WEST ST West Street Consulting

AXCM

AXCM Plugin for FrameMaker®

v3.30 User Guide

Contents

1: Introduction

AXCM is a plugin for the structured environment of Adobe FrameMaker that allows you to use attributes, values, and element markup to indicate and manage conditional content. The functional concept is similar to native conditional text, except that conditions are specified and managed with structural metadata rather than traditional condition tags.

Structured FrameMaker has always allowed conditional metadata to be specified with structural attributes and element markup, but it has historically lacked adequate native features to manage those conditions. This plugin fills that deficit and provides a comprehensive suite of management functions, such as conditional coloring and the production of conditional output.

Advantages over native conditional text

The use of structural metadata and the AXCM plugin for conditional text brings a host of advantages over native condition tags, including:

- **Easier management of multiple, overlapping conditions** - Structural markup provides a multi-dimensional matrix for specifying overlapping conditions, and the plugin allows those conditions to be managed much more easily and independently. If you have used native conditional text in the past, you are probably aware of the difficulties that immediately surface once you attempt to overlap multiple conditions, many of which are overcome by the AXCM methodology.

  With this plugin, each condition is its own entity that can be managed without conflict with others. You can color any condition or combination of conditions as you see fit, and completely ignore any conditions that you are not concerned with at the present. Similarly, you only deal with the conditions of interest while producing (or *filtering*) output. No more sifting through long lists of conditions trying to decide what to hide versus show.

- **Clear and concise application of conditions** - When your conditions are assigned as attribute values and/or element markup, you know exactly what content is conditional, every time. You never again have to be concerned with issues like a missed character or paragraph mark during condition assignment.
- **“Automatic” conditions** - Because the mere presence of an attribute or an element tag can represent a condition, a particular element can be designated as always conditional. A common application of this behavior is through the use of designated elements for in-text authoring comments. If you use a unique element tag or place a unique attribute on such an element, you can have the filtering process automatically remove every single instance of the element, ensuring that every one is removed, every time. Following this example, you would never again need to worry whether you conditionalized all of your personal comments.
- **“Scheme” usage for controlling coloring and filtering actions** - The plugin operates on the concept of “schemes” to control filtering and coloring activities. A scheme allows you to “program” a certain coloring or filtering pattern into your settings one time, then simply run that scheme afterwards. The repetitive decision-making process of the Show/Hide dialog box becomes a thing of the past.
- **Preservation of conditions in markup** - If you import/export XML or SGML and your conditions are specified as structural markup, your conditions will naturally survive the trip in their native form. Furthermore, they will be readily available for any external post-process to recognize and manage as necessary.
- **Whole-chapter conditionalization** - The functional model of the plugin allows you to conditionalize whole chapters of a book.
- **Comprehensive support for logical operators** - Especially with the newer XPath-based schemes, AXCM can accommodate virtually any permutation of AND, OR, NOT, and other common logical operators to device filtering and coloring criteria.

What the plugin does

The plugin provides three main functions:

- **Coloring** - Using schemes based on attribute values and/or structural markup, the plugin can color your conditional content in a highly-flexible and customizable fashion. The concept is similar to native condition tag indicators, but the functionality is much more advanced. For more information, see *Coloring* on page 3-21.
- **Filtering** - Filtering is the process of producing conditional output, similar in concept to using the FrameMaker Show/Hide dialog box. It is functionally different than native conditional text, though, being more flexible and easier to use. For more information, see *Filtering* on page 3-15.

- **Validation** - With conditions specified attributes, there are certain rules which can be applied to help maintain the accuracy and integrity of those conditions. Validation uses these rules to check your document setup and reports any violations it finds. It has no counterpart in native conditional text. For more information, see *Attribute validation* on page 3-22.

  NOTE: Validation schemes are only supported in the “classic” scheme format.

Requirements to use the AXCM plugin

- Structured FrameMaker 8 - 10, with any EDD. You may use any markup you want for conditions. For important information about newer versions FrameMaker, see *Important notes on later versions of FrameMaker* on page 1-3.
- Microsoft Windows, as supported by your version of FrameMaker.

Important notes on later versions of FrameMaker

FrameMaker 9 and later have introduced some significant changes to the interface which have impacted the functionality of plugin software such as AXCM. While we believe that the software is generally stable and adheres to its core functionality, some anomalies may be present, especially as related to dialog boxes and other interface features. We will continue to monitor the software and make improvements as feasible and warranted. If you discover any critical problems, such as crashes and/or deviations from core functionality, please contact us right away and we will investigate it.

The following notes are applicable to FrameMaker 9 and later:

- Book-wide functions such as book filters do not support the new group and folder features within FrameMaker books. We may implement support in the future, but this is not guaranteed, as the complexity of nested book structures may be generally incompatible with AXCM operation.
- For some functions such as coloring, performance may slower in newer versions of FrameMaker. We will continue to look at this issue but may be limited by the speed of FrameMaker itself. We have observed that XPath-based scheme activities are faster than classic scheme activities.

About the name

AXCM is an acronym for Attribute and XPath-Based Condition Management. It used to be “ABCM,” before the plugin included XPath functionality. We wish it had a more interesting name, but have failed to conjure up anything better.

Translation of the AXCM interface

AXCM supports customizable translations of its menus, dialog boxes, and messaging, based on “lookup” files that you can create and edit. When a string is required for a dialog box control or a message, it looks for that string in one of these lookup files according to the currently active language. Note the following:

- West Street does not claim support for any foreign language, only that you may add your own translations as desired. You can use this feature to implement a real language or simply rename labels, etc. using text that you like better. The plugin installs with a sample “Bogusian” language intended to serve as a model for setting up another language.
- West Street does not guarantee that any particular feature will work correctly once you implement a new language. We intend for it to work and will address any problems you find; however, you should be aware that it is impossible to fully test a feature with a virtually infinite number of variations/permutations.
- West Street believes that translation features cover about 95% of the strings that are associated with active features. This means that a small percentage of strings remain fixed in English, especially as related to short prompts and other messaging. Additionally, note that none of the features scheduled for deprecation support translatable strings, such as the transformation features.
- West Street believes that the unicode range of character sets is fully supported for replacement text. The Bogusian sample provides an example of this.
- West Street believes that this feature is generally applicable for specialized use by select users only. For that reason, this documentation is brief. If you need assistance with translation features, please contact us and we will be happy to help.

Selecting a language

To select a language, select **AXCM > Language > Set Language**. Any languages that are properly configured will appear in the list (see *Language configuration* on page 1-4). A language change takes effect immediately.

You can also set a default language upon startup in your preferences file (see *Local settings* on page 2-9). This setting provides an option to default to the current language in use by the FrameMaker interface. Again, be aware that any setting in this file must represent a properly-configured language

Language configuration

For any new language, the plugin requires two lookup files, both of which much reside together in the plugin installation folder or the settings folder. These files are named as follows, where `language` is the case-insensitive language name that will appear in the **Set Language** dialog box:

- `AXCM_Strings_Dialogs_`*`language`*`.fm` - The lookup file for strings that appear in the menus and major dialog boxes, such as the Node Wizard. This file consists of a set of tables with the English text in the left column and the replacement text in the right. For each dialog box string, the plugin effectively starts with the English text and attempts to look up the translation based on the contents of this file.

  Note that for these types of strings, the plugin is starting with “built-in” English versions. Therefore, when set to English, the plugin does not use this file. That is, a file named `AXCM_Strings_Dialogs_English.fm` will never be used. However, it is always used for any other language.
- `AXCM_Strings_General_`*`language`*`.fm` - The lookup file for all other strings that strings that appear in error reports, short interactive prompts, and other places. The strings in this file are looked up based on an ID string, rather than the full English version. For this type of file, a `AXCM_Strings_General_English.fm` file does exist and is the source of all English strings that relate to prompts and messaging.

The two different files with their differing methodologies are required to accommodate how FrameMaker handles strings with respect to dialog boxes versus other functional areas, when programming to its API. Further explanation on this subject is beyond the scope of this document.

Once both of these files are properly-named and reside in the installation or settings folder, the respective language name automatically appears in the **Set Language** dialog box. Note the following:

- For new languages, the best approach is to copy the “Bogusian” examples and use them as templates. Each file contains additional instructions within.
- If you alter the file structure or otherwise make changes beyond that described in this document or within the files themselves, the results could be completely unpredictable. At worst, you may cause FrameMaker to crash.
- The strings files can also be stored in MIF format.

Additional language utilities

The plugin includes the following additional utilities in the **Language** menu that may be used rarely, if at all:

- **Create Dialog Strings File** - Creates a new dialog and menu strings file with English text only, ready for translation to a new language.
- **Update Dialog Strings File** - Attempts to update an active dialog and menu strings with the latest English strings used by the plugin. You must have a valid strings file currently open. Any new English strings are added as new rows to the respective tables. Any strings in the file that appear to be unused are colored red.

Note the following:

- These features were originally intended as a convenience for making updates, but may be deprecated. Again, it is recommended that you use the Bogusian files as templates instead.
- These features apply to the dialog strings file only. For the general strings file, you must always use an existing file as a template and all maintenance is done manually.

Trademarks and licensing information

2: Getting Started

This chapter contains information about the basic concepts involved with the plugin.

Definitions of terms

Within this document, note the following definitions:

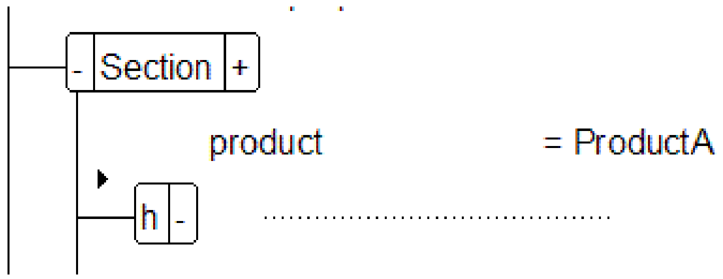
- **Native conditional text** or **conditional text** - Refers to the built-in conditional text feature that comes with FrameMaker, with the standard condition tags and show/hide behavior. While these terms can be accurately applied to elements with conditional attribute values as processed by this plugin, they are reserved for the native feature for clarity.
- **Attributes** and **Values** - Refers specifically to the attributes and values found in structural markup. With regards to AXCM functionality, attribute values are one means of conditional tagging to replace the condition tags used with native conditional text. With XPath-based schemes, element tags and content are also available for representing conditional content.

Important note on native conditional text

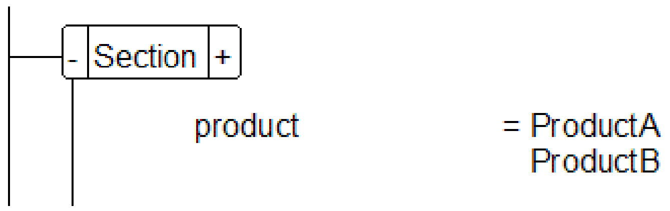
This software is intended as a replacement for native FrameMaker conditional text, leveraging the power of structural markup to overcome the many limitations associated with the native feature. While the software does not prevent you from using native conditional text at the same time, it is *highly recommended* that you do not. The usage of this software to manage conditional information does not mix well at all with the usage of native conditional text. In any given document set, you should use one or the other exclusively. Using AXCM in conjunction with native conditional text will likely produce unexpected and disappointing results.

Specifying attributes

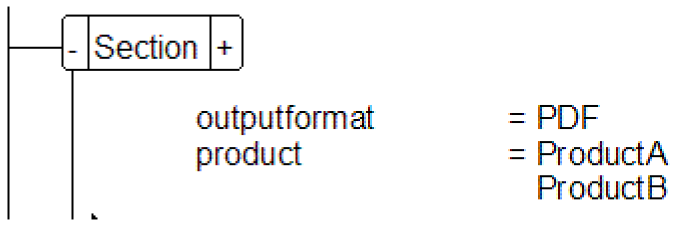
For the purposes of this plugin, any attribute and value can represent a condition. For example, the following `Section` element shows a potential “ProductA” condition designated for the `product` attribute:



Or, the following figure shows a Section element potentially conditionalized for two different products:



You may use multiple attributes and values as needed to designate conditions, overlapping as necessary, such as:



In short, you may use any attributes and values you wish, provided that you use them consistently and build your scheme logic around them.

NOTE: Using a Strings-type attribute in an EDD, it is convenient to add multiple values to a single attribute in the form of a list. However, AXCM also supports tokenized strings of values, typically found in XML markup. For XPath-based schemes, the types of expressions used determine whether tokenized values are recognized. For “classic” schemes, the recognition of this construct is an individual scheme option. For more information, see *Attribute values delimited by whitespace (Tokenized strings)* on page 4-50.

- Section +
product
= ProductA ProductB

Figure 2-1 Multiple values as a tokenized string

Conditionalizing whole chapters

One of the key benefits to using AXCM is the ability to conditionalize entire chapters of books. For more information, see *Conditionalizing (and filtering out) entire files* on page 3-19.

Local settings

AXCM provides a number of customizable settings in a simple text file that can be opened by selecting **AXCM > Open Local Settings File**. When selecting this command, the plugin attempts to open the file in Notepad. If the file fails to open, you may have Notepad installed in an unusual location, in which case there is a setting in the settings file that you can configure to point to your `Notepad.exe` file. If you need help with getting this menu command to work, please contact West Street.

At any time, you can select **AXCM > Read Local Settings From Settings File** to read the settings into memory. The file does not need to be currently open. Note that Notepad operations such as saving and closing the settings file do not initiate a settings read. To read settings, you must select that command.

The descriptions of all settings are contained within the file itself. You should take some time to review the file in its entirety to ensure that you have AXCM configured for optimal behavior with respect to your personal workflow.

About the main settings file

The main settings file is the home for scheme and attribute library data. Whenever you work in a scheme editor, all the data you see is coming from the main settings file, and likewise all modifications are stored therein. Whenever you specify or change a scheme, all scheme parameters come from this file.

Note that scheme data can also be stored in “configuration files.” For more information, see *About “configuration files”* on page 2-12.

Main settings file location

The plugin always keeps a local copy of the main settings file to retrieve scheme data whenever necessary. If you want, you can use the local file as the only copy, managing all your data locally. In this scenario, the scheme data you use is private to your installation, and the only means of sharing scheme data with other users is to pass a copy of the file around. When you edit schemes, you are editing data in the local copy only. For more information on where the local copy is stored, see *Where settings files are stored* on page 2-13.

Alternatively, you can place a “master copy” of this file anywhere on your computer or some other networked computer, then point any number of individual users to that master file. In this scenario, FrameMaker will retrieve a copy of the master file upon each startup and store it locally, after which it operates normally with the local copy. With this type of enterprise configuration, you can maintain a central library of scheme data and ensure that all applicable users are using the same scheme parameters.

NOTE: A main settings file can reside in a read-only location. For any user that does not have write access to the location, scheme data will be viewable, but scheme editing tools will not allow the user to commit changes. In an enterprise settings scenario, this may be one method to limit who can alter scheme data.

The location of your “master copy” is specified in your local settings file. By default, the location points to the local copy, which normally at the following path (or similar):

```
C:\Documents and Settings\{user_name}\Application
Data\Adobe\FrameMaker\10\WestStreet\AXCM\AXCM_MainSettings_LocalCop
y.fm
```

With your local settings pointed to this file, you will be working in “local mode” only. If you want to engage the “enterprise” feature, you need only to move a copy of that file to some master location, then edit your local settings (or use **AXCM > Main Settings Configuration > Set Main Settings File Location**) to point to the master copy. Once you point to a different file, the plugin will go to that location automatically upon startup, retrieve a copy, and overwrite the local version. The local copy will remain current with the master file and a group of users can remain synchronized. For more information on local settings, see *Local settings* on page 2-9.

Whenever you edit schemes, you are editing the file that your local settings point to. If your settings point to the local copy, your edits will appear on your local installation only.

If your settings point to some master copy, your edits will appear there, and your local copy will be refreshed once you are complete. If you edit some master copy that other users also point to, they will see your changes upon their next startup of FrameMaker. Note the following important items:

- If your main settings file resides anywhere that you do not have administrative write privileges, edit actions through AXCM will fail. Related to this subject, you should review *Where settings files are stored* on page 2-13.
- If you point to a file on an enterprise location but the software is unable to find it, the most recent local copy is used instead. In this manner, the software will remain functional in the event of network problems that are blocking access to your master copy.

About the main settings document structure

A main settings file is a structured FrameMaker document itself. It may have any name, but it must use the EDD designed for it. If you plan to place a master version somewhere else, you should simply copy and paste the local copy that installs with the software, then point your local settings to the new location.

You can use the file in binary FrameMaker, MIF, or XML format. For XML, the file will functionally roundtrip using the default structure application, but formatting will be lost. If you want to roundtrip the file without losing any of the formatting amenities, you can build a very simple structure application using a factory version of the file as the template. No custom API client or read/write rules are required. If you need help roundtripping the file, please contact West Street.

Because it is a normal structured document, a main settings file can be edited manually or by some external process other than FrameMaker. If you choose to do this, you should exercise extreme caution and be sure to maintain the functional structure that AXCM is expecting. An improperly structured file will at best cause AXCM to malfunction and at worst cause FrameMaker to crash. Note that from a functional perspective, AXCM cares nothing about the formatting in the file, only the markup and the data.

Book processing limitations

AXCM supports the coloring, filtering, and validation of books that contain folders and groups, new features added in FrameMaker 9. However, it does not support book files nested within book files. An attempt to run processing on such a book will yield unpredictable results at best.

About “configuration files”

As an alternative to the use of the main settings file, scheme data can also be stored in tabular format in a FrameMaker document. When stored in this manner, that file is known as a “configuration file” for the purposes of AXCM and its documentation.

A configuration file can be any format that is capable of rendering a table in FrameMaker, including binary FrameMaker, MIF, and XML. It can be structured or unstructured, using any template. When reading data from a configuration file table, no element or formatting markup is considered. Only the text is read.

A scheme table does need to follow a strict syntax and general layout. For more explanation and examples, see the samples contained in `AXCM_Sample_Config_File.fm` which is provided with the AXCM installation.

To use a scheme from a configuration file for coloring, filtering, or validation, you must select or browse to the file using the special commands found in the **Category** dropdown lists in the respective dialog boxes. Once a configuration file has been selected, the **Scheme** list shows all the schemes that could be found in the file, similar to the usage of a normal category from the main settings document.

The additional items are relevant to configuration file usage:

- Configuration files must be edited manually. They have no integration with the AXCM scheme editors. All scheme editor activity works with traditional main settings files only.
- AXCM identifies a table as a scheme table based on the title alone. Scheme tables can exist anywhere in the document, including master and reference pages. The order in which they are identified may not follow normal document order.
- The general setup of scheme tables follows the overall appearance of schemes within the scheme editors. Therefore, a familiarity with traditional scheme usage is important for the successful use of configuration files.
- An incorrectly-configured scheme table can cause any nature of unpredictable and/or undesirable behavior, sometimes without any warning. Therefore, you should use them with care and thoroughly test them before putting them into production use.
- It is expected that this feature will be used by a select few users in specialized environments only. Therefore, this documentation is intentionally kept brief. If you have additional questions or need more help, please contact West Street.

AXCM includes a simple utility for validating the overall setup of a scheme table, invoked by selecting **AXCM > Check Tabular Scheme Data**. Before selecting this command, you should place the insertion point somewhere within the table you want to check. The utility validates the following basic rules:

- Two schemes of a particular type within the same file cannot have identical names.
- Filter and validation schemes should have at least one **Attribute** or **Expressions** row.
- Filter and validation schemes should not have both **Attribute** and **Expressions** rows.
- Filter and validation schemes should not have multiple and **Expressions** rows.
- Filter and validation schemes should not have **Rule** rows.
- Coloring schemes should have at least one **Rule** row.
- Each **Rule** row in a coloring scheme should have a color specified.
- Coloring schemes should not have **Attribute** or **Expressions** rows.
- Any cell meant to contain one or more attributes, values, or XPath expressions should not be empty.
- All XPath expressions (as applicable) must be parsable.

Where settings files are stored

By default, all settings and support files are stored in the Windows “Documents and Settings” area for the respective user, at a location similar to the following:

```
C:\Documents and Settings\{user_name}\Application
Data\Adobe\FrameMaker\9\WestStreet\AXCM
```

In the AXCM installation area, the `AXCM.ini` file provides the option to store all settings in the AXCM installation area instead. This approach should work as long as you have full administrative privileges to the installation area. However, it is recommended that you preserve the default settings instead, which ensures proper operation regardless of installation area privileges. It also allows the plugin to work in collaborative server environments such as Citrix.

About scheme categories

The software uses three different types of schemes for processing, as applicable:

- Coloring
- Filtering
- Validation (“classic” schemes only)

To help with scheme management and organization, schemes are placed into categories and you must select the appropriate category when setting or editing a particular scheme. Each category can contain any number of coloring, filtering, and validation schemes, and the way in which you set up your categories is completely up to you. This architecture is designed simply to allow the grouping of common schemes, such that any given list does not get too long.

3: Filtering, Coloring, and Validating

This section of the document describes the three main processes that the AXCM provides to manage your conditional content:

- **Filtering** - Filtering is the process by which you produce publishable output from your composite, conditional source. It is analogous to the “Show/Hide” activity with native conditional text. For more information, see *Filtering* on page 3-15.
- **Coloring** - Coloring is a means of indicating your conditional content with custom colors, primarily as an authoring convenience to help you visually see your conditions. This function is analogous to the “condition indicators” aspect of native conditional text. For more information, see *Coloring* on page 3-21.
- **Validation** - Validation provides an automatic means of detecting common errors with conditional attribute assignment. It is unique to markup-based conditions and has no counterpart in native conditional text. For more information, see *Attribute validation* on page 3-22.

You can have as many schemes as you want, and even share them at an enterprise level. For more information, see *About the main settings file* on page 2-9.

Filtering

Filtering allows you to produce output from a composite, conditional source, often as one of the final steps before publishing. It has some conceptual similarity to showing and hiding native conditional text, but it is much more advanced and flexible.

The filtering logic is directed entirely by the parameters of your defined filter schemes. That is, for any given document, all decisions about what content gets “shown” versus what gets “hidden” are based on the instructions found in the scheme that you run. This section does not cover this logic; rather, it describes the general aspects of filtering and file handling. For details on how the logic of schemes work during the filtering process, see *Filter schemes* on page 4-40.

Before attempting to filter content, you should read this section carefully. You should be especially sure that you understand the difference between source and duplicate file filtering, as described in *Filter types - Source versus duplicate file* on page 3-17.

Launching a filter

To launch a filtering action, bring the desired book or document to the front and select **AXCM > Filtering > Filter {doc type}**. This function will produce the filter dialog box, with the following options:

NOTE: If you intend to filter a whole book, be sure to bring the book window to the front before launching the dialog box.

Scheme category and **Filter scheme**	Sets the filter scheme you want to run. For more information on scheme construction and behavior, see *Filter schemes* on page 4-40.
Filtered book folder	Sets the target folder where a duplicated, filtered book will be placed. This option is only applicable to duplicate file book filters. For more information, see *Filter types - Source versus duplicate file* on page 3-17.
New and **View/Edit**	Allows you to view and perhaps edit the setup of the selected scheme, or create a custom “on-the-fly” scheme. For more information, see *Creating and editing schemes from the filter dialog* on page 3-19.
Filter type	Filter type for the current filtering action. For more information, see *Filter types - Source versus duplicate file* on page 3-17. **NOTE:** You can set a default value for this option in your local settings file. For more information, see *Local settings* on page 2-9.
Remove coloring (refresh EDD)	Removes all format overrides (such as AXCM-applied coloring) by refreshing EDD format rules.
Save original files before filtering	Causes the plugin to save all applicable files before launching the filter, including the book file if you are performing a book filter. This option is especially recommended for duplicate file filters, because the filtering action will close your original files during the process and any unsaved changes would be lost otherwise.

Delete empty folders and groups after filtering	Causes the plugin to delete any empty folders and/or groups in the filtered book file, after the filter. Note that: • This option will delete all empty folders and groups whether or not the filtering action deleted their contents or they were empty from the start. • You can configure a startup default for this setting in your local settings (see *Local settings* on page 2-9).

Filter types - Source versus duplicate file

AXCM provides two types of filtering which you should be sure to understand before using the filter:

- **"Duplicate file" filtering** - With this type, your files to be filtered are duplicated, then the content to be "hidden" is completely deleted from the duplicate. Your source files are unaffected and the result is a filtered duplicate of the source file. This form of filtering is very clean and is generally recommended for filtering processes involved with pre-publication document preparation.
- **"Source file" filtering** - This type of filtering works directly on your source files and uses native conditional text as the tool to hide the unwanted content. For all content deemed to be hidden, it applies the condition defined in your local settings (see *Local settings* on page 2-9) and then hides that condition after the filter. Your source files are effectively filtered, but because the unwanted content was hidden with the standard conditional text mechanism, no content is permanently deleted.

  Source file filtering includes two variations:

  – **Restore from a previous filter first** - Before the filter, AXCM shows all conditions in the document and then removes them. This step effectively removes any filtering that was applied by a previous source file filter. Note, however, that it will also remove any conditional text in the document applied by any other means.

  – **Do not restore** - With this method, AXCM moves straight to the filter without any restoration. This method allows you to run multiple filter schemes on a single file in a layered fashion. Note that this method is generally reserved for specialized use only and that most users should use the "restoration" method.

    By default, the "no-restore" method shows all native condition tags in the document before a filter, then hides the "hidden" condition after a filter. This behavior can be changed with settings in your local settings file. In all cases, if you are using XPath-based schemes and this filter method, you should make sure that you understand the starting context of the document, as element hierarchy and relationships can change when content is shown and hidden.

The decision of which filter type to use is purely based on workflow. For publishing, especially books, the duplicate file method is generally preferred, because native conditional text is known to cause crashes and other oddities while generating print or PDF output. On the other hand, the source file filter might be more convenient on a single-document basis while authoring, such that you can get a quick view of what your output will look like.

If you perform a duplicate filter on a single document, the plugin will open up an unsaved duplicate and then filter it, leaving it open on the screen afterwards. If you perform a duplicate file filter on a book, you must specify a target folder to receive the duplicate book. AXCM cannot duplicate a book within the same folder as the original book, because duplicate books use all the same filenames as the original book. The only physical difference with the duplicate book is the missing content that was filtered out, as applicable.

Using the duplicate file filter on a book provides a convenient means to move your publishable output to some refreshable staging area for publication. For example, if you use Quadralay software to generate help systems from your book, you can filter the book into a separate project area, then run the help generation software on the filtered duplicate. With this method, you never need to be concerned with the help generation software manipulating your source files or attempting to manage conditions for you.

When you perform a duplicate file filter on a book, AXCM will adjust all cross-references and file reference links automatically. For cross-references between chapter files, the links will be adjusted to point between the respective chapter files of the new, duplicated book. For cross-references outside the book, the plugin will leave them alone and they will continue to point to the same, external source.

If you use the source file filter, you should be aware that the native conditional text is used as a mechanism to hide content only. The native conditional text (i.e., the “Hidden” condition) plays no part in the logic of determining what to show or hide. All show/hide logic is driven by the respective filter scheme. Note the following important items about source-file filtering:

- The filtering and restoration process will interfere with any native conditional text assignment already in the document. Although you should not use native conditional text in conjunction with AXCM, you should be especially sure not to run a source file filter on a document that still contains any.
- The plugin provides an automatic means of restoring a document after a source file filter. For more information, see *Restoring a document or book* on page 3-19.

How filtering works

When a structured flow is filtered, AXCM starts at the highest-level element and walks through the entire structure tree in a logical fashion, doing one of the following for each element:

- For “classic” schemes, checks whether the attribute setup qualifies the element for preservation or deletion
- For XPath-based schemes, checks whether the element/node was matched by the XPath expression(s) or not.

For any given element, if the element is determined to be a "keeper," the plugin continues on to the next element. Conversely, if AXCM determines that the element should not be kept, it will hide or delete the element and all its children, according to the filter type. It then backs up to the previous element and continues down the tree.

The active filter scheme contains all the logic used to determine what content should remain, and what should be removed. For details on this logic, see *Filter schemes* on page 4-40.

Restoring a document or book

After performing a source file filter, you can restore your document or book to normal by selecting **AXCM > Filtering > Restore {doc type}**. This function will remove all instances of the "Hidden" condition tag in the restored document(s). The intent is to restore the document to the actual condition previous to the filter action.

NOTE: This function may remove other native conditional text from the document. For this reason, you should never run a source file filter or post-filter restoration if you are still using native conditional text manually. For information on native conditional text, see *Important note on native conditional text* on page 2-7.

Conditionalizing (and filtering out) entire files

AXCM allows you to conditionalize an entire chapter of a book, and likewise filter out the whole chapter as applicable. To conditionalize a chapter, simply use conditional markup at the highest-level element of the main flow, like you would any other element. If a filter scheme determines that the HLE should be removed, it assumes that the entire file should be removed from the book.

Note that whole-chapter removal can only occur for duplicate file filters, because it requires a permanent alteration to the filtered book. The plugin never makes permanent alterations to your source files, so it cannot remove a file if you are performing a source file filter. If a source file filter encounters an HLE that should be hidden, it simply hides all content in the flow, which will normally leave you with blank pages in your output. The ability to conditionalize and remove entire chapters is an important benefit to using duplicate file filters, among others.

Creating and editing schemes from the filter dialog

The filter dialog provides the following buttons related to scheme management:

- **New** - Allows you to create a new “classic” scheme and optionally store it in the scheme library.
- **View/Edit** - Allows you to view the scheme setup for the selected scheme and, if the scheme is a classic scheme in the “Custom” category, allows you to edit it. XPath-based schemes and any classic schemes in other categories cannot be edited.

All custom schemes use the classic scheme format. For details on how classic filter schemes work, see *About “classic” vs. XPath schemes* on page 4-28.

When you launch the dialog box for a new or editable scheme, the scroll box on the left provides a list of all attributes and values found in the document(s) to be filtered. If you have familiarity with classic scheme construction, the usage of this dialog box should be generally intuitive, with the following notes:

- The dialog box allows you to add attributes and/or values to existing attributes. These functions add to the dialog box list only, not the document(s) to be filtered.
- The following options affect the format of the attribute/value list in the dialog box AND the behavior of the subsequent filter:
  - **Consider whitespace as an attribute value delimiter (tokenized values)** (see *Attribute values delimited by whitespace (Tokenized strings)* on page 4-50)
  - **Consider EDD-applied attribute defaults** (see *Considering EDD-applied defaults* on page 4-49)
- The following options affect the format of the attribute/value list in the dialog box but have no effect on the subsequent filter:
  - **Ignore Unique ID and ID Reference attributes** - Omits any attributes from the list that are unique ID or ID Reference types. This is a recommended setting, as these types of attributes are normally not used for conditional metadata.
  - **Assume that unspecified attributes mean "unconditional"** - Causes the “`<no value>`” value to automatically appear for any attribute added to the scheme, as a dialog box convenience only (see *<no value> and <any value> in “classic” schemes* on page 4-45).

Additionally, note the following:

- Like any classic filter scheme, a custom-defined scheme is a simple list of attributes and values with an applicable rule-base that drives the filtering logic. In particular, the use of `<no value>` for attributes may be very important. For more information, see *<no value> and <any value> in “classic” schemes* on page 4-45.
- Like any classic scheme, if you specify an attribute but no valid values for it, any element that has the attribute defined will be filtered out, regardless of specified values. For more information, see *Filtering out elements by type, using unique attribute names* on page 4-46.

- If you create or edit a scheme but choose not to save it, it will be deleted following the selection of another scheme in the filter dialog or the filtering action itself.
- If you save a new scheme, it will be stored in your main settings under the “Custom” category in the classic schemes library, where it may be managed afterwards in the classic scheme editor like any other scheme.

Coloring

Coloring text according to conditions is mostly an authoring convenience, allowing you to see visually where your conditions are assigned. In this respect, the purposes of coloring with the AXCM plugin are exactly the same as those associated with native conditional text.

The process of conditional coloring with the plugin, however, is functionally much different than native conditional text. Before attempting to set up schemes and perform coloring actions, you should be aware of the following:

- Coloring does not occur until you manually run a scheme through the **AXCM > Coloring** menu or associated shortcuts. The plugin does not include any automatic coloring.
- Coloring is applied as a simple format override, much as if you opened the paragraph designer, selected a color, and clicked Apply. It is therefore easy to remove by refreshing the EDD definitions.
- When you run coloring on a whole document, the EDD definitions are first refreshed to remove any previous coloring. This process will also remove any other format overrides in the document.
- The active coloring scheme contains all the logic used to determine color assignment. For more information, see *Coloring schemes* on page 4-31.

NOTE: Coloring should occur with reasonable reliability, but IT IS NOT FLAWLESS. Format overrides do not always mix well with an EDD-driven, structured environment and some anomalies may occur. It should always work well enough, though, to clearly indicate where your conditions are assigned. Note that in any case, filtering should be flawless. If a certain piece of content does not color as expected, it should still filter correctly. If it does not, the software has a critical bug and you should report it to West Street.

Launching a coloring action

To launch a coloring action, you should bring the desired file to the front and select **AXCM > Coloring > Color {doc type}**. Note the following:

- When you choose to color a selection only, the software colors the selected element and all descendants. If no element is entirely selected, the software colors the element that contains the insertion point, and all descendants. If there is no insertion point, nothing happens.
- The software does not automatically apply coloring, so you may want to keep the Esc 1 1 shortcut handy for coloring the current selection. In your preferences, you can specify a default scheme to load upon startup that will be used for selection coloring, until you change it.
- By default, the scheme selection box appears each time you launch a document or book coloring action. You can stop this behavior by unchecking the option at the bottom of the selection box. Afterwards, coloring will initiate as soon as you select the respective command, using the most recently-selected scheme. If you want to restore the appearance of selection box, you can select **AXCM > Coloring > Set Active Scheme** to produce the same selection box, and recheck the option.
- When the software determines that a color should be applied, it looks for it by name in the current document’s template. If it cannot find the color, it cannot apply it.
- When an entire book is colored, any chapter files that are closed will be skipped.
- Coloring will override any colors applied by paragraph and character formats, but it will not override colors applied by condition indicators from native conditional text.

Removing coloring

Coloring by AXCM is accomplished by simple format overrides and is therefore easily removed by refreshing the element definitions. You can do this the with the **AXCM > Coloring > Uncolor {file type}** commands, which are nearly identical to the **File > Import > Element Definitions** command, except that the **Uncolor** commands will also remove change bars if you have the proper setting enabled in your local settings file. **File > Import > Element Definitions** will not remove change bars.

Attribute validation

NOTE: Validation schemes must follow the “classic” scheme format. AXCM does not support the concept of an XPath-based validation scheme.

AXCM includes a validation feature that helps you prevent common issues associated with attribute values and conditional markup. It may be used as an automatic process during authoring, or you can run it on an entire document or book as a post-process before filtering and publishing. When you run it on an entire file, AXCM produces a hyperlinked report detailing all the issues it found.

The following sections contain details on the four potential issues that validation can detect. Before using validation, note the following:

- The software is programmed to recognize four potential issues, but not all four may be important to you. For this reason, you can selectively decide which validation “rules” should be active, using your local settings file. For more information, see *Local settings* on page 2-9.
- AXCM has no association with element definition validation, launched through the Element > Validate menu command.

Automatic validation

In your local settings file, you can opt to have validation occur automatically during key user events, such as inserting elements and setting attributes. Any rule violations are reported instantly with message boxes, and strikethrough text applied as applicable.

For auto-validation to work, the software must have an active validation scheme. In your local settings, you can specify a default validation scheme to load upon startup, such that auto-validation will begin to work immediately. If you do not specify a valid default scheme, auto-validation will fail after startup until you manually set an active scheme. For more information on local settings, see *Local settings* on page 2-9.

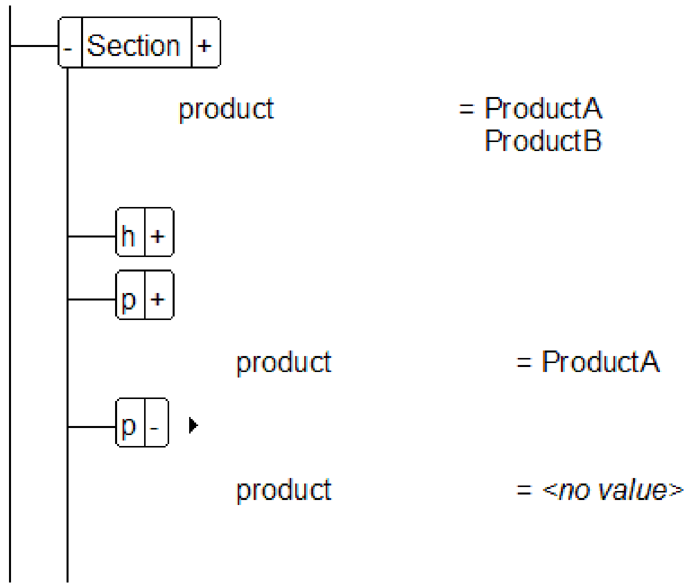
Validation rule #1 - Simple syntax

When using attribute values to denote conditional content, the syntax of the specified values is extremely important. With rule 1 active, the validation feature will scan all attributes contained in the active validation scheme, and ensure that all specified values match those contained in the scheme. If the software finds a value in the document that is not in the scheme, it will report it as an error. Note that it only scans the values of the attributes found in the scheme, and all other attributes are ignored.

Validation rule #2 - Ancestor element lacking subordinate condition

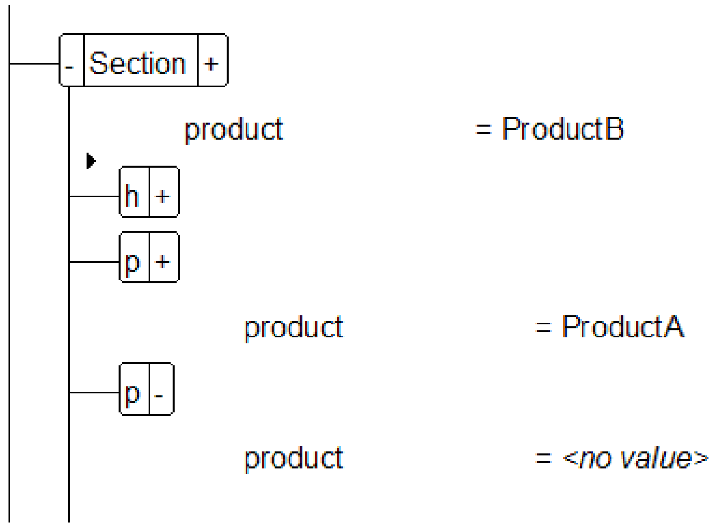
Because of the natural inheritance that flows through a structure tree, it is normally an error when something breaks that flow. When using attribute values to denote conditions, this situation can occur when an element contains a condition that is not shared by all its ancestors.

As an example, consider the following structure fragment:



This fragment is hierarchically sound because all conditions are properly nested and the natural inheritance is not broken. The `Section` element contains all the conditions shared by subordinate elements. This includes the p element with no value, because a “no value” situation generally indicates to inherit parent conditions by default. This fragment will filter normally for both products A and B, and no content will get lost.

Conversely, consider the following fragment:

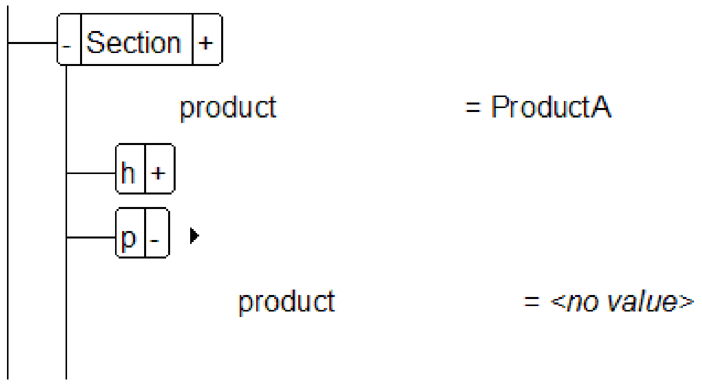


This fragment has hierarchy issues because conditions are not properly nested. In particular, the “ProductA” element is generally orphaned, because its condition is not shared by the `Section` ancestor. To illustrate, consider the case where you are filtering to produce a “Product A” version of this document. The `Section` element will be removed during the filter process, because it does not apply to Product A. This removal, however, will also remove the subordinate elements, including the p element tagged for Product A. So, this element will never appear in a Product A version of the document despite its tag, due to the mismatch in conditional hierarchy.

During validation, this scenario is checked for all attributes found in the validation scheme. Note that this rule does not look at the validity of the values themselves; rather, it only looks for mismatches between ancestors and descendants with any value. Therefore, the specific values specified in the validation scheme are not used for this rule, unlike rule #1.

Rule #3 - Unspecified descendants

In some specialized cases, you may require that all elements explicitly specify all applied and inherited conditions. For example, consider the following structure fragment:



In a purist scenario, the empty `product` attribute on the subordinate p element might be considered an error, because it does not explicitly contain the contain the condition of its parent. If copied and pasted elsewhere, its original conditional nature might be lost because it was dependent upon its parent to inherit the Product A condition.

Normally, an empty attribute indicates to inherit ancestor conditions by default, and this situation is not considered an error. Therefore, rule #3 is frequently disabled by users.

Rule #4 - Empty attribute not allowed

This rule flags any attributes that are not permitted to be unspecified, indicated by the lack of a “<no value>” inclusion in the active validation scheme. That is, if a particular attribute in the scheme does not have “<no value>” included in the list of valid values, the attribute is not permitted to be empty.

This rule is a largely a specialized version of rule #1, provided for convenience. For more information on rule #1, see *Validation rule #1 - Simple syntax* on page 3-23.

4: Scheme Setup And Other Main Settings

Schemes are the configuration workhorse of the plugin, where you specify exactly how you want it to color, filter, and/or validate your content. Rather than making manual decisions about how to process your content with each action, you put this logic into schemes and simply run the desired scheme whenever necessary.

NOTE: Before attempting to work with schemes, you should understand the two different types offered by the software. For more information, see *About “classic” vs. XPath schemes* on page 4-28.

You can have as many schemes as you want, and even share them at an enterprise level. For more information, see *About the main settings file* on page 2-9.

General information about schemes and categories

In most respects, a scheme is little more than:

- For “classic” schemes, a collection of attributes and values, or
- For XPath-based schemes, a list of XPath expressions

...and perhaps some additional options. When run, the plugin navigates the document structure tree(s) and stops at each element, comparing its markup to the scheme setup. If they match, some respective action occurs, such as the coloring of the element during coloring or the preservation of content during filtering.

Because of their similarities, the three scheme types (coloring, filtering, validation) look much the same and use the same editors (**AXCM > Main Settings > “Classic” Schemes** or **XPath Schemes**). The scheme editors include a drop-down menu that allows you to switch between scheme type that you are editing. All schemes are stored in the main settings file, described in more detail under *About the main settings file* on page 2-9.

The plugin also provides a higher level of categorizing schemes, known simply as scheme categories. A category is a collection of any number of coloring, filter, and validation schemes, and serves as a mechanism to help you keep schemes in order. The way you categorize schemes has no effect on how the plugin operates. Rather, it is a basic feature that allows you to group common schemes together and prevent scheme lists from getting too long.

NOTE: Category names must be unique across “classic” and XPath-based schemes.

Although all schemes are constructed in a similar manner, the way they behave during processing may differ. For example, the details of attribute/value/XPath matching differs between coloring and filter schemes. These details are explored in the individual sections about each scheme type.

NOTE: Schemes are completely document- and book-independent. You can run any scheme of any type on any document or book. In most cases, you will have a number of schemes that you run on any given document set, and you may share schemes between different document sets. The manner in which you name and categorize your schemes is entirely up to you and no scheme is ever restricted to a particular file.

About “classic” vs. XPath schemes

Originally, AXCM (ABCM) was focused solely on attributes and values as the mechanism for expressing conditions within documents. When schemes were created, they were represented by simple collections of attributes and values, which drove an attribute-focused rule base during coloring, filtering, and validating. While this method was useful in most conditional text workflows, it lacked some flexibility with more advanced scheme setups.

With version 2.0 of AXCM, a new method of scheme construction was introduced known as XPath-based schemes. This methodology relies on XPath expressions to build schemes, providing a very rich set of semantics for managing conditions including the ability to recognize:

- Element tags and hierarchical relationships
- Element and attribute text fragments
- Complex logical evaluations using AND, OR, NOT, and much more

As such, the original type of scheme is now referred to as a “classic” scheme, both in the AXCM GUI and this document. Before working with schemes you should be sure you understand the difference between the two types. While the software allows you to use both types simultaneously, a good understanding will allow you to choose the type that best fits your needs.

Note that validation schemes only apply to the classic scheme type. The concept of validation does not fit well with a scheme constructed of XPath expressions.

Important notes about XPath-based schemes

- During scheme setup, XPath-based schemes are considerably more challenging to understand and perfect. While they add a significant amount of flexibility, this flexibility comes at the cost of simplicity. You should test your schemes thoroughly before using them in a production environment. Despite the complexity, you should find that a set of common scheme constructions serve most of your needs, with only minor adjustments to attribute names, values, and/or element tags required to adapt schemes to new applications. And of course, once a scheme is set up, it needs no further attention unless changes are required.
- The AXCM tutorial for XPath schemes may be your best option for learning how XPath-based schemes work and obtaining some sample expressions.
- All XPath expressions must use the context of the highest-level element for their respective queries. Therefore, all expressions must begin with a forward slash (/).
- For filtering, text nodes will be filtered out unless you explicitly provision otherwise. You can do this one of two ways:
  - Write your expressions to match text nodes, typically by using the `node()` notation rather than the asterisk shortcut. For example, you can use:

    `//node()[@Product = "ProductA"]`

    ...rather than:

    `//*[@Product = "ProductA"]`
  - Set your local settings (see *Local settings* on page 2-9) to ignore text nodes entirely. If you never plan to filter out text nodes, this option can save processing time.

  Note that “text nodes” in this context is limited to untagged text between tagged elements, or in other words, text nodes that are part of an element with a mixed content model. AXCM and its XPath do not recognize the implied text node of a text-containing element without other tagged child elements.
- AXCM uses the XPath engine that was originally built for FrameSLT, another West Street plugin. As a temporary source for XPath documentation, a copy of the *FrameSLT User Guide* XPath chapter is provided as a reference. If you are not familiar with the extent of West Street XPath support, you should browse this document, as the software only supports a subset of the full W3C specification. If you need any additional help, please contact West Street.

General scheme editing procedures - “Classic” schemes

All classic schemes are edited using the classic scheme editor (**AXCM > Main Settings > “Classic” Schemes**). Each scheme type (coloring, filtering, validation) looks similar, as each is one or more collections of attributes and values. The following are some general tips to keep in mind while editing classic schemes:

- A scheme can contain multiple attributes and unique values for each. When you are looking at the attributes and values on the right, the list of values will always reflect the currently selected attribute only.
- When you add attributes and values to a scheme, the plugin provides a dialog box with a drop-down menu. This menu is prepopulated based on information found in your master attribute library. For more information, see *Master attribute library* on page 4-51.
- When you add coloring rules, the plugin provides a dialog box with a drop-down menu. This menu is prepopulated based on information found in your master colors list. For more information, see *Master colors list* on page 4-52.
- Like all AXCM dialog boxes, you can double-click an item in a scroll box to edit it.
- All schemes may include a set of advanced options, accessible by clicking the Advanced Options button. For more information on these options, see *Advanced scheme options* on page 4-48.

General scheme editing procedures - XPath-based schemes

All XPath-based schemes are edited using the XPath scheme editor (**AXCM > Main Settings > XPath Schemes**). The following are some general tips to keep in mind while editing XPath-based schemes:

- Non-parsable XPath expressions are not usable and will be rejected.
- The dialog box retains a general history of recent XPath expressions you have entered and/or edited. You can control the length of this history in your local settings (see *Local settings* on page 2-9).
- For coloring schemes, you can change the color or style of a rule simply by making a selection in the respective drop-down list. For colors, it is recommended that you have all required colors stored in your master color list, rather than attempting to type in the drop-down list. For more information, see *Master colors list* on page 4-52.
- The **XPath expressions** box has a **Test** button which allows you to test your expressions on the active document. For more information, see *About the XPath expression tester* on page 4-31.

- Like all AXCM dialog boxes, you can double-click an item in a scroll box to edit it.
- All schemes may include a set of advanced options, accessible by clicking the **Advanced Options** button. Some of these options are only applicable to classic schemes. For more information on these options, see *Advanced scheme options* on page 4-48.

About the XPath expression tester

The XPath-based scheme editor includes an expression tester, launched with a **Test** button below the expressions box. This utility is a simple tool for testing one or all of your expressions against the active document to determine what element(s) are matched. While it is a convenient utility that can help you perfect a scheme before ever using it, you should understand the information in this section before using it.

Most importantly, you should remember that the utility is a simple matching tool only, which does not necessarily provide a clear indication of what the scheme will do unless you pay close attention to hierarchy. Especially with filter schemes, you must remain aware of an unmatched element anywhere in the hierarchy which could cause the removal of all descendant elements when it gets filtered out, despite what the expression(s) match on those elements. For example, you may have a section-level or table row element that you have conditionalized for removal, but the paragraph elements below it are generally unconditional at face value. The tester makes its best attempt to represent hierarchical relationships with respect to higher-level matches, but some interpolation may still be necessary.

Additionally, note the following:

- Because XPath-based schemes use the AND logic between expressions, so does the expression tester when you select the **(test all)** option. That is, only nodes that match all expressions will be included.
- You can edit expressions in the expression tester and/or the scheme editor, with each dialog box automatically refreshing from the other.
- After obtaining the matches, you can a type match number directly in text box beside the **<<** and **>>** buttons, then click one of those buttons to jump to that match.
- The tester never alters test files, other than to change the text selection. If you notice that testing a document appears to cause the “unsaved changes” warning, it is because text selection with an API client such as ABCM automatically causes FrameMaker to indicate a change. Your content, however, has not been changed.

Coloring schemes

Coloring text according to conditions is mostly an authoring convenience, allowing you to see visually where your conditions are assigned. In this respect, the purposes of coloring with the AXCM plugin are exactly the same as those associated with native conditional text.

A coloring scheme includes one or more "rules," each of which indicates a color and the parameters to match in order to apply that color. The order of these rules is often critically important for achieving the desired results. For more information, see *Coloring rule order* on page 4-35.

While similar in concept to native conditional tag indicators, the process of conditional coloring with AXCM is functionally much different. Coloring with the plugin is a highly-customizable and specific process. With your schemes, you must indicate exactly what conditions should receive what color, including any details about condition overlap. There is no automatic magenta text or overlap coloring with the plugin... if you want overlaps colored a certain way, you must specify as such. Furthermore, a scheme only colors the conditions you want, and ignores any others that might exist. In this manner, it is very different than native conditional text, which forces you to view one coloring pattern only, and all conditions at a time or none at all.

Because of this flexibility, you can have as many schemes as you want for any particular document or structure definition, and run whichever one applies the particular coloring pattern you want to see at the time. It is common to color content in different fashions depending on what you want to see, particularly if you have many conditions and/or conditional overlaps.

NOTE: For more information on running a coloring scheme, see *Coloring* on page 3-21.

Basic coloring scheme behavior

When you run a coloring scheme, the process starts at some element, and steps logically throughout each descendant element performing the coloring function. At each element, the plugin stops and does one of the following:

- For classic schemes, compares the attributes/values on the element to those in the rules of the scheme, looking for a match
- For XPath schemes, checks whether the element matches all of the XPath expressions specified for one of the rules (that is, uses an AND logic between expressions if there are more than one)

It goes down each rule in order, looking for a match. It applies the color assigned to the first matching rule it finds, if any. Once a rule is applied or all rules have been exhausted, the plugin steps to the next element and does the same thing until all elements are completed.

If you run coloring on a whole document or book, the starting point is the highest-level element. If you run it on a selection, the starting point is the selected element, or the element that contains the insertion point. All coloring is launched through the **AXCM > Coloring** menu or associated shortcuts. You are encouraged to become accustomed to the shortcut for coloring a selection (Esc 1 1), because you may use it frequently to refresh the area in which you are working.

Where the colors come from

During a coloring action, if a rule matches, the plugin attempts to find the associated color(s) by name in the document being processed. If it finds a color, it will retrieve the associated color definition and apply it. If it does not, it will warn you that the color does not exist.

For this reason, it is important that you specify colors in your schemes that your template(s) actually contains. To help prevent errors, you can customize the drop-down list of colors that appears in the scheme editor to reflect the colors that are valid for your documents. For more information, see *Master colors list* on page 4-52.

Coloring scheme details - “Classic” schemes

To create and’/or edit a classic coloring scheme, you should work in the classic scheme editor (**AXCM > Main Settings > “Classic” Schemes**). Be sure that you have the correct category and scheme type selected. For more information on general scheme editing procedures, see *General scheme editing procedures - “Classic” schemes* on page 4-30.

A coloring scheme includes one or more rules, each of which contains a set of attributes and values. At a basic level, when the attributes/values of a rule match those on an element, the element receives the color assigned to the rule. There are, however, a number of technical details concerning coloring schemes, described in the following list:

- **Attribute/value matching criteria** - Rule matching behavior is very extensible with the **Match all values** option. For more information, see *Attribute/value matching criteria* on page 4-34.
- **Rule order** - Rule order is very important, because for any given element, the rules are processed in the order which they appear, and only the first matching rule is applied. For a more detailed explanation, see *Coloring rule order* on page 4-35.
- **<no value>** and **<any value>** - These standard items can be added to the values for any attribute, and are important to understand. For more information, see *<no value> and <any value> in a coloring scheme* on page 4-36.
- **Other formatting capabilities** - Coloring rules support the same additional style options as native conditional text, such as underlining and strikethrough. These options are specified on a rule-by-rule basis and are applied as simple format overrides, like coloring.

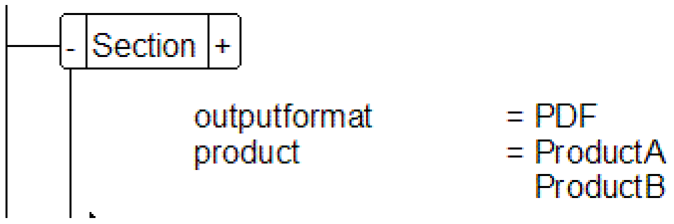
- **Changing a rule color** - The color assigned to a rule can be changed by selecting the rule in the list and double-clicking it or clicking Edit.
- **Override coloring of child elements** - This rule option causes all coloring of any child elements to be skipped, if the rule is matched. All child elements will receive the color of the matched element.

Attribute/value matching criteria

During coloring, each element is tested against each coloring rule in the scheme, until one matches or the rules are exhausted. Each rule has an independent setting called “Match all values,” which significantly affects the criteria required for an attribute/value match, as follows:

- **The option is checked** - If “Match all values” is checked, every single attribute and specified value in the rule must appear on the element in order to make a match. The element may have more attributes and values than appear in the rule, but it must at least have all those specified in the rule.
- **The option is NOT checked** - If the option is not checked, the rule will match if a single value from a single rule attribute is matched.

For example, consider the following element:



outputformat = PDF
product = ProductA
ProductB

...and consider the following rule:

Rule color	Attribute(s)	Value(s)
Green	`outputformat`	PDF

This rule will match whether or not “Match all values” is checked, because it matches at least one value of the `outputformat` attribute, and it also happens that every value in the rule is found on the element. The rule doesn’t care about the `product` attribute at all, because it isn’t specified in the rule.

Similarly, consider the following rule:

Rule color	Attribute(s)	Value(s)
Green	`outputformat`	PDF
	`product`	ProductA

This rule will also match in either case, because every attribute and value in the rule is found on the element, so the state of the “Match all values” checkbox doesn’t matter.

Conversely, consider the following rule:

Rule color	Attribute(s)	Value(s)
Green	`outputformat`	PDF
	`product`	ProductA ProductC

This rule is different. If “Match all values” is unchecked, the rule will match, because at least one value in the rule is found on the element. However, if it is checked, the rule will not match, because “ProductC” is not found in the `product` attribute of the element.

The “Match all values” option and rule order are your primary tools for designed detailed and effective coloring schemes. For more information on rule order, see *Coloring rule order* on page 4-35.

Coloring rule order

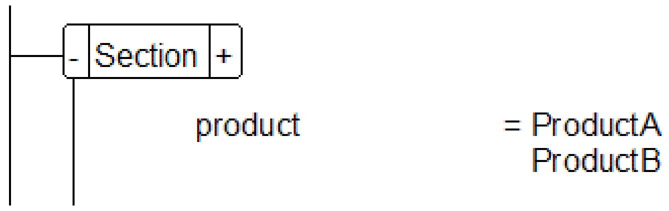
Rule order in a coloring scheme is critically important, because for each element evaluated, the plugin will choose the first rule that matches and ignore the rest. Therefore, you must be sure that your most “specific” rules are near the top, and the more “general” rules are near the bottom.

For example, suppose you want to color all your “ProductA” content red, and all your “ProductB” content green. And, to indicate a mix of conditions, you want to color content for both products in blue. In this case, you might be tempted to create the following scheme:

Rule #	Rule color	Attribute(s)	Value(s)
1	Red	`product`	ProductA

Rule #	Rule color	Attribute(s)	Value(s)
2	Green	`product`	ProductB
3	Blue	`product`	ProductA ProductB

At first glance, this scheme seems to have all the rules you need. More than likely, though, you will never get to see your blue color applied. For an explanation, consider the following element:



This element is one that should be colored blue, according to your original intentions. However, the plugin will never get to the blue rule (#3), because the first rule (red) will always match first. Its only criterion is that the `product` element contains “ProductA”, which this element does. So, it colors the element red and never gets to your blue rule.

To make a scheme like this work, you must be more specific with rule order and use the “Match all values” option appropriately. Consider the same basic scheme, with the rules and options rearranged:

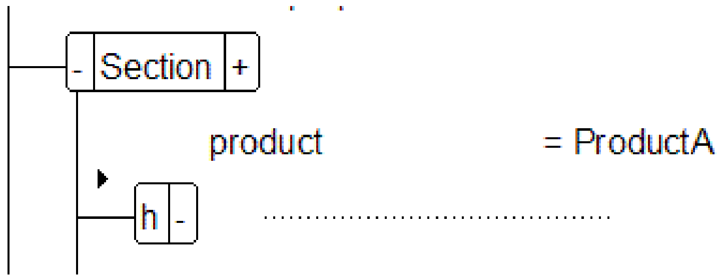
Rule #	Rule color	Attribute(s)	Value(s)	Options
1	Blue	`product`	ProductA ProductB	Match all values
2	Red	`product`	ProductA	
3	Green	`product`	ProductB	

Now, the “composite product” rule is at the top, so it will be evaluated first. And, it is forced to match all the values in order to qualify. In this case, the `Section` element will be properly colored blue, and any elements for ProductA or ProductB only will be colored red or green, respectively.

<no value> and <any value> in a coloring scheme

Like any classic scheme type, you can specify “<no value>” or “<any value>” for any attribute. These values, which automatically appear in the applicable drop-down menus, mean literally what they say: no value or any value. “No value” is synonomous with an empty attribute, and "any value" is synonymous with an attribute that contains any value.

As an example, consider the following element:



...and consider the following rule:

Rule color	Attribute(s)	Value(s)
Green	`product`	<any value>

This rule will match, because the `product` attribute contains any value. The converse is true, in that a specification of "<no value>" would only match if the attribute is empty. Note the following about <any value>/<no value>:

- If <any value> and <no value> both appear for any given attribute, it means literally "color me if I have this attribute, and it is either empty or specified." In other words, it will color any element based on the mere presence of an attribute, regardless of its contents.
- <any value> and the "Match all values" option are generally incompatible, because the option requires an explicit list to work logically.

Other coloring scheme options and features

Note the following miscellaneous items about coloring schemes:

- **<refresh EDD> as a color** - The “<refresh EDD>” option always appears in the colors list, and can be used in the place of a color for any rule. This option will cause the plugin to refresh the EDD definition for any element it matches, removing all format overrides for that element and any descendants. No colors are applied, unless the EDD definition directs as such.
- **<skip> as a color** - The “<skip>” option always appears in the colors list, and can be used in the place of a color for any rule. This option will cause the plugin to do nothing if the rule matches, and simply step to the next element. This option is intended for certain specialized use only and may not be commonly found in schemes.
- **Override coloring of child elements** - This option is available on a rule-by-rule basis, near the “Match all values” option. If a rule matches and this option is specified, it causes the color to be applied to the respective element and all descendant elements, with no consideration for descendant attribute conditions. In essence, it causes the plugin to discontinue its walk down the current branch being processed, and back up to start down the next logical branch. Any descendant elements therefore remain unprocessed.

Coloring scheme details - XPath-based schemes

To create and’/or edit an XPath-based coloring scheme, you should work in the XPath scheme editor (**AXCM > Main Settings > XPath Schemes**). Be sure that you have the correct category and scheme type selected. For more information on general scheme editing procedures, see *General scheme editing procedures - XPath-based schemes* on page 4-30.

A coloring scheme includes one or more rules, each of which contains one or more XPath expressions. Aside from the complexity of XPath, the functional logic is simple... for each element, if it is matched by all expressions for a rule, it receives the color and/or style assigned to the rule. AXCM walks down the element tree in hierarchical order, testing each element against each rule in order. For each element, the first rule that matches (if any) is applied and the plugin resumes with the next element.

Therefore, the challenging aspect of an XPath-based coloring scheme is building the expressions that perform the desired matching. The following sections provide some examples to help you get started.

Matching a single, basic condition

Assume that you have a document with `Product` attributes and one of the possible values is “ProductA.” If you wanted to color all ProductA content Red, you could use a Red rule with the following expression:

```
//*[@Product = "ProductA"]
```

This expression says literally, “Match me if I am an element with a `Product` attribute and that attribute is set to “ProductA”. If you use tokenized values for the `Product` attribute, you could use the `contains()` function for added flexibility. For example:

```
//*[contains(@Product, "ProductA")]
```

Matching and differentiating two basic conditions

Assume that you have a document with `Product` attributes and the possible values “ProductA” and “ProductB”. And, assume you want to color all ProductA content Red, all ProductB content Green, and all overlaps Blue. In this case, you could use the following set of rules:

Rule #	**Color**	**Expression(s)**
1	Blue	`//*[@Product = "ProductA"]` `//*[@Product = "ProductB"]`
2	Red	`//*[@Product = "ProductA"]`
3	Green	`//*[@Product = "ProductB"]`

There are many variations that could produce the same effect. For example, consider the following alternative setup which would be important if your attribute values are tokenized:

Rule #	**Color**	**Expression(s)**
1	Blue	`//*[contains(@Product, "ProductA") and contains(@Product, "ProductB")]`
2	Red	`//*[contains(@Product, "ProductA")]`
3	Green	`//*[contains(@Product, "ProductB")]`

Despite any variations, it is important that the “overlap” rule is listed first, because otherwise one of the other rules would match the same element first and apply its color instead. For an explanation of rule order from the perspective of classic schemes, see *Coloring rule order* on page 4-35.

Coloring everything except a certain condition

In some cases, you may want to color everything except a certain condition. For example, using the previous examples of `Product` and “ProductA”, perhaps you want to simply color everything that does *not* apply to ProductA as gray, making it easier to isolate the ProductA content yet still in its normal color. You could use a rule such as:

Rule #	**Color**	**Expression(s)**
1	Gray	`//*[@Product != "" and not(contains(@Product, "ProductA"))]`

This expression says literally, “Color me gray if I have a `Product` attribute set to something and it is not set to “ProductA”. This type of scheme setup is particularly useful when you have deep layers of conditional content. For example, assume the following conditional aspects also apply:

- You use an `Audience` attribute to indicate the effective audience and for this particular deliverable, an element must have it unspecified or set to “All”.
- You use special `Comment` elements to insert your own personal notes. For preparing deliverables, you don’t care about any attributes on this element; rather, you simply want every instance of the element to be removed from every deliverable, every time.

With these additional conditional stipulations, you might construct the following coloring scheme to color everything gray *except* deliverable ProductA content:

Rule #	**Color**	**Expression(s)**
1	Gray	`//*[@Product !="" and not(contains(@Product, "ProductA"))]`
2	Gray	`//*[@Audience !="" and not(contains(@Audience, "All"))]`
3	Gray	`//Comment`

Note that even though multiple rules are required for the desired effect, only one color is ultimately required for the output. Therefore, each rule applies the same color, as a cascading logic for graying all the material that does not apply to a ProductA deliverable.

Filter schemes

Filtering is the process by which you produce conditional output. It is loosely analogous to the “Show/Hide” process for native conditional text, with far more flexibility and options.

A filter scheme is mostly a simple collection of either attributes and values, or for XPath-based schemes, a collection of XPath expressions. During the filtering process, the plugin examines each element in a logical fashion, starting at the highest-level element and walking logically throughout each branch. If the markup on the element matches the attributes/values/expressions in the scheme, the element is preserved. If it does not, the element and all descendants are removed or hidden.

A filter scheme is structurally more simple than a coloring scheme because it has no rules, only one set of attributes/values or expressions. This difference is because the filtering process is a simple yes or no decision... not one where multiple colors might need to be evaluated and applied.

A critical point to understand when building schemes is that you are specifying the content to “keep,” not the content to hide. This aspect of filter schemes makes them fundamentally different than showing/hiding native conditional text. With the native Show/Hide dialog box, you must focus on what conditions to hide, in order to produce the output you want to keep. This logic is counterintuitive and is overcome by AXCM filter schemes, in which you specify what you want to stay in your output. All other conditions not specified are either ignored or hidden by default, depending on the logic of the scheme.

Note the following additional items about “classic” filter schemes:

- **Attributes not specified in the scheme are ignored** - Only those attributes found in the scheme are evaluated, and only then if the respective element contains them. All other attributes on the element are ignored, regardless of their contents. In this way, you can set up schemes that only consider certain conditions. This process is is much different than showing/hiding native conditional text, in which case you must always consider all conditions every time you want to show/hide, because they must all be dealt with in the Show/Hide dialog box.
- **Matching requires at least one value match for each scheme attribute** - If at least one value matches on the element between the attributes in the scheme and the attributes on the element, the element is preserved. That is, for each attribute in the scheme, at least one value must be found at the element, otherwise it is removed. For examples of this behavior, see *General filter scheme matching behavior - “Classic” schemes* on page 4-42.
- **<no value> and <any value>** - These items, which mean literally what they say, may be very important for proper scheme behavior. For more information, see *<no value> and <any value> in “classic” schemes* on page 4-45.

Note the following additional items about XPath-based filter schemes:

- **An element must be matched by all expressions in the scheme, otherwise it will be filtered out** - In other words, there is a strict AND logic between multiple expressions in a scheme. If you require an OR logic (or any other logical operator), it must be built into the XPath expression(s). XPath is extremely versatile and can support a wide variety of logical possibilities.
- **Text nodes will be filtered out unless you have provisioned otherwise** - To preserve text nodes in your filtered output, you must either account for them in your XPath expressions or set your local settings to ignore them globally. For more information, see *Important notes about XPath-based schemes* on page 4-29 and *Local settings* on page 2-9.

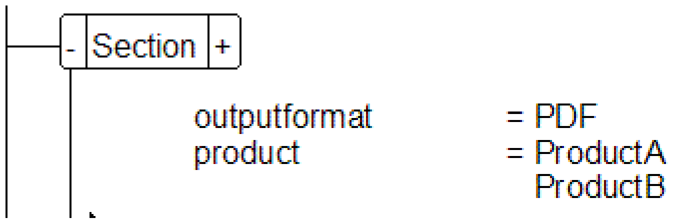
NOTE: For general information on running a filter, see *Filtering* on page 3-15.

General filter scheme matching behavior - “Classic” schemes

The logic for matching (versus discarding) during a filter action is generally simple. For each element evaluated, the following rules apply:

- If an attribute is on the element and in the scheme, that attribute is evaluated. At least one value must match between the two, otherwise the element is flagged for removal.
- If an attribute in the scheme does not exist on the element, or vice versa, it is simply ignored.

For example, consider the following element:



```
outputformat     = PDF
product          = ProductA
                   ProductB
```

...and consider the following scheme setup:

Attribute(s)	Value(s)
`outputformat`	PDF

During evaluation, the `Section` element will be preserved. It has an `outputformat` attribute which is also contained in the scheme, and at least one value (PDF) matches between the two. The `product` attribute is not included in the scheme, so the scheme doesn’t care about it at all.

Conversely, the following scheme setup would cause the removal of the element:

Attribute(s)	**Value(s)**
`outputformat`	HTML

The following scheme setup would allow the preservation of the element, because at least one value matches on both scheme attributes:

Attribute(s)	**Value(s)**
`outputformat`	PDF
`product`	ProductA

The same applies to the following scheme. This scheme adds another value to match on the `product` attribute that the element doesn't have, but it doesn't matter because the ProductA value does match:

Attribute(s)	**Value(s)**
`outputformat`	PDF
`product`	ProductA ProductC

The following scheme would also preserve the element. The `customer` attribute is never evaluated because it doesn't exist on the element:

Attribute(s)	**Value(s)**
`outputformat`	PDF
`customer`	CustomerA

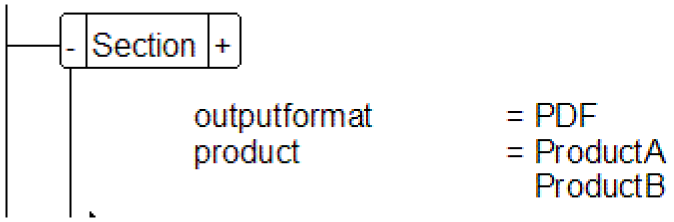
The following scheme, however, would not match and would flag the element for removal. Even though the `outputformat` attribute makes a match, the `product` attribute does not, and at least one match must occur for all attributes evaluated:

Attribute(s)	**Value(s)**
`outputformat`	PDF
`product`	ProductC

General filter scheme matching behavior - XPath-based schemes

The logic for matching (versus discarding) and element during a filter action is generally simple. If an element is matched by each expression in the scheme, it is preserved. Otherwise, it is removed, along with any descendant elements.

For example, consider the following element:



...and consider the following scheme setup, designed to filter for a “ProductA” deliverable:

Expression(s)
`//*[not(@product) or @product="" or @product="ProductA"]`

During evaluation, the `Section` element will be matched (preserved) because the expression effectively says “match me” if:

- The element doesn’t have a `product` attribute, or
- It has an unspecified `product` attribute, or
- It has a `product` attribute set to “ProductA”.

Conversely, the following setup will cause the element to be filtered out, because the second expression does not match it.

Expression(s)

`//*[not(@product) or @product="" or @product="ProductA"]`
`//*[not(@outputformat) or @outputformat="" or @outputformat="HTML"]`

The following setup exhibits similar behavior, but in this case it is specifically excluding an element assigned to PDF output, rather that simply including HTML only:

Expression(s)

`//*[not(@product) or @product="" or @product="ProductA"]`
`//*[not(@outputformat = "PDF")]`

Because XPath also supports matching based on element names, content, and hierarchy, you have many additional options for determining conditional content. Using the previous example, assume that you also have `InternalComment` and `ExternalComment` elements that you would like filtered out as well. For production-ready publishing of ProductA content, you could enhance the scheme as follows:

Expression(s)
`//*[not(@product) or @product="" or @product="ProductA"]`
(...filters out anything with a `product` attribute that is not empty or set to “ProductA”)
`//*[not(@outputformat = "PDF")]`
(..filters out anything with an `outputformat` attribute that is not set to “PDF”)
`//*[not(self::InternalComment and self::ExternalComment)]`
(...filters out any element with the tag `InternalComment` or `ExternalComment`)

The final expression may seem a bit confusing, as it contains an “and” statement, yet the explanation claims an “or” logic. Consider the literal meaning of the expression, which is “match me if I am not an `InternalComment` and I am not an `ExternalComment`.” In other words, it says “don’t match me if I am an `InternalComment` or an `ExternalComment`”, which in filter scheme logic means “filter me out.”

Remember that you are always specifying the content to keep, not the content to remove. See the AXCM tutorial on XPath-based schemes for additional information and functional examples of XPath-based filter schemes.

NOTE: West Street acknowledges the initial difficulties of understanding XPath-based scheme logic, even for individuals with XPath expertise. Please do not hesitate to contact us for assistance.

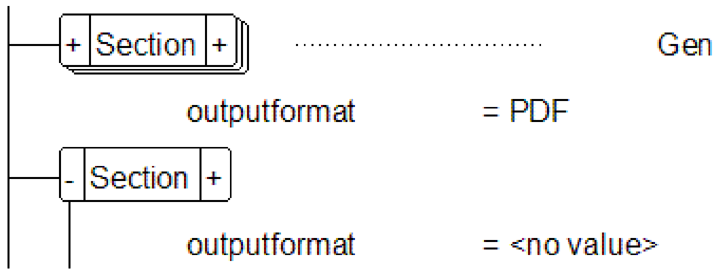
<no value> and <any value> in “classic” schemes

NOTE: The <no value>/<any value> convention has no relevance for XPath-based schemes. Any logic to handle empty and/or specified attributes should be built into the XPath expression(s), in a manner supported by the XPath standard.

Like any scheme type, you can specify “<no value>” or “<any value>” for any attribute. These values, which automatically appear in the applicable drop-down menus, mean literally what they say: no value or any value. “No value” is synonymous with an empty attribute, and “any value” is synonymous with an attribute that contains any value.

These items, especially “<no value>”, may be critically important for a properly-functioning filter scheme. An “unconditional” situation is frequently indicated by an empty attribute, analogous to the native conditional text practice of simply assigning no tag to unconditional content. Unlike native conditional text, however, the plugin does not mandate this assumption, and if you intend to use empty attributes to denote an unconditional situation, you must provide for this convention in your schemes using "<no value>" as applicable.

As an example, consider the following two elements:



The first element is designated for PDF output, while the second element has no specification. This convention would typically indicate that the second element is unconditional with regards to output format, and should always be preserved through any `outputformat`-based filter. Assuming this is the case, the scheme must specify the following to produce PDF output:

Attribute(s)	**Value(s)**
`outputformat`	<no value> PDF

With this scheme, both elements will be preserved. If the scheme failed to include "<no value>", the second element would be filtered out, because "PDF" does not match a literal state of no value. Only the special "<no value>" flag does. Therefore, any architecture that uses empty attributes to denote an unconditional state must be incorporated with schemes that use "<no value>" to designate as such.

The "<any value>" flag is similar in concept, except that it matches if the respective attribute is populated with any value at all. The "<any value>" flag is likely to be used much less often, if at all.

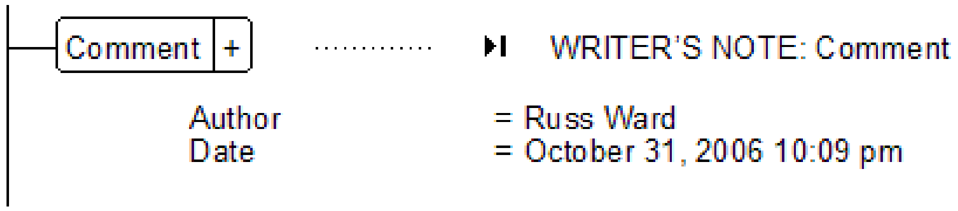
Filtering out elements by type, using unique attribute names

NOTE: This technique applies to "classic" schemes only. For XPath-based schemes, use the XPath syntax to explicitly identify content to filter out.

By way of scheme setup, the plugin provides a way to filter out all elements with a given attribute, regardless of its contents. This feature provides a way of filtering all elements of a certain type in a blanket fashion, if they are elements that you want removed from the output regardless of attribute contents.

A common usage of this feature is with authoring comments, when a structure definition reserves a special element for them. If you put authoring comments directly in your text, it is likely that you will want to filter them all out before producing deliverable output. And, it is likely that you will want them all out period, without any regard for attribute contents.

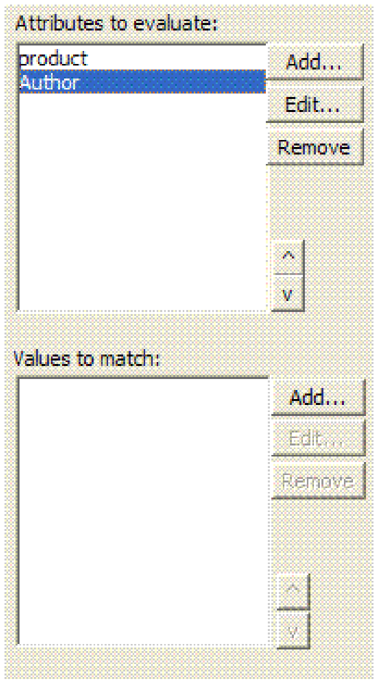
As an example, consider the following element:



Comment + ... WRITER'S NOTE: Comment

Author = Russ Ward
Date = October 31, 2006 10:09 pm

Before producing output for customers, it is likely that the author would like to remove all `Comment` elements like this completely, regardless of attribute contents. To accomplish this with a filter scheme, you can specify an attribute and leave the Values box blank. This effectively says to the plugin, “There are no valid values at all for this attribute, so the attribute itself is invalid. Whenever the attribute is encountered, therefore, just remove the parent element.” The scheme dialog box might look something like the following:



Attributes to evaluate:
product
Author

To make this feature work effectively, the attribute you choose should be unique to the element(s) you are trying to filter out. For example, the attribute chosen in this example is `Author`. This scheme setup will cause the removal of any element with an `Author` attribute, so if you only intend for `Comment` elements to be removed in this fashion, the Author attribute must be unique to `Comment` elements.

The use of this convention allows great flexibility with storing non-publishable data in your documents, because once a scheme is set up, you can be assured that it will all be removed during filtering, every time. The risk that an errant comment will remain in the document because of misassigned conditional text is eliminated.

Validation schemes

NOTE: Validation schemes are configurable as “classic” schemes only. While they can be built and run on any document, the concept of building a validation scheme with XPath expressions is not applicable.

Validation schemes direct the behavior of attribute validation feature, and are essentially a collection of the attributes and valid values that you use for your conditions. For a complete explanation of how the validation feature works, see *Attribute validation* on page 3-22.

Validation schemes are constructed with the same editor as other schemes, using the standard controls. Note the following about validation schemes:

- Because a validation scheme is a collection of valid attributes and values, you should have a separate scheme for each document set that uses different attributes and values for conditions. In other words, for any set of documents that uses the same exact attributes and values for setting conditions, there should be one unique validation scheme.
- <no value> and <any value> may be specified for attributes in a validation scheme, and like other schemes, they mean literally what they say. If you specify <no value> for an attribute, that attribute is not permitted to contain any values. If you specify <any value>, the attribute can contain any value, but it cannot be empty. Either of these specifications should appear alone, because combining them with explicit values and/or each other is illogical and would serve no purpose.
- The advanced scheme options apply, as with all schemes. For more information, see *Advanced scheme options* on page 4-48.

Advanced scheme options

For any scheme, you can access the advanced options by clicking the **Advanced Options** button under the schemes list, in the scheme editor. This section describes the options available, on a scheme-by-scheme basis.

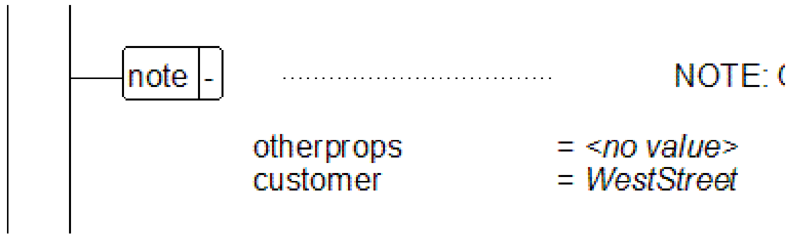
NOTE: Each scheme has its own independent set of advanced options. When you edit these options, you are editing them for the selected scheme only.

Advanced options include:

- **When evaluating attribute values, consider EDD-applied defaults** - See *Considering EDD-applied defaults* on page 4-49.
- **When evaluating attributes and values, ignore case-sensitivity** (Classic schemes only) - See *Ignoring case-sensitivity* on page 4-49.
- **Consider whitespace as an attribute value delimiter** (Classic schemes only) - See *Attribute values delimited by whitespace (Tokenized strings)* on page 4-50.
- **Process all flows** - See *Processing all flows* on page 4-51.

Considering EDD-applied defaults

In an EDD, you can specify default values for attributes which appear in the Structure View in italics. For example, the following `note` element has `customer` attribute with a default value of "WestStreet" assigned:



While they do appear in the Structure View, default values aren't actually "real" and do not appear in the FrameMaker attribute editor. By default, AXCM will ignore them while processing, unless you check this advanced scheme option. If you do check it, all default values are regarded the same as any value that was explicitly set.

Ignoring case-sensitivity

NOTE: This option does not apply to XPath-based schemes which necessarily process all markup in a case-sensitive fashion. If you require case-insensitivity, consider using the `contains-ci()` function. See the *FrameSLT User Guide* for more information.

In most processes involving XML and other structured content, case-sensitivity is generally the rule. This is especially true when referring to markup qualities, such as attribute names and values. By default, all processing by AXCM adheres to strict case-sensitivity when comparing scheme parameters to attributes and values in your documents.

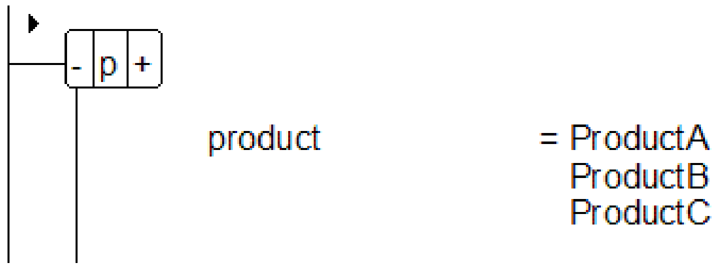
However, if you check the “ignore case-sensitivity” advanced option, AXCM will completely ignore the case of attributes and values during evaluation. For example, the attributes `PRODUCT`, `Product`, and `product` will look the same.

NOTE: This option is always off by default, and is recommended for special situations only. The case-sensitivity of markup is usually very important.

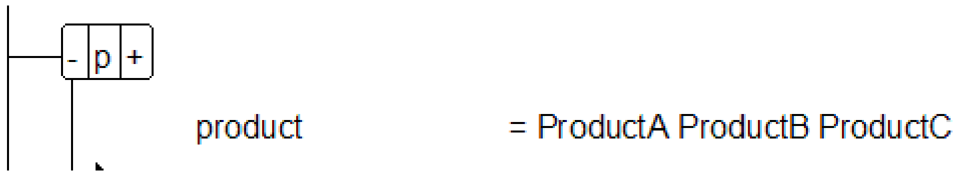
Attribute values delimited by whitespace (Tokenized strings)

NOTE: This option does not apply to XPath-based schemes which necessarily process all markup as it is encountered. If you require the recognition of tokenized values, consider using the `contains()` function. See the *FrameSLT User Guide* for more information and/or *Matching and differentiating two basic conditions* on page 4-39 for an example.

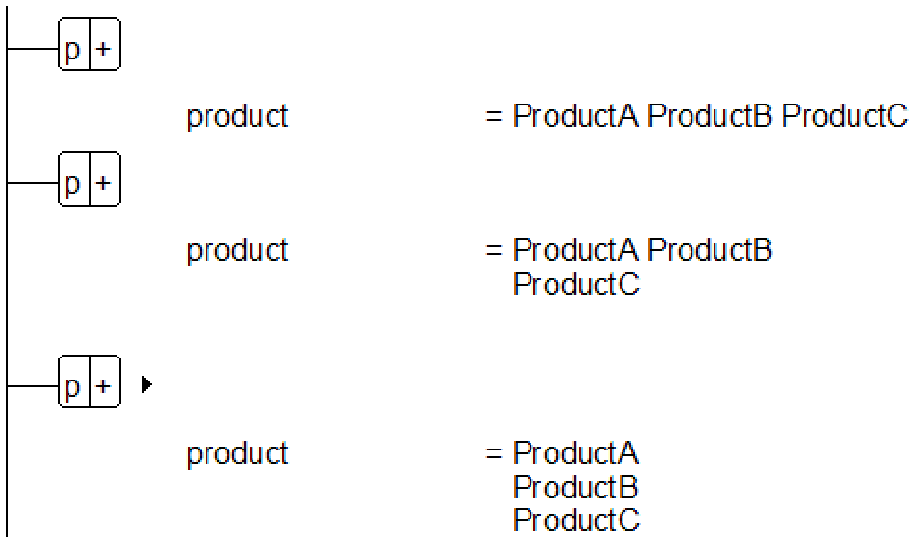
The FrameMaker interface makes it convenient to manage multiple values on a single attribute, separating individual values with a carriage return in the attribute editor and the Structure View. For example, the following `product` attribute has three separate values:



This convention is easily managed with a Strings-type attribute in an EDD and is recognized by AXCM. However, in many applications (especially those dealing with XML), multiple values are found on a single line, delimited with whitespace. For example, the same “conditionalization” could appear as follows:



With this advanced option checked, AXCM will recognize the individual values in this type of combined string (also called a *tokenized string*). That is, AXCM will recognize all individual *tokens* separated by whitespace, such that the following sample elements all appear the same to the plugin:


p +
product = ProductA ProductB ProductC
p +
product = ProductA ProductB ProductC
p +
product = ProductA ProductB ProductC

When checked, this option applies to all attributes and values, and only applies to tokenized values delimited by whitespace. Without this option checked, the default behavior is to ignore individual tokens and consider whole strings only.

Processing all flows

By default, a scheme will process the main flow only, normally flow A. With this option checked, however, all structured flows will be processed independently. This includes flows in text frames and on the master and reference pages. Any unstructured flows are ignored in either case.

Master attribute library

NOTE: The master attribute library is applicable to “classic” scheme management only.

By selecting **Main Settings > Attribute Library**, you can define default attributes and values to populate the drop-down dialog boxes in the scheme editor. For example, when you add an attribute to a scheme, the drop-down dialog box will contain the names of any attribute specified in this library. This list is a scheme editing convenience only and has no effect on the coloring, filtering, or validating of content. It is provided because the same attributes and values are typically reused between multiple schemes, and spelling and case-sensitivity are very important.

NOTE: The scheme editor dialog boxes will allow you to type any values you want. You are not restricted to the entries in the master attribute list.

Master colors list

By selecting **Main Settings > Colors**, you can define a set of default colors to appear in the drop-down dialog box when adding a new rule to a coloring scheme. This feature is provided as a convenience because the same colors are typically reused frequently, and spelling and case-sensitivity are very important.

This list is intended to enhance the scheme editing process only. It has no effect on the coloring feature of the plugin, and it has no inherent correlation with any templates or color definitions. If you use it, you should simply populate it with the names of the colors that appear in your templates, especially those that you intend to use in coloring schemes. In the scheme editor, you can always type any color you want, and you are never restricted to this list alone.

Migrating Sourcerer settings

This feature has been deprecated. If you have a large amount of data that requires migration, please contact West Street.

5: External Calls to AXCM

Like many FrameMaker plugins, you can make external calls to AXCM to invoke certain plugin activities, often for purposes of automation. Specifically, you can call this plugin to:

- Set the active filter, coloring, and validation schemes (*SetScheme* on page 5-71)
- Get and set various options for filtering and other processing (*GetParm* on page 5-62 and *SetParm* on page 5-65)
- Filter-check an element (*FilterCheckElement* on page 5-59)
- Filter a document or book (*FilterFile* on page 5-60)
- Restore a document or book from a source-file filter (*RestoreFile* on page 5-64)
- Color an element (*ColorElement* on page 5-56)
- Color a document or book (*ColorFile* on page 5-57)
- Validate an element (*ValidateElement* on page 5-73)
- Read the local settings file (*ReadLocalSettings* on page 5-63)
- Change the delimiter character for external calls (*ChangeCallDelimiter* on page 5-55)

These functions are fully exposed through the FrameMaker API and allow you to programmatically mimic the behavior of the plugin as used interactively through the GUI.

How to send an external call to AXCM

To call AXCM, you can use one of three methods:

- **With the FDK F_ApiCallClient() function, from another API client** If you are working on another FDK client, you can use `F_ApiCallClient()` to call AXCM. This function is part of the normal FDK library and does not require any changes to your normal project settings. For more information on the function itself, see the *FDK Developer's Reference* provided by Adobe with the FDK.
- **With FrameScript or ExtendScript (FM10 or later)** FrameScript®, a scripting tool by Finite Matters, Ltd®, has a comparable function for calling FDK clients, `CallClient`. ExtendScript, which is a native feature included with FrameMaker, can also call clients. When called from a script, AXCM behaves identically to a regular API call.
- **With FrameAC** FrameAC by Mekon® (www.mekon.com) is a COM-based utility that enables developers to use Visual Basic to control FrameMaker. FrameAC also provides the ability to script calls to other API clients.

For any supported operation, you pass a string to AXCM which contains a command and any applicable parameters, and AXCM sends back a numeric code indicating the results. The syntax of these strings is the same for either API or scripting calls, and is explained in detail in this document.

NOTE: The call descriptions and examples in this document are written from an FDK/API perspective, using `F_ApiCallClient()`. If you are using FrameScript or FrameAC, the basic call syntax will be the same, sent using the mechanism supported by the respective tool.

General information on external calls

Before you attempt to call AXCM, note the following:

- Certain commands require that you specify a document or book, which can be done by one of three methods. For more information, see *Specifying document and book arguments* on page 5-55.
- The default delimiter string between arguments in a call to AXCM is three dashes (---). In this document, the syntax descriptions of external calls use the default delimiter, which you should adjust accordingly if you decide to change the delimiter with `ChangeCallDelimiter`.
- Several calls to AXCM return zero (0) to indicate a command failure, consistent with the behavior of other FDK functions. However, F_ApiCallClient() also returns zero if it fails to communicate at all with the specified API client. If you aren't sure whether your calls are reaching AXCM, you can call `Hello` to verify that communications are getting through.

- With the exception of scheme categories and names, call string arguments are generally not case-sensitive. For example, to set an active scheme, you can send any case variation of the `SetScheme` command name, such as `SETSCHEME` or `SetScheme`.
- To effectively use the external interface to AXCM, you should be familiar with the functionality and workflow of the plugin through the GUI.

Specifying document and book arguments

When a document or book identifier is required, you may use any of the following three methods:

- **An object handle ID** - The integer form of the F_ObjHandleT object ID for the file.
- **A filename** - A non-qualified filename, such as `MyDocument.fm`.
- **A file path** - A fully-qualified file path, such as:

  ```
  C:\MyDocs\MyDocument.fm
  ```
  With this method, you may substitute forward-slashes for backslashes. For example:

  ```
  C:/MyDocs/MyDocument.fm
  ```

In all cases, the file must be currently open. AXCM will not open any files.

Specifying Boolean arguments

When an argument requires a Boolean true or false, you can specify it as follows:

- For **true**, you can specify `1`, `true`, or any word that begins with “t”, including just `t`.
- For **false**, you can specify `0`, `false`, or any word that begins with “f” (yes, any word), including just `f`.

Boolean arguments are not case-sensitive.

Call reference

This section details the external calls you can make to AXCM.

ChangeCallDelimiter

Changes the delimiter for external call arguments. The default upon startup is three dashes (“`---`”).

Syntax

```
F_ApiCallClient("FrameSLT", "ChangeCallDelimiterNewDelimiter");
```

NOTE: The new delimiter directly follows the `ChangeCallDelimiter` command. Do not separate them with the old delimiter. Anything following the command will be considered the new delimiter.

Returns

`F_ApiCallClient()` returns one of the following values:

Value	Meaning
`1`	Delimiter successfully changed.
`101`	Unrecognized command. Make sure you spelled “`ChangeCallDelimiter`” correctly.
`103`	Incorrect number of arguments in the call string. Make sure you provided a new delimiter after `ChangeCallDelimiter`.

ChangeCallDelimiter syntax example

```
F_ApiCallClient("AXCM", "ChangeCallDelimiter++++");
```

ColorElement

Colors an element according to the active coloring scheme. This command is not supported for XPath-based schemes.

Syntax

```
F_ApiCallClient("AXCM",
   "ColorElement---Document---ElemId---IncludeDescendants---DoWarnings");
```

where:

Document	Document that contains the element to be colored. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55.
ElemId	The F_ObjHandleT object ID of the element to color.

`IncludeDescendants`	(Boolean) Indicates whether to evaluate and color any descendant elements. If set to False, descendant elements may receive any coloring applied to the main element only. For more information on setting Boolean arguments, see *Specifying Boolean arguments* on page 5-55.
`DoWarnings`	(Boolean) Indicates whether to perform interactive user prompting. If set to False, no message boxes are produced under any conditions, including critical errors. For more information on setting Boolean arguments, see *Specifying Boolean arguments* on page 5-55.

Usage description

`ColorElement` evaluates the specified element against the active coloring scheme and applies any formatting as applicable. The command requires that an active coloring is scheme set, perhaps with `SetScheme`.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Coloring occurred successfully.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad document argument. See *Specifying document and book arguments* on page 5-55.
`105`	Bad element ID.
`106`	Bad category and/or scheme name. This error will occur if an active coloring scheme is not set before the command is run.
`116`	Coloring failed for an unknown reason.
`117`	An interactive user cancellation occurred.
`120`	The scheme is an XPath-based scheme, which is not supported for this command.

ColorFile

Colors a document or book according to the active coloring scheme.

Syntax

```
F_ApiCallClient("AXCM", "ColorFile---File---DoWarnings");
```

where:

`File`	Document or book to be colored. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55. **NOTE:** If you specify a book, only currently-open chapter files will be processed. Closed book components are ignored.
`DoWarnings`	(Boolean) Indicates whether to perform interactive user prompting. If set to False, no message boxes are produced under any conditions, including critical errors. For more information on setting Boolean arguments, see *Specifying Boolean arguments* on page 5-55.

Usage description

`ColorElement` runs the active coloring scheme on the specified document or book. The command requires that an active coloring scheme is set, perhaps with `SetScheme`.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Coloring occurred successfully.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad file argument. See *Specifying document and book arguments* on page 5-55.
`106`	Bad category and/or scheme name. This error will occur if an active coloring scheme is not set before the command is run.
`108`	No structure found in main flow. This error only occurs if you are processing a single document, and the “Process all flows” scheme option is turned off in the active scheme.
`116`	Coloring failed for an unknown reason.

Value	Meaning
`117`	An interactive user cancellation occurred.
`121`	The scheme is an XPath-based scheme, but an XPath parser could not be found. This is typically an installation problem. See the installation documentation for more information.

FilterCheckElement

Checks the specified element against the active filter scheme and returns whether the element should be “filtered out” or not. This command is not supported for XPath-based schemes.

Syntax

```
F_ApiCallClient("AXCM", "FilterCheckElement---Document---ElemId");
```

where:

`Document`	Document that contains the element to be checked. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55.
`ElemId`	The F_ObjHandleT object ID of the element to check.

Usage description

`FilterCheckElement` evaluates a single element against the active filter scheme and determines whether the element should be hidden, or in other words, filtered out. It does not perform any filtering action itself, returning a flag only. This command requires a valid, active filtering scheme, perhaps set with `SetScheme`.

NOTE: If you want AXCM to perform a whole file filter, including all the functionality associated with an interactive GUI filtering action, use `FilterFile` instead.

Returns

Value	Meaning
`0`	Element should be preserved. **NOTE:** This value may also be returned if the currently-active filter scheme is not valid. Be sure to call `SetScheme` successfully before running this command the first time.
`1`	Element should be filtered out.

Value	**Meaning**
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad document argument. See *Specifying document and book arguments* on page 5-55.
`105`	Bad element ID.
`106`	Bad category and/or scheme name. This error will occur if an active filtering scheme is not set before the command is run.
`120`	The scheme is an XPath-based scheme, which is not supported for this command.

FilterFile

Filters a document or book according to the active filtering scheme and current filter parameters.

Syntax

```
F_ApiCallClient("AXCM", "FilterFile---File---DoWarnings");
```

where:

`File`	Document or book to be filtered. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55. **NOTE:** If you specify a book, all book components must be currently open.
`DoWarnings`	(Boolean) Indicates whether to perform interactive user prompting. If set to False, no message boxes are produced under any conditions, including critical errors. **NOTE:** Interactive prompting does not include the Filter dialog box. For more information on setting Boolean arguments, see *Specifying Boolean arguments* on page 5-55.

Usage description

`FilterFile` filters an entire document or book and returns the object ID of the filtered file. The filter occurs in accordance with the current filter settings which can be set beforehand with `SetParm` and `SetScheme`. The filter scheme and other settings can have a significant impact on how the filter behaves and you should be sure that you understand and set them properly.

If you filter a single document successfully, the command returns the ID of the filtered document. In the case of a duplicate-file filter, this is the ID of the new, filtered file. For a source-file filter, it returns the same ID that you originally sent (if you sent the file parameter in ID form).

If you filter a book, the behavior is the same. Note, however, that a duplicate-file book filter requires a target folder to receive the duplicated book. It is critically important that you set this parameter before running the filter and make absolutely sure that you have done it correctly. The filter will overwrite any files it finds in the target folder. You can set the target folder path with `SetParm`, along with other important filter settings.

When running a source-file filter, AXCM always removes all conditional text from a file first, unless you are using the “Source_NR” option. For no-restore source-file filters, you can also choose to control the show/hide status of the hidden condition yourself, in the case where you do not want AXCM to automatically hide it after the filter. By controlling it yourself (that is, hiding it yourself after running all filters), you can save processing time. For more information on setting up for a no-restore filter, see `SetParm`.

In the unlikely event that a book filter fails in the middle of processing, you should capture this error and close all affected files without saving changes. A failure in the middle of a book filter will leave your files in an unpredictable state.

For more information on filter types, see *Filter types - Source versus duplicate file* on page 3-17. For more information on other filter options, see *Launching a filter* on page 3-16.

NOTE: Following a source-file filter, you can restore the document or book with `RestoreFile`.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad file argument. See *Specifying document and book arguments* on page 5-55.
`106`	Bad category and/or scheme name. This error will occur if an active filtering scheme is not set before the command is run.
`111`	An interactive user cancellation occurred, or some other unknown filter error occurred.

Value	Meaning
`112`	The file could not be duplicated, for an unknown reason. This error is only applicable to duplicate-file filters.
`113`	One or more book components are not open, applicable only to book filters.
`114`	The specified path for the filtered book is the same as the book to be filtered. The filter must abort because it would otherwise overwrite the original book with the filtered book, permanently deleting content. This error is only applicable to duplicate-file book filters. For more information on setting this parameter, see `SetParm`
`115`	The specified path for the filtered book is inaccessible or does not exist. This error is only applicable to duplicate-file book filters. For more information on setting this parameter, see `SetParm`.
`121`	The scheme is an XPath-based scheme, but an XPath parser could not be found. This is typically an installation problem. See the installation documentation for more information.
Any number over 1000	An integer form of the object ID for the filtered file, indicating a successful filter.

GetParm

Gets a parameter related to AXCM, such as the plugin version.

Syntax

```
F_ApiCallClient("AXCM", "SetParm---Parm");
```

where:

`Parm`	Parameter to retrieve. For a list of parameters, see *Usage description* on page 5-62.

Usage description

The following table lists the parameters supported by this command:

Parameter	Description
`AXCMVersionMajor`	Major version number of AXCM; for example, the “3” in version 3.13.
`AXCMVersionMinor`	Major version number of AXCM; for example, the “13” in version 3.13.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`109`	Unrecognized parameter.
`122`	A general unknown error occurred.
Any other number	The parameter value.

Hello

Tests whether AXCM is initialized and receiving external calls.

Syntax

```
F_ApiCallClient("AXCM", "Hello");
```

Returns

Value	Meaning
`0`	AXCM is not initialized and/or communication failed. Possible causes include: • AXCM is not running at all. Check the FrameMaker interface for an AXCM menu. • Your call uses a syntax that differs from the plugin name in the `maker.ini` file. In the AXCM installation instructions, the following line is to be entered into `maker.ini`: `AXCM=Standard,AXCM,WestStreet\AXCM.dll,structured` Whatever string you use to call AXCM (as the first argument of `F_ApiCallClient()` must match the name assigned there.
`1`	AXCM is ready.

ReadLocalSettings

Reads settings from the local settings file, similar to selecting **AXCM > Read Local Settings From Settings File** in the interface. It may be useful for the restoration of normal settings after changing settings through the API.

Syntax

```
F_ApiCallClient("AXCM", "ReadLocalSettings---DoWarnings");
```

where:

DoWarnings	(Boolean) Indicates whether to perform interactive user prompting. If set to False, no message boxes are produced under any conditions, including critical errors. For more information on setting Boolean arguments, see *Specifying Boolean arguments* on page 5-55.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Settings read completed normally. This value does not indicate that any particular setting was or was not read properly, or that all settings are configured correctly. It only means that the settings file was located and appeared to contain at least one setting. If any settings were missing from the file, system defaults were applied.
`101`	Unrecognized command. Check the syntax of the command itself.
`115`	The local settings file could not be found or was found to be empty.

RestoreFile

Restores a document or book following a source-file filter.

Syntax

```
F_ApiCallClient("AXCM", "RestoreFile---File");
```

where:

File	Document or book to be restored. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55. **NOTE:** If you specify a book, only currently-open book components are restored. AXCM does not open any files.

Usage description

`RestoreFile` removes the Hidden condition from a document or book as applied during a source-file filter. This command is not applicable if you use duplicate-file filters. For more information, see *Restoring a document or book* on page 3-19.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Restoration occurred normally.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad file argument. See *Specifying document and book arguments* on page 5-55.

SetParm

Sets a parameter that affects AXCM processing, such as filter parameters.

Syntax

```
F_ApiCallClient("AXCM", "SetParm---Parm---Value");
```

where:

Parm and *Value*	Parameter and value to set. For a list of parameters and valid values, see *Usage description* on page 5-65.

Usage description

`SetParm` is a means to set important parameters via external calls. These parameters would typically be set by a user in a dialog box during an interactive session, and represent important settings that can significantly affect how AXCM processes content.

The following table lists the parameters supported by this command and the valid values for each:

Parameter	**Description**	**Valid values**
`Gen_MainSettingsPath`	Path to the master copy of the main settings file, normally specified in the local settings file. When the location is (re)set this way, the file is retrieved and stored locally as if you browsed to it and selected it manually. All future requests for scheme data will be based on the new file. Note that this command does not change the setting in the local settings file; that is, the change is temporary for the current FrameMaker session only. The original path is restored the next time local settings are read, which you can do through the API with `ReadLocalSettings`.	See *Specifying document and book arguments* on page 5-55.

Parameter	Description	Valid values
`Filter_Type`	Filter type, normally set in the Filter dialog box. See *Launching a filter* on page 3-16.	• **D** or **Duplicate** • **S** or **Source** - Source-file filtering with restoration • **S_NR** or **Source_NR** - Source-file filtering with no restoration. This is a special setting that is identical to **Source**, except that the plugin does not remove any conditional text from the file before filtering. It is designed for specialized usage where multiple source-file filters must be run on a single file to reach a desired result. For more information, see *Filter types - Source versus duplicate file* on page 3-17. Note that **Duplicate** filtering has no “NR” counterpart, because you can run multiple duplicate-file filters on the same file by running subsequent filters on the duplicates.
`Filter_SaveFirst`	Option to save all files prior to a filter action, normally set in the Filter dialog box. See *Launching a filter* on page 3-16.	Boolean true/false. See *Specifying Boolean arguments* on page 5-55
`Filter_RemoveOverrides`	Option to remove format overrides following a filter action, normally set in the Filter dialog box. See *Launching a filter* on page 3-16.	Boolean true/false. See *Specifying Boolean arguments* on page 5-55

Parameter	Description	Valid values
`Filter_ShowBeforeNRFilt`	Controls whether AXCM shows all native conditions before running a no-restore source-file filter. Normally, a filter runs cleaner when all conditions are shown.	Boolean true/false. See *Specifying Boolean arguments* on page 5-55
`Filter_HideAfterNRFilt`	Controls whether AXCM automatically hides the “hidden” condition following a no-restore source-file filter. If you have many filters to run in sequence, it may save processing time to manage the state of the condition yourself; that is, hide the condition yourself once all filters are applied. Note that you disable this setting; that is, prevent AXCM from automatically hiding the condition, the effects of your filter(s) will not be visible until you hide the condition.	• **ALWAYS** • **PROMPT_FIRST** • **NEVER**
`Filter_Path`	Target path for a duplicate-file book filter, normally set graphically in the Filter dialog box. For more information, see *Launching a filter* on page 3-16. **NOTE:** This parameter must be set before you can run a duplicate-file book filter	A valid folder path. Note the following: • You can optionally use forward slashes instead of back slashes. For example: `C:/MyDocs/` • You MUST include the trailing slash. See the example above. • You MUST NOT include the target file name. Specify the folder path only. • You should be VERY CAREFUL to set this property correctly. A book filter will overwrite files in the target folder.

Parameter	Description	Valid values

`Val_Rule1Active`
`Val_Rule2Active`
`Val_Rule3Active`
`Val_Rule4Active`
	Specifies whether the respective validation rule is active, normally set in the local settings file. See *Local settings* on page 2-9.	Boolean true/false. See *Specifying Boolean arguments* on page 5-55

`Val_ApplyStrikethrough`	Specifies whether validation should apply strikethrough text, normally set in the local settings file. See *Local settings* on page 2-9.	Boolean true/false. See *Specifying Boolean arguments* on page 5-55

NOTE: Once a parameter is set, it remains set for the duration of the session unless changed.

Returns

Value	Meaning
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Parameter set successfully.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`109`	Unrecognized parameter.
`110`	Invalid value.
`115`	Bad file path or ID.
`122`	A general unknown error occurred. If you were attempting to set a file path, the file may be non-existent, improperly configured, currently in use, or corrupt.

SetScheme

Sets the active coloring, filter, or validation scheme.

Syntax

```
F_ApiCallClient("AXCM",
   "SetScheme---SchemeType---Category/File---Scheme");
```

where:

`SchemeType`	Scheme type, one of: • **F** or **Filter** • **C** or **Coloring** • **V** or **Validation**
`Category/File`	Case-sensitive scheme category -or- The ID, filename, or path of an open configuration file (see *Specifying document and book arguments* on page 5-55). If the argument you send can be correlated with an open document, the command attempts to read the scheme from that document in the special "configuration file" tabular format. Otherwise, it attempts to read it from the currently-configured main settings document. In no case will AXCM open any files that are closed. Note that you can change the current main settings document with `SetParm`. For more information on tabular scheme data, see *About "configuration files"* on page 2-12.
`Scheme`	Case-sensitive scheme name.

Usage description

`SetActiveScheme` sets the active scheme prior to a coloring, filtering, or validation action. It reads the data from your local copy of the main settings file. Once a scheme is set, it remains set until you change it.

Returns

Value	**Meaning**
`0`	Communication with AXCM appears to have failed. Use `Hello` to test connectivity.
`1`	Parameter set successfully.
`101`	Unrecognized command. Check the syntax of the command itself.
`102`	Bad scheme type argument.
`103`	Incorrect number of arguments sent with command.
`106`	Unrecognized category and/or scheme.
`107`	Main settings file critical error, possibly missing or corrupt.

ValidateElement

Validates the specified element against the active validation scheme and returns the first rule violated, if any.

Syntax

```
F_ApiCallClient("AXCM", "ValidateElement---Document---ElemId");
```

where:

`Document`	Document that contains the element to be checked. For more information on specifying this parameter, see *Specifying document and book arguments* on page 5-55.
`ElemId`	The F_ObjHandleT object ID of the element to check.

Usage description

`ValidateElement` evaluates a single element against the active validation scheme and returns an integer representing the first rule found that was violated, if any. It operates using the currently-active validation rules and validation options, all of which can be set with `SetParm`. It does not create any reports.

Note that this command only returns a single integer and therefore can only return a single rule number. An element, however, can violate more than one rule at once. This command will simply return the first rule violation it finds, but you should be aware that more violations may exist.

Returns

Value	Meaning
`0`	Element’s attributes are valid.
`1 - 4`	Number of the validation rule that the element violated. See *Attribute validation* on page 3-22.
`101`	Unrecognized command. Check the syntax of the command itself.
`103`	Incorrect number of arguments sent with command.
`104`	Bad document argument. See *Specifying document and book arguments* on page 5-55.
`105`	Bad element ID.
`106`	Bad category and/or scheme name. This error will occur if an active filtering scheme is not set before the command is run.
`119`	An unknown error occurred during validation.

Detailed example—Calling AXCM (FDK)

The following example contains a C language code sample for use with the FDK. It is a self-contained function that has been designed for and tested against the `External_Calls_Sample.fm` file, found in your `AXCM_SampleFiles` subfolder. For proper operation, this function relies on `External_Calls_Sample.fm` to be in its original state, and the external call schemes to be unaltered in the `Samples` category. This category is found in the default main settings file provided with the AXCM installation.

With `External_Calls_Sample.fm` active, this function does the following:

1. Sets the active coloring scheme
2. Colors the original document
3. Sets up and performs a duplicate-file filter on the original document
4. Colors the new, filtered duplicate
5. Closes the duplicate
6. Sets up and runs a source-file filter on the original document
7. Restores the original and removes coloring
8. Retrieves the ID of the first `Section` element, colors it, then filter checks it
9. Retrieves the ID of the second `Section` element, colors it, then filter checks it

NOTE: You can also find an electronic copy of this function in the `External_Calls_Sample.c` file which installs into the `AXCM_SampleFiles` subfolder, under `WestStreet`.

```
VoidT AXCM_Sample()
{
  F_ObjHandleT docId,
    docId2,
    flowId,
    elemId;
  UCharT msg[512];

  IntT returnVal;

  UIntT i;

  //Let's store the ID of the active document, which MUST BE the
  //External_Calls_Sample.fm file for this whole function to work
  docId = F_ApiGetId(0, FV_SessionId, FP_ActiveDoc);
  if(!docId) return;

  //Message
  F_ApiAlert("Preparing to color.  Click OK to set the active scheme...",
    FF_ALERT_CONTINUE_WARN);
  //Set the active coloring scheme.  Let's do a bogus scheme first, just as
  //an example of a call failure
  returnVal = F_ApiCallClient("AXCM", "SetScheme---C---BogusCategory---BogusScheme");

  //send a message about the failure.  Should indicate a return value of 106
  F_Sprintf(msg, "The command to set the scheme failed, because the category\
and scheme name were bogus. The call returned the following integer:  %d\n\n\
Click OK to try again.",
    returnVal);

  F_ApiAlert(msg, FF_ALERT_CONTINUE_WARN);

  //Set the active coloring scheme for real this time
  returnVal = F_ApiCallClient("AXCM", "SetScheme---C---Samples---External_Call_Sample");

  //Evaluate the response.  We're going to back out if something went wrong.
  if(returnVal == True)
    F_ApiAlert("The scheme was set successfully. Click OK to launch the coloring.",
      FF_ALERT_CONTINUE_WARN);

  else
  {
    F_Sprintf(msg, "The command failed, returning the following integer:  %d\n\n\
Your main settings do not include the factory samples necessary for this test.\
The test will abort.", returnVal);

    F_ApiAlert(msg, FF_ALERT_CONTINUE_WARN);

    return;
  }

  //Launch the coloring.
  returnVal = F_ApiCallClient("AXCM", "ColorFile---External_Calls_Sample.fm---False");

  //Let's make sure it worked, before continuing.  If you forgot to open the file
  //beforehand, this would have caused it to fail.
  if(returnVal == True)
    F_ApiAlert("The file was successfully colored. Click OK to launch the filtering.",
      FF_ALERT_CONTINUE_WARN);

  else
  {
    F_Sprintf(msg, "The coloring failed. Did you forget to open the file?",
      returnVal);

    F_ApiAlert(msg, FF_ALERT_CONTINUE_WARN);

    return;
  }

  //Set the filtering scheme
  returnVal = F_ApiCallClient("AXCM", "SetScheme---F---Samples---External_Call_Sample");

  //Set the filter type to duplicate file
  returnVal = F_ApiCallClient("AXCM", "SetParm---Filter_Type---D");

  //Set the "save files first" option to off
  returnVal = F_ApiCallClient("AXCM", "SetParm---Filter_SaveFirst---0");
  //Filter the document
  returnVal = F_ApiCallClient("AXCM", "FilterFile---External_Calls_Sample.fm---False");

  //If it filtered successfully, we should have received an object ID back of the
  //filtered duplicate.  Just as a sample of what we can do with it, let's color the
  //filtered duplicate now.

  //Let's save the document ID first.
  if(returnVal > 1000)
  {
    docId2 = (F_ObjHandleT)returnVal;
    F_ApiAlert("The file was successfully filtered. Click OK to color the new file.",
      FF_ALERT_CONTINUE_WARN);
  }
  else
  {
    F_ApiAlert("Something went wrong.  Aborting the test.", FF_ALERT_CONTINUE_WARN);
    return;
  }

  F_Sprintf(msg, "ColorFile---%d---False", docId2);
  returnVal = F_ApiCallClient("AXCM", msg);

  //Get ready to close the filtered duplicate
  F_ApiAlert("The duplicate file was colored. Click OK to close it.",
    FF_ALERT_CONTINUE_WARN);

  F_ApiClose(docId2, FF_CLOSE_MODIFIED);

  //Now let's do a source-file filter

  F_ApiAlert("The duplicate file was closed. Now click OK to perform a\
 source-file filter on the original document.", FF_ALERT_CONTINUE_WARN);

  //Set the filter type to source file
  returnVal = F_ApiCallClient("AXCM", "SetParm---Filter_Type---S");

  //Filter the document
  returnVal = F_ApiCallClient("AXCM", "FilterFile---External_Calls_Sample.fm---False");

  //Report
  F_ApiAlert("The file was filtered. Click OK to restore it.",
    FF_ALERT_CONTINUE_WARN);

  //Restore the filtered file.
  returnVal = F_ApiCallClient("AXCM", "RestoreFile---External_Calls_Sample.fm");

  //and let's remove the coloring
  F_ApiSimpleImportElementDefs(docId, docId,
    FF_IED_REMOVE_OVERRIDES | FF_IED_REMOVE_BOOK_INFO);

  //Just for kicks, let's do some element-level functions.

  //Let's get the ID of the first Section element,
  //the one tagged for Product A.
  flowId = F_ApiGetId(FV_SessionId, docId, FP_MainFlowInDoc);
  elemId = F_ApiGetId(docId, flowId, FP_HighestLevelElement);
  elemId = F_ApiGetId(docId, elemId, FP_FirstChildElement);
  for(i = 0; i < 5; i++)
    elemId = F_ApiGetId(docId, elemId, FP_NextSiblingElement);

  //Prompt
  F_ApiAlert("The code has retrieved the ID of the first Section element.\
 Click OK to color it.", FF_ALERT_CONTINUE_WARN);

  //Color the first Section element
  F_Sprintf(msg, "ColorElement---%d---%d---True---False", docId, elemId);
  returnVal = F_ApiCallClient("AXCM", msg);

  //Prompt
  F_ApiAlert("The element has been colored. Click OK to filter check it.",
    FF_ALERT_CONTINUE_WARN);

  //Filter-check the first Section element.  It should return a value of
  //zero, meaning that the element should not be filtered out.  In other
  //words, the active coloring scheme allows it to stay.
  F_Sprintf(msg, "FilterCheckElement---%d---%d", docId, elemId);
  returnVal = F_ApiCallClient("AXCM", msg);

  F_Sprintf(msg, "The filter check returned: %d.\n\n\
0 = Keep\n1 = Filter out", returnVal);
  F_ApiAlert(msg, FF_ALERT_CONTINUE_WARN);

  //Do the same thing for the second Section element.  This one should
  //return a flag to filter it out, like it was filtered out when we
  //ran the full document filter earlier.

  //Get the ID of the second Section element
  elemId = F_ApiGetId(docId, elemId, FP_NextSiblingElement);

  //Prompt
  F_ApiAlert("The code has retrieved the ID of the second Section element.\
 Click OK to color it.", FF_ALERT_CONTINUE_WARN);

  //Color the second Section element
  F_Sprintf(msg, "ColorElement---%d---%d---True---False", docId, elemId);
  returnVal = F_ApiCallClient("AXCM", msg);

  //Prompt
  F_ApiAlert("The element has been colored. Click OK to filter check it.",
    FF_ALERT_CONTINUE_WARN);

  //Filter-check the second Section element.  It should return a value of
  //one, meaning that the element should be filtered out.  In other words,
  //it is content to be hidden.
  F_Sprintf(msg, "FilterCheckElement---%d---%d", docId, elemId);
  returnVal = F_ApiCallClient("AXCM", msg);

  F_Sprintf(msg, "The filter check returned: %d.\n\n\
0 = Keep\n1 = Filter out", returnVal);
  F_ApiAlert(msg, FF_ALERT_CONTINUE_WARN);

  F_ApiAlert("All done!", FF_ALERT_CONTINUE_WARN);
}
```