - ____ Date: dd/mm/yyyy
V1.0.4.10/11/12/13/14	18/Jan/2015	Added enhancement to improve the initial load time of the UI Application by concatenating the javascript files into one file.
		Added enhancement to improve the initial load time of the UI Application by concatenating the stylesheet files into one file.
		Added new feature enabling the generator to call external method allowing users to add custom

		metadata to the generate process. New option 'EnableCustomFieldMetadata' has been added to the CTC Configurator. New CustomMetadata project has been added to the installation for users to customize.
V1.0.4.20/ 21/22/23/24	17/Feb/2015	Added ViewUnload event to enable custom code to manage and check for dirty flag on the View Model when user navigates to another ispec.
V1.0.4.30/ 31/32/33/34	5/Mar/2015	Fixed issue with custom MAINT button causing script to error.
V1.0.4.40/ 41/42/43/44	6/Mar/2015	Fixed issue with multipleIspecCopiesEnabled set to false.
V1.0.4.50/ 51/52/53/54	19/Mar/2015	Added Maint ComboBox Buttons Custom control which generate customized group of MAINT buttons from a Combo Box.
V1.0.4.60/ 61/62/63/64	24/Mar/2015	Added 'blankWhenZero' option to inputmask binding.
		Added 'clearValue' argument to RegisterButtonGroup method to allow for MAINT fields that are not mutually exclusive with other buttons on the form such as MAINT fields painted as dropdown combo box.
		Upgraded to latest versions of the following JavaScript frameworks: - knockout v3.3.0
V1.0.4.70/ 71/72/73/74	8/Apr/2015	Added 'props' property to CTCSmartClient.MaintButtons.js
		Added new event 'ListsLoaded' which occurs when all lists have been received from the host and loaded into the view.
		Changed behavior of MutuallyExclusiveActionButtons and RepeatLastActionButtonOnEnterKey to work the same as Presentation Client.
		Added ability to set TrackChanges property as a custom property on fields.
		Enhanced the custom MaintComboBoxButtons control to work with list of Maint values created dynamically at runtime.
		Added Maint ListBox Buttons Custom control which generate customized group of MAINT buttons from a List Box.
V1.0.4.80/ 81/82/83/84	16/Apr/2015	Enhanced the formula for determining whether to position the ComboBox dropdown list above or

		below the input box.
		Added optional parameter 'showWaitIndicator' to customService function.
		Fixed issue causing exception when creating SystemInfo for ispecs.
V1.0.4.90/ 91/92/93/94	17/Apr/2015	Fixed issue passing aggregated field names as the argument on Custom FieldMetadata method.
		Modified submit on DoubleClick to comply with enhanced buttons behaviour.
V1.0.4.100/ 101/102/103/ 104	25/Jun/2015	Added option TrackChange which enables tracking changes to all or specific fields within an ispec. This allows alerting the user to unsaved changes when navigating to another record of ispec.
		Added option FieldChangeHighlight which enables highlighting fields that have changed for which TrackChange is set.
		Added enhancements to CTC Combo Box to enable External Source AutoComplete functionality.
V1.0.4.110/ 111/112/113/ 114	16/Jul/2015	Enhanced dirtyField binding to include dependency on viewModel dirtyFlag to ensure dirtyField is evaluated after transaction data is received from host.
		Fixed issue with Combo Box keeping dropdown list open when scrolling through the list using arrow keys.
V1.0.4.120/ 121/122/123/ 124	1/Aug/2015	Added Font-Awesome to the Custom Maint Buttons control and to the release.
V1.0.4.130/ 131/132/133/ 134	18/Aug/2015	Added binding for Masking data such as SSN and Credit Card numbers.
		Added new control for defining tabs for a group of ispec. Tabs will automatically appear at the top of the screens when an ispec in the group is accessed and automatically disappear when going to another not in the group.
		Added listChanged event to DataGrid, ListView and Combo Box which is raised when the list data is changed such as when the host returns a new list. This allows manipulating the list before it is added to the control.
		Added ability to specify MatchOnField condition

		to options elements.
V1.0.4.140/ 141/142/143/ 144	11/Sep/2015	Fixed issues with MaintButtonsControl default template.
		Fixed issues with CalculatorControl default template.
V1.0.4.150/ 151/152/153/ 154	15/Sep/2015	Added Calendar Popup widget.
		Added Calculator Popup widget.
V1.0.4.160/ 161/162/163/ 164	19/Sep/2015	Added Command Line bat file for automating the process of building the bundle/folder.
		Fixed issue with illegal character 0x1b (ESC) in report output.
V1.0.4.170/ 171/172/173/ 174	28/Sep/2015	Fixed issue with Popup Calculator widget and Popup Calendar widget causing the new value not to be written to the field.
		Added IISReset.bat file to the generated Views folder. This is to manually reset IIS when using AB Suite multithreaded builds. See section 'IIS Reset on AB Suite 4.0 or higher'.
		Enhanced Popup Calculator widget to recognize field types N, S, C, + and -.
		Enhanced Textbox-ValidateNumeric to consider LockedSign property of a field when validating characters entered into a field.
V1.0.4.180/ 181/182/183/ 184	21/Nov/2015	Added workaround for AB Suite 4.0 multithread build issues causing PostGenerate to be invoked multiple times.
V1.0.4.190/ 191/192/193/ 194	2/Dec/2015	Added support for the Unisys Automated Testing Tool to the CTC Smart Client Generator for AB Suite 4.0 or higher.
		Added beforeGetView extension method to CTCSmartClient.ViewsManager.
V1.0.4.200/ 201/202/203/ 204	17/Dec/2015	Added support for Visual Studio 2015.
		Fixed issue with string.startsWith and string.endsWith causing exception when search string contains Regex reserved characters.
V1.0.4.210/ 211/212/213/ 214	4/Jan/2016	Deprecated BlankUserControl. Use GenericUserControl instead.

		<p>Added enhancements to Combo Box External Source:</p> <ul style="list-style-type: none"> - autoFocus option: When true, select first item in the list. - open callback option: Triggered when opening the dropdown. - set listItems: allows setting the list of items.
		Added enhancement to Combo Box AutoComplete to erase the last character of the entered text when hitting the backspace key.
V1.0.4.220/ 221/222/223/ 224	10/Feb/2016	Fixed behavior of enter key on Combo Box so when selecting an item and hitting enter key, it will submit the form.
V1.0.4.230/ 231/232/233/ 234	16/Feb/2016	Fixed arrow up/down on Combo Box.
V1.0.4.240/ 241/242/243/ 244	18/Feb/2016	Removed previous enhancement for LockedSign introduced in v1.0.4.170/171/172/173/174.
V1.0.4.250/ 251/252/253/ 254	14/Mar/2016	Enhanced DataGrid and Combo Box to use font-awesome arrow up/down icon instead of arrow as background image.
		<p>Added improved version of LockSign validation. With this enhancement, Textbox-ValidateNumeric considers LockedSign property of a field when validating characters entered into a numeric field. By default, this is enabled, however, it can be turned off by adding the following statement to the _onViewLoad method of the MainUIPage.js file:</p> <pre>this._currentViewController.currentIspecInfo.ispecViewObj.canCheckForLockSign = false;</pre>
V1.0.4.260/ 261/262/263/ 264	3/Jun/2016	Fixed system message OK_BYE (802) being displayed when opening an ispec that does a RECALL (BYE) function in the constructor.
V1.0.4.270/ 271/272/273/ 274	26/Jun/2016	Enhance CTCInputMask to restore cursor position within the text of the text box.
		Enhance CTC Group Tabs to make it easier to add custom style.
V1.0.4.280/ 281/282/283/ 284	2/Jan/2017	Added mobile friendly meta tag to MainUIPage.html file.

		Added default TabGroups specifications to MainUIPage.js file.
		Upgraded Font-Awesome to version 4.7
		Added toolbar to the MainUIPage with the following default features: <ul style="list-style-type: none"> - Calendar - Calculator - Print Form - Copy to Clipboard - Console - New Window - Show Field Name - Quick Find - Hide/Show Header
		New feature 'CopyFrom as SimpleGrid' added. This will generate a copyfrom area as a row formatted grid.
V1.0.5.0/1/2/3/4/5	20/Jan/2017	Upgraded to latest versions of the following JavaScript frameworks: jQuery v1.12.4 jQuery UI v1.12.1 knockout v3.4.1
		Enhanced upgrading the Visual Studio version so instead of reinstalling/reinitializing all infrastructure files, only the solution file (.sln) and project file (.csproj) will be installed.
		CTC Smart Client Generator upgrade to be qualified with Visual Studio 2015.
		Qualified Smart Client with CE 6.1.
		The ShowField Name tool on the MainUIPage toolbar has been enhanced to use the jQuery Tooltip function, which allows for custom tooltip display and styling.
		Added an additional option 'showbutton' to Custom CheckBox/RadioButton. When showicon and showbutton options are set, the checkbox /radiobutton will be shown as a button with a custom icon.
		Added FieldMask Custom Control. This control substitutes a TextBox and is used when wanting to mask out fields such as SSN and Credit Card numbers.
		Fixed issue causing the web session to close when running multiple application across

		different virtual directories on the same domain. When closing one of the open applications, the web session for all open applications will be closed.
		Enhanced the CopyToClipboard function in MainUIPage.js to support Chrome, Firefox and Internet Explorer.
		Fixed issue with multiple CheckBox on a field defined as a numeric field. The issue was causing the default value of a check box to be ignored.
V1.0.5.10/11/ 12/13/14/15	03/Mar/2017	Fixed issue with Checkbox not setting initial default checked value.
V1.0.5.20/21/ 22/23/24/25	12/Mar/2017	Fixed issue with Checkbox retaining the default value when the unchecked value is empty and not set to a value. It is recommended to always specify a value for the checked and unchecked properties in the painter.
V1.0.5.30/31/ 32/33/34/35	05/Sep/2017	Added ServerAccess service module to allow easy customization for accessing resources on the server from the client at runtime.
		Fixed issue with IE11 and DataGrid. On IE11, the last item in the list on the DataGrid is not visible.
		Improved performance of rendering lists on the client. In average, the time it takes to render a list has been reduced by 66%.
V1.0.5.40/41/ 42/43/44/45	18/Sep/2017	Added workaround for issues when doing multithreaded generates.
V1.0.5.50/51/ 52/53/54/55	02/Oct/2017	Added workaround for issues when doing multithreaded generates causing two builds being started for a bundle.
V1.0.5.60/61/ 62/63/64/65	06/Oct/2017	Fixed issue with response encoding causing issues running the generated Smart Client from Microsoft Edge.
V1.0.5.70/71/ 72/73/74/75	16/Dec/2017	Fixed issue when generating ROC causing the generator to throw an exception.
		Added new option EnableARIA wich provided support for aria-label property on textbox controls and alt property on image controls.
		Added TextList control as a new custom control. TextList displays a list as read-only text in a HTML DIV tag.
V1.0.5.80/81/ 82/83/84/85	10/Jan/2018	Excluded TOP_LINE and ACTMTH from tab index when enableAria is set.
		Added enhancement to always treat system fields

		TOP_LINE and ACTMTH as hidden fields.
V1.0.5.90/91/ 92/93/94/95	2/Feb/2018	Added TabIndex option with 3 settings: 'AsPainted', 'Zero' and 'Resequenece'.
		Added CreateCustomMetadataFile option.
		Added 'ExcludeLanguage' option for Language node.
		Added workaround for issue with AB Suite CE Generate Environment causing PanelCapable option to not be set to true and generating incorrect Button Groups.
V1.0.5.100/1 01/102/103/1 04/105	28/Mar/2018	Added TabIndex option with an additional setting: 'AsPaintedBy10'. This will create tabindex as painted multiplied by 10, allowing to add user controls in the tab order
		Added SameRowRange option, allowing to specify a range value +/- within which controls painted close to each other will be considered on the same row.
		Enhanced the popup calendar so it can be opened in standalone mode (without being associated with a field on the screen) and stay open until the user close it.
		Enhanced the popup calculator so it can be opened in standalone mode (without being associated with a field on the screen) and stay open until the user close it.
V1.0.5.110/1 11/112/113/1 14/115	03/Apr/2018	Added control Width and Height to MatchOnField expressions of the CTC Configurator.
		Fixed issue causing Messages/Errors window to not open a second time after having been closed.
		Enhanced the performance of loading configuration file when starting CTC Configurator.
V1.0.5.120/1 21/122/123/1 24/125	04/Apr/2018	Fixed issue causing Messages/Errors window to not open a second time after having been closed when using Console in non-modal mode.
V1.0.5.130/1 31/132/133/1 34/135	25/Apr/2018	Enhanced Copy CopyFrom area to Clipboard to include blank rows.
		Enabled maxlength attribute for TextArea. HTML5 specifications provided automatic check for maxlength on TextArea.
V1.0.5.140/1 41/142/143/1	7/May/2018	Added User Settings allowing user to set individual options.

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		Enhanced Console to accept input starting with `:`. This is to determine the difference between a command and input to a prompt.
		Added ListView popup
		Enhanced DataGrid to right align header column when data column is right aligned.
V1.0.5.150/1 51/152/153/1 54/155	14/May/2018	Added Field AutoComplete option to the Generator.
		Enhanced User Settings allowing the user to turn Field AutoComplete on/off on an individual basis.
		Fixed issue with User Settings Color Wheel that does not work in Firefox.
V1.0.5.160/1 61/162/163/1 64/165	18/Aug/2018	Fixed issue causing InfrastructureFilesVersionCheck and ReInstallBundle options to be written to a conditional options element when upgrading to a new version of the Smart Client generator.
		Added SettingDynamicAttributes event to allow MainUIPage.js to handle dynamic attributes.
V1.0.5.170/1 71/172/173/1 74/175	9/Sep/2018	Added new options InitialCapital_CheckBoxRadioButton, InitialCapital_Label and InitialCapital_PushButton for converting the text to lower case with initial capital for each word.
V1.0.5.180- 185	13/Oct/2018	Enhanced SimpleGrid to include Left Margin when determining controls to be included in the grid header.
		Added custom control MaintTextBoxButtonsControl used for substituting a textbox with a group of Maint Buttons.
		Enhanced runtime to catch invalid xml character for hosttype 3 (NT).
V1.0.5.190- 195	19/Jan/2019	Added tooltip to DataGrid column headers.
		Unable to enter decimal point in numeric fields when generating copy from ispec as SimpleGrid.
		Improved the generation of SimpleGrid to provide a better size the grid.
V1.0.5.200- 205	8/Feb/2019	Fixed issue causing button groups on CopyFrom Grids being added incorrectly to the grid.
		Enhanced MaintButtons to add class name `ctc-maintcontainer-xxxx` of the current ispec to the

		MaintContainer allowing to style the MaintContainer for individual ispecs.
		Fixed issue with the VS2015 project causing an error when loading Microsoft.WebApplication.targets causing a build error of the generated application.
		Added enhancement to button group control to add class for layout (horizontal/vertical) and label position (left/right) for checkbox and radio button.
V1.0.5.210-215	22/Feb/2019	Added Dropdown Popup to be used for Favorite Links applied to the toolbar in the header.
V1.0.5.220-225	1/Mar/2019	Added RemoveBorder option for Text Fields.
		Removed restriction for Dynamic Attributes. Dynamic Attributes are now processed for every transaction including when the host returns a transaction error.
		Added General Runtime Error handler catching errors caused by configuration items.
V1.0.5.230-235	21/Mar/2019	Enhanced CTCStyleSheet to enable easier styling of Main Menu.
		Enhanced the Calculator to allow input from numeric keyboard.
V1.0.5.240-245	6/May/2019	Enhanced AutoTabbing to include Buttons in the tab-order for next field to tab to.
		Enhanced submitting form by Enter-key to simulate click on button when focus is on a button when hitting the enter-key.
		Enhanced TransactionError.js to set focus on the OK button so the dialog will close when hitting the enter key.
		Enhanced the Console to allow optional Uppercase of command line input.
		Added workaround for AB Suite sometimes skips setting the isLastResponsePrompt flag and mistaking input to prompt as a command.
V1.0.5.250-255	9/June/2019	Fixed issue with AutoComplete causing the value selected from the dropdown list to not be written to the ViewModel.
V1.0.5.260-265	27/June/2019	Fixed issue with Console causing console not refreshing and not showing response from the host.
V1.0.5.270-	3/Sep/2019	Fixed issue with Console causing null to be sent

275		to the host when no input is entered.
V1.0.5.280-285	4/Sep/2019	Added Console.js to infrastructure files to be installed.
V1.0.5.290-296	16/Nov/2019	Qualified Smart Client with CE 7.0.
		Added event logging for the IIS Session_End event.
V1.0.5.300-306	12/Aug/2020	Enhanced locating MSBuild.exe according to the Visual Studio version configured for the bundle
		Updated ABSuiteBundleRebuild.bat and MSBuildSolution.bat files to allow for easy configuring the location of MSBuild.exe depending on the Visual Studio version.
		Upgraded to latest versions of the following JavaScript frameworks: jQuery v3.5.0
		Configuring runtime web config parameters using the CTC Configurator has been disabled. All web config parameters must be edited directly in the web.config file using a text editor.
		Added Customizable Chart Type Selector to Kendo Charts.
		Added Password Show Hide custom control. This enables the user to see the password that has been typed into the password field.
		Dashboard feature has been added.
V1.0.5.310-316	14/Sep/2020	Fixed issue in Dashboard causing the Add Dashboard Item dialog to not open.
		Added Lookup widget. This allows popping up an ispec to let the user find a specific item and when closing the popup specified fields will be transferred to the parent ispec.
V1.0.5.320-326	10/Oct/2020	Enhanced lookup function to offset the tabindex of ispecs loaded into the lookup dialog. This is to ensure the tabindex is unique within the browser page.
		Added Home icon and Favorite links icon to tool bar.
		Added 2 options to lookup: <ul style="list-style-type: none"> - okOnEnterKey, allowing user to use the enter key to OK the lookup popup. Submitting the lookup ispec using enter key is disabled for the lookup popup. - okOnDobleClick, allowing user to OK the

		lookup popup using double click. Submitting the lookup ispec using double click is disabled for the lookup popup.
V1.0.5.330-336	15/Nov/2020	Removed MultiIspec_Tabs and MultiIspecs_Windows. This has been replaced with the Dashboard feature.
		Added Keep Open option to Console and Select Ispec popup dialogs.
		Added workaround for generating CopyFrom as SimpleGrid caused by inconsistent placement of copyfrom controls by the AB Suite Painter.
V1.0.5.340-346	12/Jan/2021	Interim version
V1.0.5.350-356	9/Jun/2021	Added option FormType for generating character based forms.
		Added CopyFromCTCDataGrid custom control.
		Added SimpleGrid Right Margin.
		Added resolving MatchOnField for options on Ispec node.
		Enhanced Lookup Ispec to allow user to log in when the login procedure has not been customized to capture the user credentials.
		Added headerTemplate property to DataGrid allowing to add headers spanning two or more columns.
		Enhanced selectionChange event for DataGrid, ComboBox and ListView to provide eventType 'user' or 'system' to indicate what is causing the event to occur.
		Added class 'ctc-copyfromfield' to TextBox control to identify copyfrom fields.
		Enhanced Dashboard to allow external Custom Login through customConnect
V1.0.5.360-366	19/Aug/2021	Added option DefaultHeight to ComboBox to be applied when painted height is less than one line.
V1.0.5.370-376	31/Aug/2021	Added font Size to FontSubstitutions. Added FontName and FontSize to MatchOnField Predefined expressions.
V1.0.5.380-386	30/Sep/2021	Added warning to appear when substituting SimpleGridControl with CopyFromListControl for CopyFrom area that is not all readonly.
		Modified Chrome shortcut from 'Program Files (x86)' to 'Program Files'.
		Added Description property to Application and

		Bundle nodes
		Added Dashboard option for Installing or Removing the Dashboard feature.
V1.0.5.390-396	15/Oct/2021	Fixed issues Unselecting a row using Ctrl+Click for ComboBox, ListView and DataGrid.
		Added RenewFromHost option to ComboBox, ListBox and DataGrid allowing to specify whether to renew the list from the host on every transaction. When false, this option will increase performance of retrieving lists from the host.
		Added RemoveRows option to ComboBox, ListBox and DataGrid allowing to specify row(s) to be removed from the list.
V1.0.5.400-406	28/Oct/2021	Fixed issue with UserSettings that didn't save Field AutoComplete selections.
		Added performance measurements to log file. In log file search for: <ul style="list-style-type: none"> - End Page_Load() - End Render() - End render list
V1.0.6.0-4	28/Apr/2022	Added support for AB Suite 8.0
		Removed support for AB Suite 4.0 and lower.
		Removed obsolete Message Listener.
		Added enhancement to allow Partial Build.
V1.0.6.10-14	11/May/2022	Fixed issue with CopyFrom fields more than 100 rows.
		Added List2Grid utility
		Added workaround for issue with Calculator when precision is 0.
		Enhanced ListBox to ensure blank/empty rows are visible.