# DrawingML - Framework Reference Material

[*Note*: For further information on the mapping of elements and attributes to OPC parts, see the Bibliography entry, “Information on elements, attributes, and OPC parts in ISO/IEC 29500 (OOXML)”. *end note*]

## DrawingML - Main

The DrawingML Main namespace defines all of the base constructs for all kinds of DrawingML objects (charts, diagrams, shapes, pictures, and so on). These constructs and primitives are defined below.

### Basics

This section describes all the basic common elements associated with the DrawingML framework.

#### EMU Unit of Measurement

Throughout ECMA-376, the EMU is used as a unit of measurement for length. An *EMU* is defined as follows:

#### Core Drawing Object Information

Within DrawingML, there is the notion of core drawing elements. These are elements that both are vital to and common across the DrawingML framework. These elements denote the most integral pieces of the DrawingML document structure and thus are among the most widely used.

##### bldChart (Build Chart)

This element specifies how to build the animation for a diagram.

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| **Attributes** | **Description** |
| animBg (Animate Background) | Specifies whether or not the chart background elements should be animated as well. |
| bld (Build) | Specifies how the chart is built. The animation animates the sub-elements in the container in the particular order defined by this attribute. |

##### bldDgm (Build Diagram)

This element specifies how to build the animation for a diagram.

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| **Attributes** | **Description** |
| bld (Build) | Specifies how the chart is built. The animation animates the sub-elements in the container in the particular order defined by this attribute. |
| rev (Reverse Animation) | Specifies whether the animation of the objects in this diagram should be reversed or not. If this attribute is not specified, a value of false is assumed. |

##### chart (Chart to Animate)

This element specifies a reference to a chart that should be animated within a sequence of slide animations. In addition to simply acting as a reference to a chart there is also animation build steps defined.

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| **Attributes** | **Description** |
| bldStep (Animation Build Step) | Specifies which step this part of the chart should be built using. For instance the chart can be built as one object meaning it is animated as a single graphic. Alternatively the chart can be animated, or built as separate pieces. |
| categoryIdx (Category Index) | Specifies the index of the category within the corresponding chart that should be animated. |
| seriesIdx (Series Index) | Specifies the index of the series within the corresponding chart that should be animated. |

##### cNvCxnSpPr (Non-Visual Connector Shape Drawing Properties)

This element specifies the non-visual drawing properties for a connector shape. These non-visual properties are properties that the generating application would utilize when rendering the slide surface.

##### cNvGraphicFramePr (Non-Visual Graphic Frame Drawing Properties)

This element specifies the non-visual drawing properties for a graphic frame. These non-visual properties are properties that the generating application would utilize when rendering the slide surface.

##### cNvGrpSpPr (Non-Visual Group Shape Drawing Properties)

This element specifies the non-visual drawing properties for a group shape. These non-visual properties are properties that the generating application would utilize when rendering the slide surface.

##### cNvPicPr (Non-Visual Picture Drawing Properties)

This element specifies the non-visual properties for the picture canvas. These properties are to be used by the generating application to determine how certain properties are to be changed for the picture object in question.

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| **Attributes** | **Description** |
| preferRelativeResi ze (Relative Resize | Specifies if the user interface should show the resizing of the picture based on the picture's current size or its original size. If this attribute is set to true, then scaling is relative to the original picture size as opposed to the current picture size. |

##### cNvPr (Non-Visual Drawing Properties)

This element specifies non-visual canvas properties. This allows for additional information that does not affect the appearance of the picture to be stored.

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| **Attributes** | **Description** |
| descr (Alternative Text for Object) | Specifies alternative text for the current DrawingML object, for use by assistive technologies or applications which do not display the current object. |
| hidden (Hidden) | Specifies whether this DrawingML object is displayed. When a DrawingML object is displayed within a document, that object can be hidden (i.e., present, but not visible). |
| id (Unique Identifier) | Specifies a unique identifier for the current DrawingML object within the current document. This ID can be used to assist in uniquely identifying this object so that it can be referred to by other parts of the document. |
| name (Name) | Specifies the name of the object. [*Note*: Typically, this is used to store the original file name of a picture object. *end note*] |
| title (Title) | Specifies the title (caption) of the current DrawingML object. |

##### cNvSpPr (Non-Visual Shape Drawing Properties)

This element specifies the non-visual drawing properties for a shape. These properties are to be used by the generating application to determine how the shape should be dealt with

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| **Attributes** | **Description** |
| txBox (Text Box) | Specifies that the corresponding shape is a text box and thus should be treated as such by the generating application. If this attribute is omitted then it is assumed that the corresponding shape is not specifically a text box. |

##### cxnSp (Connection Shape)

This element specifies a connection shape that is used to connect two sp elements. Once a connection is specified using a cxnSp, it is left to the generating application to determine the exact path the connector takes. That is the connector routing algorithm is left up to the generating application as the desired path might be different depending on the specific needs of the application.

##### cxnSpLocks (Connection Shape Locks)

This element specifies all locking properties for a connection shape. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noAdjustHandles (Disallow Showing | Specifies that the generating application should not show adjust handles for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeArrowhe | Specifies that the generating application should not allow arrowhead changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeShapeTy pe (Disallow Shape | Specifies that the generating application should not allow shape type changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noEditPoints (Disallow Shape | Specifies that the generating application should not allow shape point changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the generating application should not allow shape grouping for the corresponding connection shape. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Shape Movement) | Specifies that the generating application should not allow position changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resize) | Specifies that the generating application should not allow size changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noRot (Disallow Shape Rotation) | Specifies that the generating application should not allow shape rotation changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the generating application should not allow selecting of the corresponding connection shape. That means also that no picture, shapes or text attached to this connection shape can be selected if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |

##### dgm (Diagram to Animate)

This element specifies a reference to a diagram that should be animated within a sequence of slide animations. In addition to simply acting as a reference to a diagram there is also animation build steps defined.

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| **Attributes** | **Description** |
| bldStep (Animation Build Step) | Specifies which step this part of the diagram should be built using. For instance the diagram can be built as one object meaning it is animated as a single graphic. Alternatively the diagram can be animated, or built as separate pieces. |
| id (Identifier) | Specifies the GUID of the shape for this build step in the animation. |

##### endCxn (Connection End)

This element specifies the ending connection that should be made by the corresponding connector shape. This connects the end tail of the connector to the final destination shape.

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| **Attributes** | **Description** |
| id (Identifier) | Specifies the id of the shape to make the final connection to. |
| idx (Index) | Specifies the index into the connection site table of the final connection shape. That is there are many connection sites on a shape and it shall be specified which connection site the corresponding connector shape should connect to. |

##### ext (Extension)

This element specifies an extension that is used for future extensions to the current version of DrawingML. This allows for the specifying of currently unknown elements in the future that is used for later versions of generating applications.

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| **Attributes** | **Description** |
| uri (Uniform Resource Identifier) | Specifies the URI, or uniform resource identifier that represents the data stored under this tag. The URI is used to identify the correct 'server' that can process the contents of this tag. |

##### extLst (Extension List)

This element specifies the extension list within which all future extensions of element type ext is defined. The extension list along with corresponding future extensions is used to extend the storage capabilities of the DrawingML framework. This allows for various new types of data to be stored natively within the framework.

##### graphic (Graphic Object)

This element specifies the existence of a single graphic object. Document authors should refer to this element when they wish to persist a graphical object of some kind. The specification for this graphical object is provided entirely by the document author and referenced within the graphicData child element.

##### graphicData (Graphic Object Data)

This element specifies the reference to a graphic object within the document. This graphic object is provided entirely by the document authors who choose to persist this data within the document.

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| **Attributes** | **Description** |
| uri (Uniform Resource Identifier) | Specifies the URI, or uniform resource identifier that represents the data stored under this tag. The URI is used to identify the correct 'server' that can process the contents of this tag. |

##### graphicFrame (Graphic Frame)

This element specifies the existence of a graphics frame. This frame contains a graphic that was generated by an external source and needs a container in which to be displayed on the slide surface.

##### graphicFrameLocks (Graphic Frame Locks)

This element specifies all locking properties for a graphic frame. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding graphic frame. If this attribute is not specified, then a value of false is assumed. |
| noDrilldown | Specifies that the generating application should not allow selecting of objects within the corresponding graphic frame but allow selecting of the graphic frame itself. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the generating application should not allow shape grouping for the corresponding graphic frame. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Shape Movement) | Specifies that the corresponding graphic frame cannot be moved. Objects that reside within the graphic frame can still be moved unless they also have been locked. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resize) | Specifies that the generating application should not allow size changes for the corresponding graphic frame. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the generating application should not allow selecting of the corresponding picture. That means also that no picture, shapes or text attached to this picture can be selected if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |

##### grpSp (Group shape)

This element specifies a group shape that represents many shapes grouped together. This shape is to be treated just as if it were a regular shape but instead of being described by a single geometry it is made up of all the shape geometries encompassed within it. Within a group shape each of the shapes that make up the group are specified just as they normally would. The idea behind grouping elements however is that a single transform can apply to many shapes at the same time.

##### grpSpLocks (Group Shape Locks)

This element specifies all locking properties for a connection shape. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the corresponding group shape cannot be grouped. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Moving Shape) | Specifies that the corresponding graphic frame cannot be moved. Objects that reside within the graphic frame can still be moved unless they also have been locked. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resizing) | Specifies that the corresponding group shape cannot be resized. If this attribute is not specified, then a value of false is assumed. |
| noRot (Disallow Shape Rotation) | Specifies that the corresponding group shape cannot be rotated Objects that reside within the group can still be rotated unless they also have been locked. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the corresponding group shape cannot have any part of it be selected. That means that no picture, shapes or attached text can be selected either if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |
| noUngrp (Disallow Shape Ungrouping) | Specifies that the generating application should not show adjust handles for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |

##### grpSpPr (Visual Group Shape Properties)

This element specifies the properties that are to be common across all of the shapes within the corresponding group. If there are any conflicting properties within the group shape properties and the individual shape properties then the individual shape properties should take precedence.

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| **Attributes** | **Description** |
| bwMode (Black and White Mode) | Specifies that the group shape should be rendered using only black and white coloring. That is the coloring information for the group shape should be converted to either black or white when rendering the corresponding shapes. |

##### hlinkHover (Hyperlink for Hover)

This element specifies the hyperlink information to be activated when the user's mouse is hovered over the corresponding object. The operation of the hyperlink is to have the specified action be activated when the mouse of the user hovers over the object. When this action is activated then additional attributes can be used to specify other tasks that should be performed along with the action.

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| **Attributes** | **Description** |
| action (Action Setting) | Specifies an action that is to be taken when this hyperlink is activated. This can be used to specify a slide to be navigated to or a script of code to be run. |
| endSnd (End Sounds) | Specifies if the URL in question should stop all sounds that are playing when it is clicked. |
| highlightClick | Specifies if this attribute has already been used within this document. That is when a hyperlink has already been visited that this attribute would be utilized so the generating application can determine the color of this text. If this attribute is omitted, then a value of 0 or false is implied. |
| history (Add Hyperlink to Page | Specifies whether to add this URI to the history when navigating to it. This allows for the viewing of this presentation without the storing of history information on the viewing machine. If this attribute is omitted, then a value of 1 or true is assumed. |
| id (Drawing Object | Specifies the relationship id that when looked up in this slides relationship file contains the target of this hyperlink. This attribute cannot be omitted. |
| invalidUrl (Invalid URL) | Specifies the URL when it has been determined by the generating application that the URL is invalid. That is the generating application can still store the URL but it is known that this URL is not correct. |
| tgtFrame (Target Frame) | Specifies the target frame that is to be used when opening this hyperlink. When the hyperlink is activated this attribute is used to determine if a new window is launched for viewing or if an existing one can be used. If this attribute is omitted, than a new window is opened. |
| tooltip (Hyperlink Tooltip) | Specifies the tooltip that should be displayed when the hyperlink text is hovered over with the mouse. If this attribute is omitted, than the hyperlink text itself can be displayed. |

##### ln (Outline)

This element specifies an outline style that can be applied to a number of different objects such as shapes and text. The line allows for the specifying of many different types of outlines including even line dashes and bevels.

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| **Attributes** | **Description** |
| algn (Stroke Alignment) | Specifies the alignment to be used for the underline stroke. |
| cap (Line Ending Cap Type) | Specifies the ending caps that should be used for this line. [*Note*: Examples of cap types are rounded, flat, etc. *end note*] If this attribute is omitted, than a value of square is assumed. |
| cmpd (Compound | Specifies the compound line type to be used for the underline stroke. If this attribute is omitted, then a value of sng is assumed. |
| w (Line Width) | Specifies the width to be used for the underline stroke. If this attribute is omitted, then a value of 0 is assumed. |

##### nvCxnSpPr (Non-Visual Properties for a Connection Shape)

This element specifies all non-visual properties for a connection shape. This element is a container for the nonvisual identification properties, shape properties and application properties that are to be associated with a connection shape. This allows for additional information that does not affect the appearance of the connection shape to be stored.

##### nvGraphicFramePr (Non-Visual Properties for a Graphic Frame)

This element specifies all non-visual properties for a graphic frame. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a graphic frame. This allows for additional information that does not affect the appearance of the graphic frame to be stored.

##### nvGrpSpPr (Non-Visual Properties for a Group Shape)

This element specifies all non-visual properties for a group shape. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a group shape. This allows for additional information that does not affect the appearance of the group shape to be stored.

##### nvPicPr (Non-Visual Properties for a Picture)

This element specifies all non-visual properties for a picture. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a picture. This allows for additional information that does not affect the appearance of the picture to be stored.

##### nvSpPr (Non-Visual Properties for a Shape)

This element specifies all non-visual properties for a shape. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a shape. This allows for additional information that does not affect the appearance of the shape to be stored.

##### pic (Picture)

This element specifies the existence of a picture object within the document.

##### picLocks (Picture Locks)

This element specifies all locking properties for a graphic frame. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noAdjustHandles (Disallow Showing | Specifies that the generating application should not show adjust handles for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeArrowhe ads (Disallow | Specifies that the generating application should not allow arrowhead changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeShapeType (Disallow Shape | Specifies that the generating application should not allow shape type changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noCrop (Disallow Crop Changes) | Specifies that the generating application should not allow cropping for the corresponding picture. If this attribute is not specified, then a value of false is assumed. |
| noEditPoints (Disallow Shape | Specifies that the generating application should not allow shape point changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the generating application should not allow shape grouping for the corresponding connection shape. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Shape Movement) | Specifies that the generating application should not allow position changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resize) | Specifies that the generating application should not allow size changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noRot (Disallow Shape Rotation) | Specifies that the generating application should not allow shape rotation changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the generating application should not allow selecting of the corresponding connection shape. That means also that no picture, shapes or text attached to this connection shape can be selected if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |

##### snd (Hyperlink Sound)

This element specifies a sound to be played when a hyperlink within the document is activated. This sound is specified from within the parent hyperlink element.

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| **Attributes** | **Description** |
| embed (Embedded | Specifies the identification information for an embedded audio file. This attribute is used to specify the location of an object that resides locally within the file. [*Note*: A list of suggested audio types is provided in §15.2.2. *end note*] |
| name (Sound Name) | Specifies the original name or given short name for the corresponding sound. This is used to distinguish this sound from others by providing a human readable name for the attached sound should the user need to identify the sound among others within the UI. |

##### sp (Shape)

This element specifies the existence of a single shape. A shape can either be a preset or a custom geometry, defined using the DrawingML framework. In addition to a geometry each shape can have both visual and nonvisual properties attached. Text and corresponding styling information can also be attached to a shape. This shape is specified along with all other shapes within either the shape tree or group shape elements.

##### spLocks (Shape Locks)

This element specifies all locking properties for a shape. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noAdjustHandles (Disallow Showing | Specifies that the generating application should not show adjust handles for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeArrowhe | Specifies that the generating application should not allow arrowhead changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeShapeTy pe (Disallow Shape | Specifies that the generating application should not allow shape type changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noEditPoints (Disallow Shape | Specifies that the generating application should not allow shape point changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the generating application should not allow shape grouping for the corresponding connection shape. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Shape Movement) | Specifies that the generating application should not allow position changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resize) | Specifies that the generating application should not allow size changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noRot (Disallow Shape Rotation) | Specifies that the generating application should not allow shape rotation changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the generating application should not allow selecting of the corresponding connection shape. That means also that no picture, shapes or text attached to this connection shape can be selected if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |
| noTextEdit (Disallow Shape | Specifies that the generating application should not allow editing of the shape text for the corresponding shape. If this attribute is not specified, then a value of false is assumed. |

##### spPr (Shape Properties)

This element specifies the visual shape properties that can be applied to a shape.

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| **Attributes** | **Description** |
| bwMode (Black and White Mode) | Specifies that the picture should be rendered using only black and white coloring. That is the coloring information for the picture should be converted to either black or white when rendering the picture. |

##### stCxn (Connection Start)

This element specifies the starting connection that should be made by the corresponding connector shape. This connects the head of the connector to the first shape.

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| **Attributes** | **Description** |
| id (Identifier) | Specifies the id of the shape to make the final connection to. |
| idx (Index) | Specifies the index into the connection site table of the final connection shape. That is there are many connection sites on a shape and it shall be specified which connection site the corresponding connector shape should connect to. |

##### style (Shape Style)

This element specifies the style information for a shape.

##### sx (Horizontal Ratio)

This element specifies the horizontal ratio for use within a scaling calculation.

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| **Attributes** | **Description** |
| d (Denominator) | Specifies the denominator to be used within the equation. |
| n (Numerator) | Specifies the numerator to be used within the equation. |

##### sy (Vertical Ratio)

This element specifies the vertical ratio for use within a scaling calculation.

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| --- | --- |
| **Attributes** | **Description** |
| d (Denominator) | Specifies the denominator to be used within the equation. |
| n (Numerator) | Specifies the numerator to be used within the equation. |

##### txBody (Shape Text Body)

This element specifies the existence of text to be contained within the corresponding shape. All visible text and visible text related properties are contained within this element. There can be multiple paragraphs and within paragraphs multiple runs of text.

##### txSp (Text Shape)

This element specifies the existence of a text shape within a parent shape. This text shape is specifically used for displaying text as it has only text related child elements.

##### useSpRect (Use Shape Text Rectangle)

This element specifies that the text rectangle from the parent shape should be used for this text shape. If this attribute is specified then the text rectangle, or text bounding box as it is also called should have the same dimensions as the text bounding box of the parent shape within which this text shape resides.

##### cpLocks (Content Part Locks)

This element specifies all locking properties for a content part. These properties inform the generating application about specific properties that have been previously locked and thus should not be changed.

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| **Attributes** | **Description** |
| noAdjustHandles (Disallow Showing | Specifies that the generating application should not show adjust handles for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeArrowhe | Specifies that the generating application should not allow arrowhead changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeAspect | Specifies that the generating application should not allow aspect ratio changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noChangeShapeTy pe (Disallow Shape | Specifies that the generating application should not allow shape type changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noEditPoints (Disallow Shape | Specifies that the generating application should not allow shape point changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noGrp (Disallow Shape Grouping) | Specifies that the generating application should not allow shape grouping for the corresponding connection shape. That is it cannot be combined within other shapes to form a group of shapes. If this attribute is not specified, then a value of false is assumed. |
| noMove (Disallow Shape Movement) | Specifies that the generating application should not allow position changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noResize (Disallow Shape Resize) | Specifies that the generating application should not allow size changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noRot (Disallow Shape Rotation) | Specifies that the generating application should not allow shape rotation changes for the corresponding connection shape. If this attribute is not specified, then a value of false is assumed. |
| noSelect (Disallow Shape Selection) | Specifies that the generating application should not allow selecting of the corresponding connection shape. That means also that no picture, shapes, or text attached to this connection shape can be selected if this attribute has been specified. If this attribute is not specified, then a value of false is assumed. |

#### Colors

Given its own section within DrawingML Basics, colors are an integral part of the DrawingML framework. Colors are used in virtually every object to help describe it's appearance when it is rendered on the screen. Since not every generating application wishes to represent color in the same manner, it is possible to specify color in a number of different ways.

##### alpha (Alpha)

This element specifies its input color with the specific opacity, but with its color unchanged.

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| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the opacity as expressed by a percentage value. |

##### alphaMod (Alpha Modulation)

This element specifies a more or less opaque version of its input color. An alpha modulate never increases the alpha beyond 100%. A 200% alpha modulate makes an input color twice as opaque as before. A 50% alpha modulate makes an input color half as opaque as before.

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| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the opacity as expressed by a percentage relative to the input color. |

##### alphaOff (Alpha Offset)

This element specifies a more or less opaque version of its input color. Increases or decreases the input alpha percentage by the specified percentage offset. A 10% alpha offset increases a 50% opacity to 60%. A -10% alpha offset decreases a 50% opacity to 40%. The transformed alpha values are limited to a range of 0 to 100%. A 10% alpha offset increase to a 100% opaque object still results in 100% opacity.

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| **Attributes** | **Description** |
| val (Value) | Specifies the opacity as expressed by a percentage offset increase or decrease to the input color. Increases never increase the opacity beyond 100%, decreases never decrease the opacity below 0%. |

##### blue (Blue)

This element specifies the input color with the specific blue component, but with the red and green color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the value of the blue component. The assigned value is specified as a percentage with 0% indicating minimal blue and 100% indicating maximum blue. |

##### blueMod (Blue Modulation)

This element specifies the input color with its blue component modulated by the given percentage. A 50% blue modulate reduces the blue component by half. A 200% blue modulate doubles the blue component.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the blue component as expressed by a percentage relative to the input color component. Increases never increase the blue component beyond 100%, decreases never decrease the blue component below 0%. |

##### blueOff (Blue Offset)

This element specifies the input color with its blue component shifted, but with its red and green color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the blue component as expressed by a percentage offset increase or decrease to the input color component. Increases never increase the blue component beyond 100%, decreases never decrease the blue component below 0%. |

##### comp (Complement)

This element specifies that the color rendered should be the complement of its input color with the complement being defined as such. Two colors are called complementary if, when mixed they produce a shade of grey. For instance, the complement of red which is RGB (255, 0, 0) is cyan which is RGB (0, 255, 255).

##### gamma (Gamma)

This element specifies that the output color rendered by the generating application should be the sRGB gamma shift of the input color.

##### gray (Gray)

This element specifies a grayscale of its input color, taking into relative intensities of the red, green, and blue primaries.

##### green (Green)

This elements specifies the input color with the specified green component, but with its red and blue color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the value of the green component. The assigned value is specified as a percentage with 0% indicating minimal green and 100% indicating maximum green. |

##### greenMod (Green Modulation)

This element specifies the input color with its green component modulated by the given percentage. A 50% green modulate reduces the green component by half. A 200% green modulate doubles the green component.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the green component as expressed by a percentage relative to the input color component. Increases never increase the green component beyond 100%, decreases never decrease the green component below 0%. |

##### greenOff (Green Offset)

This element specifies the input color with its green component shifted, but with its red and blue color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the green component as expressed by a percentage offset increase or decrease to the input color component. Increases never increase the green component beyond 100%, decreases never decrease the green component below 0%. |

##### hslClr (Hue, Saturation, Luminance Color Model)

This element specifies a color using the HSL color model. A perceptual gamma of 2.2 is assumed.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| hue (Hue) | Specifies the angular value describing the wavelength. |
| lum (Luminance) | Specifies the luminance referring to the lightness or darkness of the color. Expressed as a percentage with 0% referring to maximal dark (black) and 100% referring to maximal white. |
| sat (Saturation) | Specifies the saturation referring to the purity of the hue. Expressed as a percentage with 0% referring to grey, 100% referring to the purest form of the hue. |

##### hue (Hue)

This element specifies the input color with the specified hue, but with its saturation and luminance unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the actual angle value to be used with the input color's hue component. |

##### hueMod (Hue Modulate)

This element specifies the input color with its hue modulated by the given percentage. A 50% hue modulate decreases the angular hue value by half. A 200% hue modulate doubles the angular hue value.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the hue as expressed by a percentage relative to the input color. |

##### hueOff (Hue Offset)

This element specifies the input color with its hue shifted, but with its saturation and luminance unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the actual angular value of the shift. The result of the shift shall be between 0 and 360 degrees. Shifts resulting in angular values less than 0 are treated as 0. Shifts resulting in angular values greater than 360 are treated as 360. |

##### inv (Inverse)

This element specifies the inverse of its input color.

##### invGamma (Inverse Gamma)

This element specifies that the output color rendered by the generating application should be the inverse sRGB gamma shift of the input color.

##### lum (Luminance)

This element specifies the input color with the specified luminance, but with its hue and saturation unchanged. Typically luminance values fall in the range [0%, 100%].

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the value of the luminance. The assigned value is specified as a percentage with 0% indicating minimal luminance and 100% indicating maximum luminance. |

##### lumMod (Luminance Modulation)

This element specifies the input color with its luminance modulated by the given percentage. A 50% luminance modulate reduces the luminance by half. A 200% luminance modulate doubles the luminance.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the luminance as expressed by a percentage relative to the input color. Increases never increase the luminance beyond 100%, decreases never decrease the luminance below 0%. |

##### lumOff (Luminance Offset)

This element specifies the input color with its luminance shifted, but with its hue and saturation unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the luminance as expressed by a percentage offset increase or decrease to the input color. Increases never increase the luminance beyond 100%, decreases never decrease the luminance below 0%. |

##### prstClr (Preset Color)

This element specifies a color which is bound to one of a predefined collection of colors.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the actual preset color value. |

##### red (Red)

This element specifies the input color with the specified red component, but with its green and blue color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the value of the red component. The assigned value is specified as a percentage with 0% indicating minimal red and 100% indicating maximum red. |

##### redMod (Red Modulation)

This element specifies the input color with its red component modulated by the given percentage. A 50% red modulate reduces the red component by half. A 200% red modulate doubles the red component.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the red component as expressed by a percentage relative to the input color component. Increases never increase the red component beyond 100%, decreases never decrease the red component below 0%. |

##### redOff (Red Offset)

This element specifies the input color with its red component shifted, but with its green and blue color components unchanged.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the red component as expressed by a percentage offset increase or decrease to the input color component. Increases never increase the red component beyond 100%, decreases never decrease the red component below 0%. |

##### sat (Saturation)

This element specifies the input color with the specified saturation, but with its hue and luminance unchanged. Typically saturation values fall in the range [0%, 100%].

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the value of the saturation. The assigned value is specified as a percentage with 0% indicating minimal saturation and 100% indicating maximum saturation. |

##### satMod (Saturation Modulation)

This element specifies the input color with its saturation modulated by the given percentage. A 50% saturation modulate reduces the saturation by half. A 200% saturation modulate doubles the saturation.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the saturation as expressed by a percentage relative to the input color. Increases never increase the saturation beyond 100%, decreases never decrease the saturation below 0%. |

##### satOff (Saturation Offset)

This element specifies the input color with its saturation shifted, but with its hue and luminance unchanged. A 10% offset to 20% saturation yields 30% saturation.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the saturation as expressed by a percentage offset increase or decrease to the input color. Increases never increase the saturation beyond 100%, decreases never decrease the saturation below 0%. |

##### schemeClr (Scheme Color)

This element specifies a color bound to a user's theme. As with all elements which define a color, it is possible to apply a list of color transforms to the base color defined.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the desired scheme. |

##### scrgbClr (RGB Color Model - Percentage Variant)

This element specifies a color using the red, green, blue RGB color model. Each component, red, green, and blue is expressed as a percentage from 0% to 100%. A linear gamma of 1.0 is assumed.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Blue) | Specifies the percentage of blue. |
| g (Green) | Specifies the percentage of green. |
| r (Red) | Specifies the percentage of red. |

##### shade (Shade)

This element specifies a darker version of its input color. A 10% shade is 10% of the input color combined with 90% black.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the shade as expressed by a percentage value. |

##### srgbClr (RGB Color Model - Hex Variant)

This element specifies a color using the red, green, blue RGB color model. Red, green, and blue is expressed as sequence of hex digits, RRGGBB. A perceptual gamma of 2.2 is used.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | The actual color value. Expressed as a sequence of hex digits RRGGBB. |

##### sysClr (System Color)

This element specifies a color bound to predefined operating system elements.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| lastClr (Last Color) | Specifies the color value that was last computed by the generating application. |
| val (Value) | Specifies the system color value. |

##### tint (Tint)

This element specifies a lighter version of its input color. A 10% tint is 10% of the input color combined with 90% white.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies the tint as expressed by a percentage value. |

### Audio and Video

The Audio and Video portion of the DrawingML framework deals with all media of these two kinds that can be attached to objects within a document. Types of audio that can be represented within a file are CD audio, QuickTime audio, and any other generic audio. When dealing with generic audio there is the option for embedding it within the file and also linking it. The linking option is preferable if the size of the audio file is too large and thus increases the size of the document by an undesirable amount. For video there are two kinds that can be represented and that is either a QuickTime movie or any other generic movie. When dealing with generic video there is only the option of linking to the media as video is too large to embed within a document.

#### audioCd (Audio from CD)

This element specifies the existence of Audio from a CD. This element is specified within the non-visual properties of an object. The audio shall be attached to an object as this is how it is represented within the document. The actual playing of the sound however is done within the timing node list that is specified under the timing element.

#### audioFile (Audio from File)

This element specifies the existence of an audio file. This element is specified within the non-visual properties of an object. The audio shall be attached to an object as this is how it is represented within the document. The actual playing of the audio however is done within the timing node list that is specified under the timing element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| contentType | Specifies the content type for the external file that is referenced by this element. Content types define a media type, a subtype, and an optional set of parameters, as defined in Part 2. If a rendering application cannot process external content of the content type specified, then the specified content can be ignored. [*Note*: A list of suggested audio types is provided in §15.2.2. *end note*] |
| link (Linked Relationship ID) | Specifies the identification information for a linked object. This attribute is used to specify the location of an object that does not reside within this file. |

#### end (Audio End Time)

This element specifies the end point for a CD Audio sound element. Encompassed within this element are the time and track at which the sound should halt its playback. This element is used in conjunction with an Audio Start Time element to specify the time span for an entire audioCD sound element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| time (Time) | Specifies the time in seconds that the CD Audio should be stopped at. If this attribute is omitted, then a value of 0 is assumed. |
| track (Track) | Specifies which track of the CD this Audio stops playing at. This attribute is required and cannot be omitted. |

#### quickTimeFile (QuickTime from File)

This element specifies the existence of a QuickTime file, as defined in the 2007-09-04 version of the QuickTime File Format Specification:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| link (Linked Relationship ID) | Specifies the identification information for a linked object. This attribute is used to specify the location of an object that does not reside within this file. |

#### st (Audio Start Time)

This element specifies the start point for a CD Audio sound element. Encompassed within this element are the time and track at which the sound should begin its playback. This element is used in conjunction with an Audio End Time element to specify the time span for an entire audioCD sound element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| time (Time) | Specifies the time in seconds that the CD Audio should be started at. If this attribute is omitted, then a value of 0 is assumed. |
| track (Track) | Specifies which track of the CD this Audio begins playing on. This attribute is required and cannot be omitted. |

#### videoFile (Video from File)

This element specifies the existence of a video file. This element is specified within the non-visual properties of an object. The video shall be attached to an object as this is how it is represented within the document. The actual playing of the video however is done within the timing node list that is specified under the timing element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| contentType | Specifies the content type for the external file that is referenced by this element. Content types define a media type, a subtype, and an optional set of parameters, as defined in Part 2. If a rendering application cannot process external content of the content type specified, then the specified content can be ignored. [*Note*: A list of suggested video types is provided in §15.2.17. *end note*] |
| link (Linked Relationship ID) | Specifies the identification information for a linked video file. This attribute is used to specify the location of an object that does not reside within this file. |

#### wavAudioFile (Audio from WAV File)

This element specifies the existence of an audio WAV file. This element is specified within the non-visual properties of an object. The audio shall be attached to an object as this is how it is represented within the document. The actual playing of the audio however is done within the timing node list that is specified under the timing element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| embed (Embedded | Specifies the identification information for an embedded audio file. This attribute is used to specify the location of an object that resides locally within the file. [*Note*: A list of suggested audio types is provided in §15.2.2. *end note*] |
| name (Sound Name) | Specifies the original name or given short name for the corresponding sound. This is used to distinguish this sound from others by providing a human readable name for the attached sound should the user need to identify the sound among others within the UI. |

### Styles

Styles within DrawingML refer to the way a particular object (be it text or a shape, or anything else) is formatted. Different aspects, ranging from color, line type, fill, and effects applied to the object can be predefined within a theme. The main purpose of a theme is to define a style matrix from which a document can pull style information from in order to format the visual look of objects in a document.

#### Styles

The elements in this section compose the basic definition of a style, including its associated colors, effect styles, line styles, fill styles, background styles, and font scheme.

##### accent1 (Accent 1)

This element defines a color that happens to be the accent 1 color. The set of twelve colors come together to form the color scheme for a theme.

##### accent2 (Accent 2)

This element defines a color that happens to be the accent 2 color. The set of twelve colors come together to form the color scheme for a theme.

##### accent3 (Accent 3)

This element defines a color that happens to be the accent 3 color. The set of twelve colors come together to form the color scheme for a theme.

##### accent4 (Accent 4)

This element defines a color that happens to be the accent 4 color. The set of twelve colors come together to form the color scheme for a theme.

##### accent5 (Accent 5)

This element defines a color that happens to be the accent 5 color. The set of twelve colors come together to form the color scheme for a theme.

##### accent6 (Accent 6)

This element defines a color that happens to be the accent 1 color. The set of twelve colors come together to form the color scheme for a theme.

##### bgFillStyleLst (Background Fill Style List)

This element defines a list of background fills that are used within a theme. The background fills consist of three fills, arranged in order from subtle to moderate to intense.

##### custClr (Custom color)

This element defines a custom color. The custom colors are used within a custom color list to define custom colors that are extra colors that can be appended to a theme. This is useful within corporate scenarios where there is a set corporate color palette from which to work.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | The name of the color shown in the color picker. |

##### dk1 (Dark 1)

This element defines a color that happens to be the dark 1 color. The set of twelve colors come together to form the color scheme for a theme.

##### dk2 (Dark 2)

This element defines a color that happens to be the dark 2 color. The set of twelve colors come together to form the color scheme for a theme.

##### effectStyle (Effect Style)

This element defines a set of effects and 3D properties that can be applied to an object.

##### effectStyleLst (Effect Style List)

This element defines a set of three effect styles that create the effect style list for a theme. The effect styles are arranged in order of subtle to moderate to intense.

##### fillStyleLst (Fill Style List)

This element defines a set of three fill styles that are used within a theme. The three fill styles are arranged in order from subtle to moderate to intense.

##### fmtScheme (Format Scheme)

This element contains the background fill styles, effect styles, fill styles, and line styles which define the style matrix for a theme. The style matrix consists of subtle, moderate, and intense fills, lines, and effects. The background fills are not generally thought of to directly be associated with the matrix, but do play a role in the style of the overall document. Usually, a given object chooses a single line style, a single fill style, and a single effect style in order to define the overall final look of the object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | Defines the name for the format scheme. The name is simply a human readable string which identifies the format scheme in the user interface. |

##### folHlink (Followed Hyperlink)

This element defines a color that happens to be the followed hyperlink color. The set of twelve colors come together to form the color scheme for a theme.

##### font (Font)

This element defines a font within the styles area of DrawingML. A font is defined by a script along with a typeface.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| script (Script) | Specifies the script, or language, in which the typeface is supposed to be used. |
| typeface (Typeface) | Specifies the font face to use. |

##### fontRef (Font Reference)

This element represents a reference to a themed font. When used it specifies which themed font to use along with a choice of color.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| idx (Identifier) | Specifies the identifier of the font to reference. |

##### fontScheme (Font Scheme)

This element defines the font scheme within the theme. The font scheme consists of a pair of major and minor fonts for which to use in a document. The major font corresponds well with the heading areas of a document, and the minor font corresponds well with the normal text or paragraph areas.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | The name of the font scheme shown in the user interface. |

##### hlink (Hyperlink)

This element defines a color that happens to be the hyperlink color. The set of twelve colors come together to form the color scheme for a theme.

##### lnDef (Line Default)

This element defines a default line that is used within a document.

##### lnStyleLst (Line Style List)

This element defines a list of three line styles for use within a theme. The three line styles are arranged in order from subtle to moderate to intense versions of lines. This list makes up part of the style matrix.

##### lt1 (Light 1)

This element defines a color that happens to be the accent 1 color. The set of twelve colors come together to form the color scheme for a theme.

##### lt2 (Light 2)

This element defines a color that happens to be the accent 1 color. The set of twelve colors come together to form the color scheme for a theme.

##### majorFont (Major Font)

This element defines the set of major fonts which are to be used under different languages or locals.

##### minorFont (Minor fonts)

This element defines the set of minor fonts that are to be used under different languages or locals.

##### scene3d (3D Scene Properties)

This element defines optional scene-level 3D properties to apply to an object.

##### spDef (Shape Default)

This element defines the formatting that is associated with the default shape. The default formatting can be applied to a shape when it is initially inserted into a document.

##### txDef (Text Default)

This element defines the default formatting which is applied to text in a document by default. The default formatting can and should be applied to the shape when it is initially inserted into a document.

#### Table Styles

Table styles are responsible for the rapid formatting that can be applied to a table. This rapid formatting takes different parts of a table into account, such as if the first row or last row should be emphasized, or if there is some type of banding (row for example) present on the table. All of these different types of formatting can be defined within a table style

##### band1H (Band 1 Horizontal)

This element describes the formatting for the first row in horizontal banding. Two different row formatting are applied to the table alternating in order to create a banding effect on the table.

##### band1V (Band 1 Vertical)

This element describes the formatting for the first row in vertical banding. Two different column formattings are applied to the table alternating in order to create a banding effect on the table.

##### band2H (Band 2 Horizontal)

This element describes the formatting for the second row in horizontal banding. Two different row formatting are applied to the table alternating in order to create a banding effect on the table.

##### band2V (Band 2 Vertical)

This element describes the formatting for the second row in vertical banding. Two different row formatting are applied to the table alternating in order to create a banding effect on the table.

##### bevel (Bevel)

This element defines the properties of the bevel associated with the 3D effect applied to a cell in a table.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| h (Height) | Specifies the height of the bevel, or how far above the shape it is applied. |
| prst (Preset Bevel) | Specifies the preset bevel type which defines the look of the bevel. |
| w (Width) | Specifies the width of the bevel, or how far into the shape it is applied. |

##### bottom (Bottom Border)

This element defines the line properties associated with the bottom border in a table cell.

##### effect (Effect)

This element defines the effect that can be applied to a table as a whole through a table style.

##### effectRef (Effect Reference)

This element defines a reference to an effect style within the style matrix. The idx attribute refers the index of an effect style within the effectStyleLst element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| idx (Style Matrix Index) | Specifies the style matrix index of the style referred to. |

##### fill (Fill)

This element defines the fill that is applied to the table as a whole. The background of the table can contain a single fill that is the entire size of the table. This can allow for gradient fills, or image fills, which span the entire size of the table.

##### fillRef (Fill Reference)

This element defines a reference to a fill style within the style matrix. The idx attribute refers to the index of a fill style or background fill style within the presentation's style matrix, defined by the fmtScheme element. A value of 0 or 1000 indicates no background, values 1-999 refer to the index of a fill style within the fillStyleLst element, and values 1001 and above refer to the index of a background fill style within the bgFillStyleLst element. The value 1001 corresponds to the first background fill style, 1002 to the second background fill style, and so on.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| idx (Style Matrix Index) | Specifies the style matrix index of the style referred to. |

##### firstCol (First Column)

This element defines the cell formatting which can be applied to the first column of the table.

##### firstRow (First Row)

This element defines the cell formatting which can be applied to the first row of the table.

##### font (Font)

This element defines the font to be used within a given table cell text style. This element allows for exact definition of the font within the table style instead of referencing a themed font.

##### insideH (Inside Horizontal Border)

This element defines the line properties associated with the inner horizontal borders in a table.

##### insideV (Inside Vertical Border)

This element defines the line properties associated with the inner vertical borders in a table.

##### lastCol (Last Column)

This element defines the cell formatting which can be applied to the last column of the table.

##### lastRow (Last Row)

This element defines the cell formatting which can be applied to the last row of the table.

##### left (Left Border)

This element defines the line properties associated with the left border in a table cell.

##### lnRef (Line Reference)

This element defines a reference to a line style within the style matrix. The idx attribute refers the index of a line style within the fillStyleLst element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| idx (Style Matrix Index) | Specifies the style matrix index of the style referred to. |

##### neCell (Northeast Cell)

This element defies the formatting for the cell in the northeast corner of a table when both the first row formatting and last column formatting are enabled. This formatting is only applied to the single cell which overlaps between the two formatting options.

##### nwCell (Northwest Cell)

This element defies the formatting for the cell in the northwest corner of a table when both the first row formatting and first column formatting are enabled. This formatting is only applied to the single cell which overlaps between the two formatting options.

##### right (Right Border)

This element defines the line properties associated with the right border in a table cell.

##### seCell (Southeast Cell)

This element defies the formatting for the cell in the southeast corner of a table when both the last row formatting and last column formatting are enabled. This formatting is only applied to the single cell which overlaps between the two formatting options.

##### swCell (Southwest Cell)

This element defies the formatting for the cell in the southwest corner of a table when both the last row formatting and first column formatting are enabled. This formatting is only applied to the single cell which overlaps between the two formatting options.

##### tblBg (Table Background)

This element defines the formatting options which can be applied to the table background shape. The background shape is the same size as the entire table and can hold a fill or an effect which spans the entire table.

##### tblStyle (Table Style)

This is the root element for a table style. Within the table style are different formatting options available in order to apply a table.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| styleId (Style ID) | Specifies a GUID identifying the table style in a unique manner. |
| styleName (Name) | Specifies the name of the table style which can show up in the user interface identifying the style to a user. |

##### tblStyleLst (Table Style List)

This element is simply a list of table styles which are used within a document.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| def (Default) | The GUID corresponding to the default table style in the list of table styles. This default can be used when a table is initially inserted into a document. |

##### tcBdr (Table Cell Borders)

This element defines the borders for the cells within a table.

##### tcStyle (Table Cell Style)

This element defines the style for a give cell in a table.

##### tcTxStyle (Table Cell Text Style)

This element defines the text properties associated with the text contained within a table cell.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bold) | Specifies if the text is to be bolded. |
| i (Italic) | Specifies if the text is to be italicized. |

##### tl2br (Top Left to Bottom Right Border)

This element defines the line properties associated with the border which goes from the top-left to the bottomright corner in a table cell.

##### top (Top Border)

This element defines the line properties associated with the top border in a table cell.

##### tr2bl (Top Right to Bottom Left Border)

This element defines the line properties associated with the border which goes from the top-right to the bottom-left corner in a table cell.

##### wholeTbl (Whole Table)

This element contains formatting options which are applied to the table as a whole when it is in its default state with no formatting options (first row, last row, etc) enabled.

### 3D drawings

The 3D portion of the DrawingML framework allows for the describing of a 3D scene to be placed within a document. This 3D scene can be described using text and shape objects along with various lighting, material and camera settings.

#### anchor (Anchor Point)

This element specifies a point in 3D space. This point is the point in space that anchors the backdrop plane.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Coordinate in 3D) | X-Coordinate in 3D space. |
| y (Y-Coordinate in 3D) | Y-Coordinate in 3D space. |
| z (Z-Coordinate in 3D) | Z-Coordinate in 3D space. |

#### backdrop (Backdrop Plane)

This element defines a plane in which effects, such as glow and shadow, are applied in relation to the shape they are being applied to. The points and vectors contained within the backdrop define a plane in 3D space.

#### bevelB (Bottom Bevel)

This element holds the properties associated with defining a bevel on the bottom or back face of a shape.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| h (Height) | Specifies the height of the bevel, or how far above the shape it is applied. |
| prst (Preset Bevel) | Specifies the preset bevel type which defines the look of the bevel. |
| w (Width) | Specifies the width of the bevel, or how far into the shape it is applied. |

#### bevelT (Top Bevel)

This element holds the properties associated with defining a bevel on the top or front face of a shape.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| h (Height) | Specifies the height of the bevel, or how far above the shape it is applied. |
| prst (Preset Bevel) | Specifies the preset bevel type which defines the look of the bevel. |
| w (Width) | Specifies the width of the bevel, or how far into the shape it is applied. |

#### camera (Camera)

This element defines the placement and properties of the camera in the 3D scene. The camera position and properties modify the view of the scene.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fov (Field of View) | Provides an override for the default field of view for the camera. Different perspectives can be obtained by modifying this attribute. |
| prst (Preset Camera Type) | Defines the preset camera that is being used by the camera element. The preset camera defines a starting point for common preset rotations in space. |
| zoom (Zoom) | Defines the zoom factor of a given camera element. The zoom modifies the scene as a whole and zooms in or out accordingly. |

#### contourClr (Contour Color)

This element defines the color for the contour on a shape. The contour of a shape is a solid filled line which surrounds the outer edges of the shape.

#### extrusionClr (Extrusion Color)

This element defines the color of the extrusion applied to a shape. The extrusion on a shape is an artificial height applied to the geometry.

#### flatTx (No text in 3D scene)

Keep text out of 3D scene entirely.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| z (Z Coordinate) | Specifies the Z coordinate to be used in positioning the flat text within the 3D scene. |

#### lightRig (Light Rig)

This element defines the light rig associated with the table. The light rig comes into play when there is a 3D bevel applied to a cell. When 3D is used, the light rig defines the lighting properties associated with the scene.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dir (Direction) | Defines the direction from which the light rig is oriented in relation to the scene. |
| rig (Rig Preset) | Defines the preset type of light rig which is to be applied to the scene. |

#### norm (Normal)

This element defines a normal vector. To be more precise, this attribute defines a vector normal to the face of the backdrop plane.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dx (Distance along X-axis in 3D) | Distance along X-axis in 3D |
| dy (Distance along Y-axis in 3D) | Distance along Y-axis in 3D |
| dz (Distance along Z-axis in 3D) | Distance along Z-axis in 3D |

#### rot (Rotation)

This element defines a rotation in 3D space. A rotation in DrawingML is defined through the use of a latitude coordinate, a longitude coordinate, and a revolution about the axis as the latitude and longitude coordinates.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| lat (Latitude) | Defines the latitude value of the rotation. |
| lon (Longitude) | Defines the longitude value of the rotation. |
| rev (Revolution) | This attributes defines the revolution around the central axis in the rotation. |

#### sp3d (Apply 3D shape properties)

This element defines the 3D properties associated with a particular shape in DrawingML. The 3D properties which can be applied to a shape are top and bottom bevels, a contour and an extrusion.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| contourW (Contour Width) | Defines the width of the contour on the shape. |
| extrusionH | Defines the height of the extrusion applied to the shape. |
| prstMaterial (Preset Material | Defines the preset material which is combined with the lighting properties to give the final look and feel of a shape. |
| z (Shape Depth) | Defines the z coordinate for the 3D shape. |

#### up (Up Vector)

This element defines a vector representing up. To be more precise, this attribute defines a vector representing up in relation to the face of the backdrop plane.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dx (Distance along X-axis in 3D) | Distance along X-axis in 3D |
| dy (Distance along Y-axis in 3D) | Distance along Y-axis in 3D |
| dz (Distance along Z-axis in 3D) | Distance along Z-axis in 3D |

### Shared Style Sheet

The shared style sheet aspects contained within DrawingML are responsible for containing formatting options and styles which can be used by applications to define a certain look or feel to documents. The shared style sheet can be used by any document category ([*Note*: For example, a presentation. *end note*]) to pull visual information from which formats the document in a certain way, or theme. The shared style sheet contains information that is not document-category specific.

#### clrMap (Color Map)

This element specifics the color mapping layer which allows a user to define colors for background and text. This allows for swapping out of light/dark colors for backgrounds and the text on top of the background in order to maintain readability of the text On a deeper level, this specifies exactly which colors the first 12 values refer to in the color scheme.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| accent1 | Specifies a color defined which is associated as the accent 1 color. |
| accent2 | Specifies a color defined which is associated as the accent 2 color. |
| accent3 | Specifies a color defined which is associated as the accent 3 color. |
| accent4 | Specifies a color defined which is associated as the accent 4 color. |
| accent5 | Specifies a color defined which is associated as the accent 5 color. |
| accent6 | Specifies a color defined which is associated as the accent 6 color. |
| bg1 | A color defined which is associated as the first background color. |
| bg2 | Specifies a color defined which is associated as the second background color. |
| folHlink | Specifies a color defined which is associated as the color for a followed hyperlink. |
| hlink | Specifies a color defined which is associated as the color for a hyperlink. |
| tx1 | Specifies a color defined which is associated as the first text color. |
| tx2 | Specifies a color defined which is associated as the second text color. |

#### clrScheme (Color Scheme)

This element defines a set of colors which are referred to as a color scheme. The color scheme is responsible for defining a list of twelve colors. The twelve colors consist of six accent colors, two dark colors, two light colors and a color for each of a hyperlink and followed hyperlink.

|  |  |
| --- | --- |
| **Sequence Index** | **Element (Color) Name** |
| 0 | dk1 (Dark 1) |
| 1 | lt1 (Light 1) |
| 2 | dk2 (Dark 2) |
| 3 | lt2 (Light 2) |
| 4 | accent1 (Accent 1) |
| 5 | accent2 (Accent 2) |
| 6 | accent3 (Accent 3) |
| 7 | accent4 (Accent 4) |
| 8 | accent5 (Accent 5) |
| 9 | accent6 (Accent 6) |
| 10 | hlink (Hyperlink) |
| 11 | folHlink (Followed Hyperlink) |

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | The common name for this color scheme. This name can show up in the user interface in a list of color schemes. |

#### custClrLst (Custom Color List)

This element allows for a custom color palette to be created and which shows up alongside other color schemes. This can be very useful, for example, when someone would like to maintain a corporate color palette.

#### extraClrScheme (Extra Color Scheme)

This element defines an auxiliary color scheme, which includes both a color scheme and color mapping. This is mainly used for backward compatibility concerns and roundtrips information required by earlier versions.

#### extraClrSchemeLst (Extra Color Scheme List)

This element is a container for the list of extra color schemes present in a document.

#### masterClrMapping (Master Color Mapping)

This element is a part of a choice for which color mapping is used within the document. There is also defined an overrideClrMapping (§20.1.6.8) element which, when specified, the override is used rather than the color mapping defined in the master. If this element is specified, then we specifically use the color mapping defined in the master.

#### objectDefaults (Object Defaults)

This element allows for the definition of default shape, line, and textbox formatting properties. An application can use this information to format a shape (or text) initially on insertion into a document.

#### overrideClrMapping (Override Color Mapping)

This element provides an override for the color mapping in a document. When defined, this color mapping is used in place of the already defined color mapping, or master color mapping. This color mapping is defined in the same manner as the other mappings within this document.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| accent1 | Specifies a color defined which is associated as the accent 1 color. |
| accent2 | Specifies a color defined which is associated as the accent 2 color. |
| accent3 | Specifies a color defined which is associated as the accent 3 color. |
| accent4 | Specifies a color defined which is associated as the accent 4 color. |
| accent5 | Specifies a color defined which is associated as the accent 5 color. |
| accent6 | Specifies a color defined which is associated as the accent 6 color. |
| bg1 | A color defined which is associated as the first background color. |
| bg2 | Specifies a color defined which is associated as the second background color. |
| folHlink | Specifies a color defined which is associated as the color for a followed hyperlink. |
| hlink | Specifies a color defined which is associated as the color for a hyperlink. |
| tx1 | Specifies a color defined which is associated as the first text color. |
| tx2 | Specifies a color defined which is associated as the second text color. |

#### theme (Theme)

This element defines the root level complex type associated with a shared style sheet (or theme). This element holds all the different formatting options available to a document through a theme and defines the overall look and feel of the document when themed objects are used within the document.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | Specifies the name given to the theme. |

#### themeElements (Theme Elements)

This element defines the theme formatting options for the theme and is the workhorse of the theme. This is where the bulk of the shared theme information is contained and used by a document. This element contains the color scheme, font scheme, and format scheme elements which define the different formatting aspects of what a theme defines.

#### themeManager (Theme Manager)

The starting part for a theme file.

#### themeOverride (Theme Override)

This element allows for an override which changes just the colors, fonts, or effects of a single object, like a table for example. Currently it is used only to control overrides on the non-top-level masters within a presentation.

### Coordinate Systems and Transformations

The following elements are used to reflect dimensions, scaling, location, rotation, and flip information on groups and individual shapes respectively.

#### chExt (Child Extents)

This element specifies the size dimensions of the child extents rectangle and is used for calculations of grouping, scaling, and rotation behavior of shapes placed within a group.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| cx (Extent Length) | Specifies the length of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |
| cy (Extent Width) | Specifies the width of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |

#### chOff (Child Offset)

This element specifies the location of the child extents rectangle and is used for calculations of grouping, scaling, and rotation behavior of shapes placed within a group.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis Coordinate) | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### ext (Extents)

This element specifies the size of the bounding box enclosing the referenced object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| cx (Extent Length) | Specifies the length of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |
| cy (Extent Width) | Specifies the width of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |

#### off (Offset)

This element specifies the location of the bounding box of an object. Effects on an object are not included in this bounding box.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### xfrm (2D Transform for Grouped Objects)

This element is nearly identical to the representation of 2-D transforms for ordinary shapes (§20.1.7.6). The only addition is a member to represent the Child offset and the Child extents.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| flipH (Horizontal Flip) | Horizontal flip. When true, this attribute defines that the group is flipped horizontally about the center of its bounding box. |
| flipV (Vertical Flip) | Vertical flip. When true, this attribute defines that the group is flipped vertically about the center of its bounding box. |
| rot (Rotation) | Rotation. Specifies the clockwise rotation of a group in 1/64000 of a degree. |

#### xfrm (2D Transform for Individual Objects)

This element represents 2-D transforms for ordinary shapes.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| flipH (Horizontal Flip) | Specifies a horizontal flip. When true, this attribute defines that the shape is flipped horizontally about the center of its bounding box. |
| flipV (Vertical Flip) | Specifies a vertical flip. When true, this attribute defines that the group is flipped vertically about the center of its bounding box. |
| rot (Rotation) | Specifies the rotation of the Graphic Frame. The units for which this attribute is specified in reside within the simple type definition referenced below. |

### Shape Fills, Effects, and Line Properties

This portion of the DrawingML framework describes effects defining the visual appearance of shapes and lines. Shapes can be filled in a variety of ways, with images, solid colors, gradients, or pattern fills. In addition, several visual effects can alter the appearance of a shape, and multiple effects can be combined together. Lines also can have special properties defining how they are rendered, included a dashed appearance or decorations at the line ends. This section documents the elements that define these properties and effects for shapes and lines.

#### alphaBiLevel (Alpha Bi-Level Effect)

This element represents an Alpha Bi-Level Effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| thresh (Threshold) | Specifies the threshold value for the alpha bi-level effect. |

#### alphaCeiling (Alpha Ceiling Effect)

This element represents an alpha ceiling effect.

#### alphaFloor (Alpha Floor Effect)

This element represents an alpha floor effect.

#### alphaInv (Alpha Inverse Effect)

This element represents an alpha inverse effect.

#### alphaMod (Alpha Modulate Effect)

This element represents an alpha modulate effect.

#### alphaModFix (Alpha Modulate Fixed Effect)

This element represents an alpha modulate fixed effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| amt (Amount) | Specifies the percentage amount to scale the alpha. |

#### alphaOutset (Alpha Inset/Outset Effect)

This element specifies an alpha outset/inset effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| rad (Radius) | Specifies the radius of outset/inset. |

#### alphaRepl (Alpha Replace Effect)

This element specifies an alpha replace effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| a (Alpha) | Specifies the new opacity value. |

#### bevel (Line Join Bevel)

This element specifies a Bevel Line Join.

#### bgClr (Background color)

This element specifies the background color of a Pattern fill.

#### biLevel (Bi-Level (Black/White) Effect)

This element specifies a bi-level (black/white) effect. Input colors whose luminance is less than the specified threshold value are changed to black. Input colors whose luminance are greater than or equal the specified value are set to white. The alpha effect values are unaffected by this effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| thresh (Threshold) | Specifies the luminance threshold for the Bi-Level effect. Values greater than or equal to the threshold are set to white. Values lesser than the threshold are set to black. |

#### blend (Blend Effect)

This element specifies a blend of several effects. The container specifies the raw effects to blend while the blend mode specifies how the effects are to be blended.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| blend (Blend Mode) | Specifies how to blend the two effects. |

#### blip (Blip)

This element specifies the existence of an image (binary large image or picture) and contains a reference to the image data.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| cstate | Specifies the compression state with which the picture is stored. This allows the application to specify the amount of compression that has been applied to a picture. |
| embed (Embedded | Specifies the identification information for an embedded picture. This attribute is used to specify an image that resides locally within the file. |
| link (Linked Picture | Specifies the identification information for a linked picture. This attribute is used to |
| **Attributes** | **Description** |
| Reference) | specify an image that does not reside within this file. |

#### blipFill (Picture Fill)

This element specifies the type of picture fill that the picture object has. Because a picture has a picture fill already by default, it is possible to have two fills specified for a picture object. An example of this is shown below.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dpi (DPI Setting) | Specifies the DPI (dots per inch) used to calculate the size of the blip. If not present or zero, the DPI in the blip is used. |
| rotWithShape | Specifies that the fill should rotate with the shape. That is, when the shape that has been filled with a picture and the containing shape (say a rectangle) is transformed with a rotation then the fill is transformed with the same rotation. |

#### blur (Blur Effect)

This element specifies a blur effect that is applied to the entire shape, including its fill. All color channels, including alpha, are affected.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| grow (Grow Bounds) | Specifies whether the bounds of the object should be grown as a result of the blurring. True indicates the bounds are grown while false indicates that they are not. |
| rad (Radius) | Specifies the radius of blur. |

#### clrChange (Color Change Effect)

This element specifies a Color Change Effect. Instances of clrFrom are replaced with instances of clrTo.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| useA (Consider Alpha Values) | Specifies whether alpha values are considered for the effect. Effect alpha values are considered if useA is true, else they are ignored. |

#### clrFrom (Change Color From)

This element specifies a color getting removed in a color change effect. It is the "from" or source input color.

#### clrRepl (Solid Color Replacement)

This element specifies a solid color replacement value. All effect colors are changed to a fixed color. Alpha values are unaffected.

#### clrTo (Change Color To)

This element specifies the color which replaces the clrFrom in a clrChange effect. This is the "target" or "to" color in the color change effect.

#### cont (Effect Container)

This element specifies an Effect Container. It is a list of effects.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | Specifies an optional name for this list of effects, so that it can be referred to later. Shall be unique across all effect trees and effect containers. |
| type (Effect Container Type) | Specifies the kind of container, either sibling or tree. |

#### custDash (Custom Dash)

This element specifies a custom dashing scheme. It is a list of dash stop elements which represent building block atoms upon which the custom dashing scheme is built.

#### ds (Dash Stop)

This element specifies a dash stop primitive. Dashing schemes are built by specifying an ordered list of dash stop primitive. A dash stop primitive consists of a dash and a space.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| d (Dash Length) | Specifies the length of the dash relative to the line width. |
| sp (Space Length) | Specifies the length of the space relative to the line width. |

#### duotone (Duotone Effect)

This element specifies a duotone effect.

#### effect (Effect)

This element specifies a reference to an existing effect container.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| ref (Reference) | Specifies the reference. Its value can be the name of an effect container, or one of four special references: |

#### effectDag (Effect Container)

This element specifies a list of effects. Effects are applied in the order specified by the container type (sibling or tree).

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| name (Name) | Specifies an optional name for this list of effects, so that it can be referred to later. Shall be unique across all effect trees and effect containers. |
| type (Effect Container Type) | Specifies the kind of container, either sibling or tree. |

#### effectLst (Effect Container)

This element specifies a list of effects. Effects in an effectLst are applied in the default order by the rendering engine. The following diagrams illustrate the order in which effects are applied, both for shapes and for group shapes.

#### fgClr (Foreground color)

This element specifies the foreground color of a pattern fill.

#### fill (Fill)

This element specifies a fill which is one of blipFill, gradFill, grpFill, noFill, pattFill or solidFill.

#### fillOverlay (Fill Overlay Effect)

This element specifies a fill overlay effect. A fill overlay can be used to specify an additional fill for an object and blend the two fills together.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| blend (Blend) | Specifies how to blend the fill with the base effect. |

#### fillRect (Fill Rectangle)

This element specifies a fill rectangle. When stretching of an image is specified, a source rectangle, srcRect, is scaled to fit the specified fill rectangle.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bottom Offset) | Specifies the bottom edge of the rectangle. |
| l (Left Offset) | Specifies the left edge of the rectangle. |
| r (Right Offset) | Specifies the right edge of the rectangle. |
| t (Top Offset) | Specifies the top edge of the rectangle. |

#### fillToRect (Fill To Rectangle)

This element defines the "focus" rectangle for the center shade, specified relative to the fill tile rectangle. The center shade fills the entire tile except the margins specified by each attribute.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bottom Offset) | Specifies the bottom edge of the rectangle. |
| l (Left Offset) | Specifies the left edge of the rectangle. |
| r (Right Offset) | Specifies the right edge of the rectangle. |
| t (Top Offset) | Specifies the top edge of the rectangle. |

#### glow (Glow Effect)

This element specifies a glow effect, in which a color blurred outline is added outside the edges of the object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| rad (Radius) | Specifies the radius of the glow. |

#### gradFill (Gradient Fill)

This element defines a gradient fill.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| flip (Tile Flip) | Specifies the direction(s) in which to flip the gradient while tiling. |
| rotWithShape | Specifies if a fill rotates along with a shape when the shape is rotated. |

#### grayscl (Gray Scale Effect)

This element specifies a gray scale effect. Converts all effect color values to a shade of gray, corresponding to their luminance. Effect alpha (opacity) values are unaffected.

#### grpFill (Group Fill)

This element specifies a group fill. When specified, this setting indicates that the parent element is part of a group and should inherit the fill properties of the group.

#### gs (Gradient stops)

This element defines a gradient stop. A gradient stop consists of a position where the stop appears in the color band.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| pos (Position) | Specifies where this gradient stop should appear in the color band. This position is specified in the range [0%, 100%], which corresponds to the beginning and the end of the color band respectively. |

#### gsLst (Gradient Stop List)

The list of gradient stops that specifies the gradient colors and their relative positions in the color band.

#### headEnd (Line Head/End Style)

This element specifies decorations which can be added to the head of a line.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| len (Length of Head/End) | Specifies the line end length in relation to the line width. |
| type (Line | Specifies the line end decoration, such as a triangle or arrowhead. |
| w (Width of Head/End) | Specifies the line end width in relation to the line width. |

#### hsl (Hue Saturation Luminance Effect)

This element specifies a hue/saturation/luminance effect. The hue, saturation, and luminance can each be adjusted relative to its current value.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| hue (Hue) | Specifies the number of degrees by which the hue is adjusted. |
| lum (Luminance) | Specifies the percentage by which the luminance is adjusted. |
| sat (Saturation) | Specifies the percentage by which the saturation is adjusted. |

#### innerShdw (Inner Shadow Effect)

This element specifies an inner shadow effect. A shadow is applied within the edges of the object according to the parameters given by the attributes.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| blurRad (Blur Radius) | Specifies the blur radius. |
| dir (Direction) | Specifies the direction to offset the shadow. |
| dist (Distance) | Specifies how far to offset the shadow. |

#### lin (Linear Gradient Fill)

This element specifies a linear gradient.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| ang (Angle) | Specifies the direction of color change for the gradient. To define this angle, let its value be x measured clockwise. Then ( -sin x, cos x ) is a vector parallel to the line of constant color in the gradient fill. |
| scaled (Scaled) | Whether the gradient angle scales with the fill region. Mathematically, if this flag is true, then the gradient vector ( cos x , sin x ) is scaled by the width (w) and height (h) of the fill region, so that the vector becomes ( w cos x, h sin x ) (before normalization). Observe that now if the gradient angle is 45 degrees, the gradient vector is ( w, h ), which goes |
| **Attributes** | **Description** |
|  | from top-left to bottom-right of the fill region. If this flag is false, the gradient angle is independent of the fill region and is not scaled using the manipulation described above. So a 45-degree gradient angle always give a gradient band whose line of constant color is parallel to the vector (1, -1). |

#### lum (Luminance Effect)

This element specifies a luminance effect. Brightness linearly shifts all colors closer to white or black. Contrast scales all colors to be either closer or further apart.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bright (Brightness) | Specifies the percent to change the brightness. |
| contrast (Contrast) | Specifies the percent to change the contrast. |

#### miter (Miter Line Join)

This element specifies that a line join shall be mitered.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| lim (Miter Join | Specifies the amount by which lines is extended to form a miter join - otherwise miter |
| **Attributes** | **Description** |
| Limit) | joins can extend infinitely far (for lines which are almost parallel). |

#### noFill (No Fill)

This element specifies that no fill is applied to the parent element.

#### outerShdw (Outer Shadow Effect)

This element specifies an Outer Shadow Effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| algn (Shadow Alignment) | Specifies shadow alignment; alignment happens first, effectively setting the origin for scale, skew, and offset. |
| blurRad (Blur Radius) | Specifies the blur radius of the shadow. |
| dir (Shadow Direction) | Specifies the direction to offset the shadow. |
| dist (Shadow Offset Distance) | Specifies the how far to offset the shadow. |
| kx (Horizontal Skew) | Specifies the horizontal skew angle. |
| ky (Vertical Skew) | Specifies the vertical skew angle. |
| rotWithShape | Specifies whether the shadow rotates with the shape if the shape is rotated. |
| sx (Horizontal Scaling Factor) | Specifies the horizontal scaling factor; negative scaling causes a flip. |
| sy (Vertical Scaling Factor) | Specifies the vertical scaling factor; negative scaling causes a flip. |

#### path (Path Gradient)

This element defines that a gradient fill follows a path vs. a linear line.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| path (Gradient Fill Path) | Specifies the shape of the path to follow. |

#### pattFill (Pattern Fill)

This element specifies a pattern fill. A repeated pattern is used to fill the object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| prst (Preset Pattern) | Specifies one of a set of preset patterns to fill the object. |

#### prstDash (Preset Dash)

This element specifies that a preset line dashing scheme should be used.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| val (Value) | Specifies which preset dashing scheme is to be used. |

#### prstShdw (Preset Shadow)

This element specifies that a preset shadow is to be used. Each preset shadow is equivalent to a specific outer shadow effect. For each preset shadow, the color element, direction attribute, and distance attribute represent the color, direction, and distance parameters of the corresponding outer shadow. Additionally, the rotateWithShape attribute of corresponding outer shadow is always false. Other non-default parameters of the outer shadow are dependent on the prst attribute.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dir (Direction) | Specifies the direction to offset the shadow. |
| dist (Distance) | Specifies how far to offset the shadow. |
| prst (Preset Shadow) | Specifies which preset shadow to use. |

#### reflection (Reflection Effect)

This element specifies a reflection effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| algn (Shadow Alignment) | Specifies shadow alignment. |
| blurRad (Blur Radius) | Specifies the blur radius. |
| dir (Direction) | Specifies the direction of the alpha gradient ramp relative to the shape itself. |
| dist (Distance) | Specifies how far to distance the shadow. |
| endA (End Alpha) | Specifies the ending reflection opacity. |
| endPos (End Position) | Specifies the end position (along the alpha gradient ramp) of the end alpha value. |
| fadeDir (Fade Direction) | Specifies the direction to offset the reflection. |
| kx (Horizontal Skew) | Specifies the horizontal skew angle. |
| ky (Vertical Skew) | Specifies the vertical skew angle. |
| rotWithShape | Specifies if the reflection rotates with the shape. |
| stA (Start Opacity) | starting reflection opacity. |
| stPos (Start Position) | Specifies the start position (along the alpha gradient ramp) of the start alpha value. |
| sx (Horizontal Ratio) | Specifies the horizontal scaling factor. |
| sy (Vertical Ratio) | Specifies the vertical scaling factor. |

#### relOff (Relative Offset Effect)

This element specifies a relative offset effect. Sets up a new origin by offsetting relative to the size of the previous effect.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| tx (Offset X) | Specifies the X offset. |
| ty (Offset Y) | Specifies the Y offset. |

#### round (Round Line Join)

This element specifies that lines joined together have a round join.

#### softEdge (Soft Edge Effect)

This element specifies a soft edge effect. The edges of the shape are blurred, while the fill is not affected.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| rad (Radius) | Specifies the radius of blur to apply to the edges. |

#### solidFill (Solid Fill)

This element specifies a solid color fill. The shape is filled entirely with the specified color.

#### srcRect (Source Rectangle)

This element specifies the portion of the blip used for the fill.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bottom Offset) | Specifies the bottom edge of the rectangle. |
| l (Left Offset) | Specifies the left edge of the rectangle. |
| r (Right Offset) | Specifies the right edge of the rectangle. |
| t (Top Offset) | Specifies the top edge of the rectangle. |

#### stretch (Stretch)

This element specifies that a BLIP should be stretched to fill the target rectangle. The other option is a tile where a BLIP is tiled to fill the available area.

#### tailEnd (Tail line end style)

This element specifies decorations which can be added to the tail of a line.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| len (Length of Head/End) | Specifies the line end length in relation to the line width. |
| type (Line | Specifies the line end decoration, such as a triangle or arrowhead. |
| w (Width of Head/End) | Specifies the line end width in relation to the line width. |

#### tile (Tile)

This element specifies that a BLIP should be tiled to fill the available space. This element defines a "tile" rectangle within the bounding box. The image is encompassed within the tile rectangle, and the tile rectangle is tiled across the bounding box to fill the entire area.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| algn (Alignment) | Specifies where to align the first tile with respect to the shape. Alignment happens after the scaling, but before the additional offset. |
| flip (Tile Flipping) | Specifies the direction(s) in which to flip the source image while tiling. Images can be flipped horizontally, vertically, or in both directions to fill the entire region. |
| sx (Horizontal Ratio) | Specifies the amount to horizontally scale the srcRect. |
| sy (Vertical Ratio) | Specifies the amount to vertically scale the srcRect. |
| tx (Horizontal Offset) | Specifies additional horizontal offset after alignment. |
| ty (Vertical Offset) | Specifies additional vertical offset after alignment. |

#### tileRect (Tile Rectangle)

This element specifies a rectangular region of the shape to which the gradient is applied. This region is then tiled across the remaining area of the shape to complete the fill. The tile rectangle is defined by percentage offsets from the sides of the shape's bounding box.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bottom Offset) | Specifies the bottom edge of the rectangle. |
| l (Left Offset) | Specifies the left edge of the rectangle. |
| r (Right Offset) | Specifies the right edge of the rectangle. |
| t (Top Offset) | Specifies the top edge of the rectangle. |

#### tint (Tint Effect)

This element specifies a tint effect. Shifts effect color values towards/away from hue by the specified amount.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| amt (Amount) | Specifies by how much the color value is shifted. |
| hue (Hue) | Specifies the hue towards which to tint. |

#### xfrm (Transform Effect)

This element specifies a transform effect. The transform is applied to each point in the shape's geometry using the following matrix:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| kx (Horizontal Skew) | Specifies the horizontal skew angle, defined as the angle between the top-left corner and bottom-left corner of the object's original bounding box. If positive, the bottom edge of the shape is positioned to the right relative to the top edge. |
| ky (Vertical Skew) | Specifies the vertical skew angle, defined as the angle between the top-left corner and top-right corner of the object's original bounding box. If positive, the right edge of the object is positioned lower relative to the left edge. |
| sx (Horizontal Ratio) | Specifies a percentage by which to horizontally scale the object. |
| sy (Vertical Ratio) | Specifies a percentage by which to vertically scale the object. |
| tx (Horizontal Shift) | Specifies an amount by which to shift the object along the x-axis. |
| ty (Vertical Shift) | Specifies an amount by which to shift the object along the y-axis. |

### Shape Definitions and Attributes

The Shape Definitions and Attributes portion of the DrawingML framework deals with all geometric properties for shapes within a document. This includes both preset geometries that publicly are interpreted by the generating application and custom geometries that have their points and curves explicitly specified. In addition to the underlying geometry of the shape there are also other coordinate-based properties for each shape that this framework describes.

#### ahLst (List of Shape Adjust Handles)

This element specifies the adjust handles that are applied to a custom geometry. These adjust handles specify points within the geometric shape that can be used to perform certain transform operations on the shape.

#### ahPolar (Polar Adjust Handle)

This element specifies a polar adjust handle for a custom shape. The position of this adjust handle is specified by the corresponding pos child element. The allowed adjustment of this adjust handle are specified via it's min and max attributes. Based on the adjustment of this adjust handle certain corresponding guides are updated to contain these values.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| gdRefAng (Angle Adjustment Guide) | Specifies the name of the guide that is updated with the adjustment angle from this adjust handle. |
| gdRefR (Radial Adjustment Guide) | Specifies the name of the guide that is updated with the adjustment radius from this adjust handle. |
| maxAng (Maximum Angle Adjustment) | Specifies the maximum angle position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move angularly. That is the maxAng and minAng are equal. |
| maxR (Maximum | Specifies the maximum radial position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move radially. That is the maxR and minR are equal. |
| minAng (Minimum Angle Adjustment) | Specifies the minimum angle position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move angularly. That is the maxAng and minAng are equal. |
| minR (Minimum | Specifies the minimum radial position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move radially. That is the maxR and minR are equal. |

#### ahXY (XY Adjust Handle)

This element specifies an XY-based adjust handle for a custom shape. The position of this adjust handle is specified by the corresponding pos child element. The allowed adjustment of this adjust handle are specified via it's min and max type attributes. Based on the adjustment of this adjust handle certain corresponding guides are updated to contain these values.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| gdRefX (Horizontal Adjustment Guide) | Specifies the name of the guide that is updated with the adjustment x position from this adjust handle. |
| gdRefY (Vertical Adjustment Guide) | Specifies the name of the guide that is updated with the adjustment y position from this adjust handle. |
| maxX (Maximum | Specifies the maximum horizontal position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move in the x direction. That is the maxX and minX are equal. |
| maxY (Maximum | Specifies the maximum vertical position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move in the y direction. That is the maxY and minY are equal. |
| minX (Minimum | Specifies the minimum horizontal position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move in the x direction. That is the maxX and minX are equal. |
| minY (Minimum | Specifies the minimum vertical position that is allowed for this adjustment handle. If this attribute is omitted, then it is assumed that this adjust handle cannot move in the y direction. That is the maxY and minY are equal. |

#### arcTo (Draw Arc To)

This element specifies the existence of an arc within a shape path. It draws an arc with the specified parameters from the current pen position to the new point specified. An arc is a line that is bent based on the shape of a supposed circle. The length of this arc is determined by specifying both a start angle and an ending angle that act together to effectively specify an end point for the arc.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| hR (Shape Arc Height Radius) | This attribute specifies the height radius of the supposed circle being used to draw the arc. This gives the circle a total height of (2 \* hR). This total height could also be called it's vertical diameter as it is the diameter for the y axis only. |
| stAng (Shape Arc Start Angle) | Specifies the start angle for an arc. This angle specifies what angle along the supposed circle path is used as the start position for drawing the arc. This start angle is locked to the last known pen position in the shape path. Thus guaranteeing a continuos shape path. |
| swAng (Shape Arc Swing Angle) | Specifies the swing angle for an arc. This angle specifies how far angle-wise along the supposed cicle path the arc is extended. The extension from the start angle is always in the clockwise direction around the supposed circle. |
| wR (Shape Arc Width Radius) | This attribute specifies the width radius of the supposed circle being used to draw the arc. This gives the circle a total width of (2 \* wR). This total width could also be called it's horizontal diameter as it is the diameter for the x axis only. |

#### avLst (List of Shape Adjust Values)

This element specifies the adjust values that are applied to the specified shape. An adjust value is simply a guide that has a value based formula specified. That is, no calculation takes place for an adjust value guide. Instead, this guide specifies a parameter value that is used for calculations within the shape guides.

#### close (Close Shape Path)

This element specifies the ending of a series of lines and curves in the creation path of a custom geometric shape. When this element is encountered, the generating application should consider the corresponding path closed. That is, any further lines or curves that follow this element should be ignored.

#### cubicBezTo (Draw Cubic Bezier Curve To)

This element specifies to draw a cubic bezier curve along the specified points. To specify a cubic bezier curve there needs to be 3 points specified. The first two are control points used in the cubic bezier calculation and the last is the ending point for the curve. The coordinate system used for this kind of curve is the path coordinate system as this element is path specific.

#### custGeom (Custom Geometry)

This element specifies the existence of a custom geometric shape. This shape consists of a series of lines and curves described within a creation path. In addition to this there can also be adjust values, guides, adjust handles, connection sites and an inscribed rectangle specified for this custom geometric shape.

#### cxn (Shape Connection Site)

This element specifies the existence of a connection site on a custom shape. A connection site allows a cxnSp to be attached to this shape. This connection is maintained when the shape is repositioned within the document. It should be noted that this connection is placed within the shape bounding box using the transform coordinate system which is also called the shape coordinate system, as it encompasses the entire shape. The width and height for this coordinate system are specified within the ext transform element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| ang (Connection Site Angle) | Specifies the incoming connector angle. This angle is the angle around the connection site that an incoming connector tries to be routed to. This allows connectors to know where the shape is in relation to the connection site and route connectors so as to avoid any overlap with the shape. |

#### cxnLst (List of Shape Connection Sites)

This element specifies all the connection sites that are used for this shape. A connection site is specified by defining a point within the shape bounding box that can have a cxnSp element attached to it. These connection sites are specified using the shape coordinate system that is specified within the ext transform element.

#### gd (Shape Guide)

This element specifies the precense of a shape guide that is used to govern the geometry of the specified shape. A shape guide consists of a formula and a name that the result of the formula is assigned to. Recognized formulas are listed with the fmla attribute documentation for this element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fmla (Shape Guide Formula) | Specifies the formula that is used to calculate the value for a guide. Each formula has a certain number of arguments and a specific set of operations to perform on these arguments in order to generate a value for a guide. There are a total of 17 different formulas available. These are shown below with the usage for each defined. |
| name (Shape Guide Name) | Specifies the name that is used to reference to this guide. This name can be used just as a variable would within an equation. That is this name can be substituted for literal values within other guides or the specification of the shape path. |

#### gdLst (List of Shape Guides)

This element specifies all the guides that are used for this shape. A guide is specified by the gd element and defines a calculated value that can be used for the construction of the corresponding shape.

#### lnTo (Draw Line To)

This element specifies the drawing of a straight line from the current pen position to the new point specified. This line becomes part of the shape geometry, representing a side of the shape. The coordinate system used when specifying this line is the path coordinate system.

#### moveTo (Move Path To)

This element specifies a set of new coordinates to move the shape cursor to. This element is only used for drawing a custom geometry. When this element is utilized the pt element is used to specify a new set of shape coordinates that the shape cursor should be moved to. This does not draw a line or curve to this new position from the old position but simply move the cursor to a new starting position. It is only when a path drawing element such as lnTo is used that a portion of the path is drawn.

#### path (Shape Path)

This element specifies a creation path consisting of a series of moves, lines and curves that when combined forms a geometric shape. This element is only utilized if a custom geometry is specified.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| extrusionOk (3D Extrusion Allowed) | Specifies that the use of 3D extrusions are possible on this path. This allows the generating application to know whether 3D extrusion can be applied in any form. If this attribute is omitted then a value of 0, or false is assumed. |
| fill (Path Fill) | Specifies how the corresponding path should be filled. If this attribute is omitted, a value of "norm" is assumed. |
| h (Path Height) | Specifies the height, or maximum y coordinate that should be used for within the path coordinate system. This value determines the vertical placement of all points within the corresponding path as they are all calculated using this height attribute as the max y coordinate. |
| stroke (Path Stroke) | Specifies if the corresponding path should have a path stroke shown. This is a boolean value that affect the outline of the path. If this attribute is omitted, a value of true is assumed. |
| w (Path Width) | Specifies the width, or maximum x coordinate that should be used for within the path coordinate system. This value determines the horizontal placement of all points within the corresponding path as they are all calculated using this width attribute as the max x coordinate. |

#### pathLst (List of Shape Paths)

This element specifies the entire path that is to make up a single geometric shape. The pathLst can consist of many individual paths within it.

#### pos (Shape Position Coordinate)

Specifies a position coordinate within the shape bounding box. It should be noted that this coordinate is placed within the shape bounding box using the transform coordinate system which is also called the shape coordinate system, as it encompasses the entire shape. The width and height for this coordinate system are specified within the ext transform element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Coordinate) | Specifies the x coordinate for this position coordinate. The units for this coordinate space are defined by the width of the path coordinate system. This coordinate system is overlayed on top of the shape coordinate system thus occupying the entire shape bounding box. Because the units for within this coordinate space are determined by the path width and height an exact measurement unit cannot be specified here. |
| y (Y-Coordinate) | Specifies the y coordinate for this position coordinate. The units for this coordinate space are defined by the height of the path coordinate system. This coordinate system is overlayed on top of the shape coordinate system thus occupying the entire shape bounding box. Because the units for within this coordinate space are determined by the path width and height an exact measurement unit cannot be specified here. |

#### prstGeom (Preset geometry)

This element specifies when a preset geometric shape should be used instead of a custom geometric shape. The generating application should be able to render all preset geometries enumerated in the ST\_ShapeType list.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| prst (Preset Shape) | Specifies the preset geometry that is used for this shape. This preset can have any of the values in the enumerated list for ST\_ShapeType. This attribute is required in order for a preset geometry to be rendered. |

#### prstTxWarp (Preset Text Warp)

This element specifies when a preset geometric shape should be used to transform a piece of text. This operation is known formally as a text warp. The generating application should be able to render all preset geometries enumerated in the ST\_TextShapeType list.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| prst (Preset Warp Shape) | Specifies the preset geometry that is used for a shape warp on a piece of text. This preset can have any of the values in the enumerated list for ST\_TextShapeType. This attribute is required in order for a text warp to be rendered. |

#### pt (Shape Path Point)

This element specifies an x-y coordinate within the path coordinate space. This coordinate space is determined by the width and height attributes defined within the path element. A point is utilized by one of it's parent elements to specify the next point of interest in custom geometry shape. Depending on the parent element used the point can either have a line drawn to it or the cursor can simply be moved to this new location.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Coordinate) | Specifies the x coordinate for this position coordinate. The units for this coordinate space are defined by the width of the path coordinate system. This coordinate system is overlayed on top of the shape coordinate system thus occupying the entire shape bounding box. Because the units for within this coordinate space are determined by the path width and height an exact measurement unit cannot be specified here. |
| y (Y-Coordinate) | Specifies the y coordinate for this position coordinate. The units for this coordinate space are defined by the height of the path coordinate system. This coordinate system is overlayed on top of the shape coordinate system thus occupying the entire shape bounding box. Because the units for within this coordinate space are determined by the path width and height an exact measurement unit cannot be specified here. |

#### quadBezTo (Draw Quadratic Bezier Curve To)

This element specifies to draw a quadratic bezier curve along the specified points. To specify a quadratic bezier curve there needs to be 2 points specified. The first is a control point used in the quadratic bezier calculation and the last is the ending point for the curve. The coordinate system used for this type of curve is the path coordinate system as this element is path specific.

#### rect (Shape Text Rectangle)

This element specifies the rectangular bounding box for text within a custGeom shape. The default for this rectangle is the bounding box for the shape. This can be modified using this elements four attributes to inset or extend the text bounding box.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| b (Bottom Position) | Specifies the y coordinate of the bottom edge for a shape text rectangle. The units for this edge is specified in EMUs as the positioning here is based on the shape coordinate system. The width and height for this coordinate system are specified within the ext transform element. |
| l (Left) | Specifies the x coordinate of the left edge for a shape text rectangle. The units for this edge is specified in EMUs as the positioning here is based on the shape coordinate system. The width and height for this coordinate system are specified within the ext transform element. |
| r (Right) | Specifies the x coordinate of the right edge for a shape text rectangle. The units for this edge is specified in EMUs as the positioning here is based on the shape coordinate system. The width and height for this coordinate system are specified within the ext transform element. |
| t (Top) | Specifies the y coordinate of the top edge for a shape text rectangle. The units for this edge is specified in EMUs as the positioning here is based on the shape coordinate system. The width and height for this coordinate system are specified within the ext transform element. |

### Simple Types

This is the complete list of simple types dedicated to DrawingML framework.

#### ST\_AdjAngle (Adjustable Angle Methods)

This simple type is an adjustable angle, either an absolute angle or a reference to a geometry guide. The units for an adjustable angle are 60,000ths of a degree.

#### ST\_AdjCoordinate (Adjustable Coordinate Methods)

This simple type is an adjustable coordinate is either an absolute coordinate position or a reference to a geometry guide.

#### ST\_Angle (Angle)

This simple type represents an angle in 60,000ths of a degree. Positive angles are clockwise (i.e., towards the positive y axis); negative angles are counter-clockwise (i.e., towards the negative y axis).

#### ST\_AnimationBuildType (Animation Build Type)

This simple type specifies the ways that an animation can be built, or animated.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| allAtOnce (Animate At Once) | Animate all objects as one. |

#### ST\_AnimationChartBuildType (Chart Animation Build Type)

This simple type specifies the ways that a chart animation can be built. That is, it specifies the way in which the objects within the chart should be animated.

#### ST\_AnimationChartOnlyBuildType (Chart only Animation Types)

This simple type specifies the build options available only for animating a chart. These options specify the manner in which the objects within the chart should be grouped and animated.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| category (Catefory) | Animate by each category |
| categoryEl (Category Element) | Animate by each element within the category |
| series (Series) | Animate by each series. |
| seriesEl (Series Element) | Animate by each element within the series |

#### ST\_AnimationDgmBuildType (Diagram Animation Build Type)

This simple type specifies the ways that a diagram animation can be built. That is, it specifies the way in which the objects within the diagram graphical object should be animated.

#### ST\_AnimationDgmOnlyBuildType (Diagram only Animation Types)

This simple type specifies the build options available only for animating a diagram. These options specify the manner in which the objects within the chart should be grouped and animated.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| lvlAtOnce (Each Level at Once) | Animate the diagram one level at a time, animating the whole level as one object |
| lvlOne (Level One-by-One) | Animate the diagram by the elements within a level, animating them one level element at a time. |
| one (Elements One-by-One) | Animate the diagram by elements. For a tree diagram the animation occurs by branch within the diagram tree. |

#### ST\_BevelPresetType (Bevel Presets)

Represents a preset for a type of bevel which can be applied to a shape in 3D. The bevel properties are applied differently depending on the type of bevel defined for a shape.

#### ST\_BlackWhiteMode (Black and White Mode)

This simple type specifies how an object should be rendered when specified to be in black and white mode.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| auto (Automatic) | Object rendered with automatic coloring |
| black (Black) | Object rendered with black-only coloring |
| blackGray (Black and Gray) | Object rendered with black and gray coloring |
| blackWhite (Black and White) | Object rendered within black and white coloring |
| clr (Color) | Object rendered with normal coloring |
| gray (Gray) | Object rendered with gray coloring |
| grayWhite (Gray and White) | Object rendered within gray and white coloring |
| hidden (Hidden) | Object rendered with hidden coloring |
| invGray (Inverse Gray) | Object rendered with inverse gray coloring |
| ltGray (Light Gray) | Object rendered with light gray coloring |
| white (White) | Object rendered within white coloirng |

#### ST\_BlendMode (Blend Mode)

This simple type describes how to render effects one on top of another.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| darken (Darken) | Darken |
| lighten (Lighten) | Lighten |
| mult (Multiply) | Multiply |
| over (Overlay) | Overlay |
| screen (Screen) | Screen |

#### ST\_BlipCompression (Blip Compression Type)

This type specifies the amount of compression that has been used for a particular binary large image or picture

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| email (Email Compression) | Compression size suitable for inclusion with email |
| hqprint (High Quality Printing Compression) | Compression size suitable for high quality printing |
| none (No Compression) | No compression was used |
| print (Printing Compression) | Compression size suitable for printing |
| screen (Screen Viewing Compression) | Compression size suitable for viewing on screen |

#### ST\_ChartBuildStep (Chart Animation Build Step)

This simple type specifies an animation build step within a chart animation.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| allPts (All Points) | Animate all points within the chart for this animation build step |
| category (Category) | Animate a chart category for this animation build step |
| gridLegend (Grid and Legend) | Animate the chart grid and legend for this animation build step |
| ptInCategory (Category Points) | Animate a point in a chart category for this animation build step |
| ptInSeries (Series Points) | Animate a point in a chart series for this animation build step |
| series (Series) | Animate a chart series for this animation build step |

#### ST\_ColorSchemeIndex (Theme Color Reference)

A reference to a color in the color scheme.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| accent1 (Accent 1) | Represents the accent 1 color. |
| accent2 (Accent 2) | Represents the accent 2 color. |
| accent3 (Accent 3) | Represents the accent 3 color. |
| accent4 (Accent 4) | Represents the accent 4 color. |
| accent5 (Accent 5) | Represents the accent 5 color. |
| accent6 (Accent 6) | Represents the accent 6 color. |
| dk1 (Dark 1) | Represents the first dark color. |
| dk2 (Dark 2) | Represents the second dark color. |
| folHlink (Followed Hyperlink) | Represents the followed hyperlink color. |
| hlink (Hyperlink) | Represents the hyperlink color. |
| lt1 (Light 1) | Represents the first light color. |
| lt2 (Light 2) | Represents the second light color. |

#### ST\_CompoundLine (Compound Line Type)

This simple type specifies the compound line type that is to be used for lines with text such as underlines.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| dbl (Double Lines) | Double lines of equal width |
| sng (Single Line) | Single line: one normal width |
| thickThin (Thick Thin Double Lines) | Double lines: one thick, one thin |
| thinThick (Thin Thick Double Lines) | Double lines: one thin, one thick |
| tri (Thin Thick Thin Triple Lines) | Three lines: thin, thick, thin |

#### ST\_Coordinate (Coordinate)

This simple type represents a one dimensional position or length as either:

#### ST\_Coordinate32 (Coordinate Point)

This simple type specifies a coordinate within the document. This can be used for measurements or spacing; its maximum size is 2147483647 EMUs.

#### ST\_Coordinate32Unqualified (Coordinate Point)

This simple type specifies a coordinate within the document. This can be used for measurements or spacing with the maximum size requirement being a 32 bit integer.

#### ST\_CoordinateUnqualified (Coordinate)

This simple type represents a one dimensional position or length in EMUs.

#### ST\_DgmBuildStep (Diagram Animation Build Steps)

This simple type specifies an animation build step within a diagram animation.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| bg (Background) | Animate the diagram background for this animation build step |
| sp (Shape) | Animate a diagram shape for this animation build step |

#### ST\_DrawingElementId (Drawing Element ID)

This simple type specifies a unique integer identifier for each drawing element.

#### ST\_EffectContainerType (Effect Container Type)

This simple type determines the relationship between effects in a container, either sibling or tree.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| sib (Sibling) | Each effect is separately applied to the parent object. |
| tree (Tree) | Each effect is applied to the result of the previous effect. |

#### ST\_FixedAngle (Fixed Angle)

This simple type represents a fixed range angle in 60000ths of a degree. Range from (-90, 90 degrees).

#### ST\_FixedPercentage (Fixed Percentage)

This simple type represents a fixed percentage from negative one hundred to positive one hundred percent. See the union's member types for details.

#### ST\_FontCollectionIndex (Font Collection Index)

This simple type represents one of the fonts associated with the style.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| major (Major Font) | The major font of the style's font scheme. |
| minor (Minor Font) | The minor font of the style's font scheme. |
| none (None) | No font reference. |

#### ST\_FOVAngle (Field of View Angle)

Represents a positive angle in 60000ths of a degree. Range from [0, 180] degrees.

#### ST\_GeomGuideFormula (Geometry Guide Formula Properties)

This simple type specifies a geometry guide formula.

#### ST\_GeomGuideName (Geometry Guide Name Properties)

This simple type specifies a geometry guide name.

#### ST\_LightRigDirection (Light Rig Direction)

Represents the direction from which the light rig is positioned relative to the scene. The light rig, itself, can be made up of multiple lights in any orientation around a given shape. This simple type defines the orientation of the light rig as a whole, and not the individual lights within the rig. This means that because the direction of the light rig is left, that does not guarantee the light is coming from the left side of the shape, but rather the orientation of the rig as a whole is rotated to the left.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| b (Bottom) | [*Example*: Consider the following example of a light direction from the bottom: |
| bl (Bottom Left) | [*Example*: Consider the following example of a light direction from the bottom left: |
| br (Bottom Right) | [*Example*: Consider the following example of a light direction from the bottom right: |
| l (Left) | [*Example*: Consider the following example of a light direction from the left: |
| r (Right) | [*Example*: Consider the following example of a light direction from the right: |
| t (Top) | [*Example*: Consider the following example of a light direction from the top: |
| tl (Top Left) | [*Example*: Consider the following example of a light direction from the top left: |
| tr (Top Right) | [*Example*: Consider the following example of a light direction from the top right: |

#### ST\_LightRigType (Light Rig Type)

Represents a preset light right that can be applied to a shape. The light rig represents a group of lights oriented in a specific way relative to a 3D scene. The following properties were used to define the shape used in the image examples below:

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| balanced (Light Rig Enum ( Balanced )) | Balanced |
| brightRoom (Bright Room) | [*Example*: Consider the following example of the brightRoom light rig applied to a basic shape: |
| chilly (Chilly) | [*Example*: Consider the following example of the chilly light rig applied to a basic shape: |
| contrasting (Contrasting) | [*Example*: Consider the following example of the contrasting light rig applied to a basic shape: |
| flat (Flat) | [*Example*: Consider the following example of the flat light rig applied to a basic shape: |
| flood (Flood) | [*Example*: Consider the following example of the flood light rig applied to a basic shape: |
| freezing (Freezing) | [*Example*: Consider the following example of the freezing light rig applied to a basic shape: |
| glow (Glow) | [*Example*: Consider the following example of the glow light rig applied to a basic shape: |
| harsh (Harsh) | *Example*: Consider the following example of the harsh light rig applied to a basic shape: |
| legacyFlat1 (Legacy Flat 1) | [*Example*: Consider the following example of the legacyFlat1 light rig applied to a basic shape: |
| legacyFlat2 (Legacy Flat 2) | [*Example*: Consider the following example of the legacyFlat2 light rig applied to a basic shape: |
| legacyFlat3 (Legacy Flat 3) | [*Example*: Consider the following example of the legacyFlat3 light rig applied to a basic shape: |
| legacyFlat4 (Legacy Flat 4) | [*Example*: Consider the following example of the legacyFlat4 light rig applied to a basic shape: |
| legacyHarsh1 (Legacy Harsh 1) | [*Example*: Consider the following example of the legacyHarsh1 light rig applied to a basic shape: |
| legacyHarsh2 (Legacy Harsh 2) | [*Example*: Consider the following example of the legacyHarsh2 light rig applied to a basic shape: |
| legacyHarsh3 (Legacy Harsh 3) | [*Example*: Consider the following example of the legacyHarsh3 light rig applied to a basic shape: |
| legacyHarsh4 (Legacy Harsh 4) | [*Example*: Consider the following example of the legacyHarsh4 light rig applied to a basic shape: |
| legacyNormal1 (Legacy Normal 1) | [*Example*: Consider the following example of the legacyNormal1 light rig applied to a basic shape: |
| legacyNormal2 (Legacy Normal 2) | [*Example*: Consider the following example of the legacyNormal2 light rig applied to a basic shape: |
| legacyNormal3 (Legacy Normal 3) | [*Example*: Consider the following example of the legacyNormal3 light rig applied to a basic shape: |
| legacyNormal4 (Legacy Normal 4) | [*Example*: Consider the following example of the legacyNormal4 light rig applied to a basic shape: |
| morning (Morning) | [*Example*: Consider the following example of the morning light rig applied to a basic shape: |
| soft (Soft) | [*Example*: Consider the following example of the soft light rig applied to a basic shape: |
| sunrise (Sunrise) | [*Example*: Consider the following example of the sunrise light rig applied to a basic shape: |
| sunset (Sunset) | [*Example*: Consider the following example of the sunset light rig applied to a basic shape: |
| threePt (Three Point) | [*Example*: Consider the following example of the threePt light rig applied to a basic shape: |
| twoPt (Two Point) | [*Example*: Consider the following example of the twoPt light rig applied to a basic shape: |

#### ST\_LineCap (End Line Cap)

This simple type specifies how to cap the ends of lines. This also affects the ends of line segments for dashed lines.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| flat (Flat Line Cap) | Line ends at end point. |
| rnd (Round Line Cap) | Rounded ends. Semi-circle protrudes by half line width. |
| sq (Square Line Cap) | Square protrudes by half line width. |

#### ST\_LineEndLength (Line End Length)

This simple type represents the length of the line end decoration (e.g., arrowhead) relative to the width of the line itself.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| lg (Large) | Large |
| med (Medium) | Medium |
| sm (Small) | Small |

#### ST\_LineEndType (Line End Type)

This simple type represents the shape decoration that appears at the ends of lines. For example, one choice is an arrow head.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| arrow (Arrow Head) | Line arrow head |
| diamond (Diamond) | Diamond |
| none (None) | No end |
| oval (Oval) | Oval |
| stealth (Stealth Arrow) | Stealth arrow head |
| triangle (Triangle Arrow Head) | Triangle arrow head |

#### ST\_LineEndWidth (Line End Width)

This simple type represents the width of the line end decoration (e.g., arrowhead) relative to the width of the line itself.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| lg (Large) | Large |
| med (Medium) | Medium |
| sm (Small) | Small |

#### ST\_LineWidth (Line Width)

This simple type specifies the width of a line in EMUs. 1 pt = 12700 EMUs.

#### ST\_OnOffStyleType (On/Off Style Type)

This simple type represents whether a style property should be applied.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| def (Default) | Follow parent settings. For a themed property, follow the theme settings. For an unthemed property, follow the parent setting in the property inheritance chain. |
| off (Off) | Property is off. |
| on (On) | Property is on. |

#### ST\_PathFillMode (Path Fill Mode)

This simple type specifies the manner in which a path should be filled. The lightening and darkening of a path allow for certain parts of the shape to be colored lighter of darker depending on user preference.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| darken (Darken Path Fill) | This specifies that the corresponding path should have a darker shaded color applied to it’s fill. |
| darkenLess (Darken Path Fill Less) | This specifies that the corresponding path should have a slightly darker shaded color applied to it’s fill. |
| lighten (Lighten Path Fill) | This specifies that the corresponding path should have a lightly shaded color applied to it’s fill. |
| lightenLess (Lighten Path Fill Less) | This specifies that the corresponding path should have a slightly lighter shaded color applied to it’s fill. |
| none (No Path Fill) | This specifies that the corresponding path should have no fill. |
| norm (Normal Path Fill) | This specifies that the corresponding path should have a normally shaded color applied to it’s fill. |

#### ST\_PathShadeType (Path Shade Type)

This simple type describes the shape of path to follow for a path gradient shade.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| circle (Circle) | Gradient follows a circular path |
| rect (Rectangle) | Gradient follows a rectangular path |
| shape (Shape) | Gradient follows the shape |

#### ST\_PenAlignment (Alignment Type)

This simple type specifies the Pen Alignment type for use within a text body.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| ctr (Center Alignment) | Center pen (line drawn at center of path stroke). |
| in (Inset Alignment) | Inset pen (the pen is aligned on the inside of the edge of the path). |

#### ST\_Percentage (Percentage)

This simple type specifies that its contents will contain a percentage value. See the union's member types for details.

#### ST\_PitchFamily (Pitch Family)

This simple type specifies a font pitch.

|  |  |
| --- | --- |
| **Value** | **Description** |
| 0x00 | DEFAULT PITCH + UNKNOWN FONT FAMILY |
| 0x01 | FIXED PITCH + UNKNOWN FONT FAMILY |
| 0x02 | VARIABLE PITCH + UNKNOWN FONT FAMILY |
| 0x10 | DEFAULT PITCH + ROMAN FONT FAMILY |
| 0x11 | FIXED PITCH + ROMAN FONT FAMILY |
| 0x12 | VARIABLE PITCH + ROMAN FONT FAMILY |
| 0x20 | DEFAULT PITCH + SWISS FONT FAMILY |
| 0x21 | FIXED PITCH + SWISS FONT FAMILY |
| 0x22 | VARIABLE PITCH + SWISS FONT FAMILY |
| 0x30 | DEFAULT PITCH + MODERN FONT FAMILY |
| 0x31 | FIXED PITCH + MODERN FONT FAMILY |
| 0x32 | VARIABLE PITCH + MODERN FONT FAMILY |
| 0x40 | DEFAULT PITCH + SCRIPT FONT FAMILY |
| 0x41 | FIXED PITCH + SCRIPT FONT FAMILY |
| 0x42 | VARIABLE PITCH + SCRIPT FONT FAMILY |
| 0x50 | DEFAULT PITCH + DECORATIVE FONT FAMILY |
| 0x51 | FIXED PITCH + DECORATIVE FONT FAMILY |
| 0x52 | VARIABLE PITCH + DECORATIVE FONT FAMILY |

#### ST\_PositiveCoordinate (Positive Coordinate)

This simple type represents a positive position or length in EMUs.

#### ST\_PositiveCoordinate32 (Positive Coordinate Point)

This simple type specifies the a positive coordinate point that has a maximum size of 32 bits.

#### ST\_PositiveFixedAngle (Positive Fixed Angle)

This simple type represents a positive angle in 60000ths of a degree. Range from [0, 360 degrees).

#### ST\_PositiveFixedPercentage (Positive Fixed Percentage)

This simple type specifies that its contents will contain a positive percentage value from zero through one hundred percent. See the union's member types for details.

#### ST\_PositivePercentage (Positive Percentage Value with Sign)

This simple type specifies that its contents will contain a positive percentage value. See the union's member types for details.

#### ST\_PresetCameraType (Preset Camera Type)

These enumeration values represent different algorithmic methods for setting all camera properties, including position. The following example images below are all based off the following shape:

|  |  |  |
| --- | --- | --- |
| **Enumeration Value** | **Description** | |
| isometricBottomDown (Isometric Bottom Down) | [*Example*: Consider the following example of the camera preset type: | |
| isometricBottomUp (Isometric Bottom Up) | [*Example*: Consider the following example of the camera preset type: | |
| isometricLeftDown (Isometric Left Down) | [*Example*: Consider the following example of the camera preset type: | |
| isometricLeftUp (Isometric Left Up) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis1Left (Isometric Off Axis 1 Left) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis1Right (Isometric Off Axis 1 Right) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis1Top (Isometric Off Axis 1 Top) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis2Left (Isometric Off Axis 2 Left) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis2Right (Isometric Off Axis 2 Right) |  | |
| isometricOffAxis2Top (Isometric Off Axis 2 Top) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis3Bottom (Isometric Off Axis 3 Bottom) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis3Left (Isometric Off Axis 3 Left) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis3Right (Isometric Off Axis 3 Right) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis4Bottom (Isometric Off Axis 4 Bottom) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis4Left (Isometric Off Axis 4 Left) | [*Example*: Consider the following example of the camera preset type: | |
| isometricOffAxis4Right (Isometric Off Axis 4 Right) | [*Example*: Consider the following example of the camera preset type: | |
| isometricRightDown (Isometric Right Down) | [*Example*: Consider the following example of the camera preset type: | |
| isometricRightUp (Isometric Right Up) | [*Example*: Consider the following example of the camera preset type: | |
| isometricTopDown (Isometric Top Down) | [*Example*: Consider the following example of the camera preset type: | |
| isometricTopUp (Isometric Top Up) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueBottom (Legacy Oblique Bottom) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueBottomLeft (Legacy Oblique Bottom | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueBottomRight (Legacy Oblique Bottom Right) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueFront (Legacy Oblique Front) | [*Example*: Consider the following example of the | |
| legacyObliqueLeft (Legacy Oblique Left) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueRight (Legacy Oblique Right) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueTop (Legacy Oblique Top) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueTopLeft (Legacy Oblique Top Left) | [*Example*: Consider the following example of the camera preset type: | |
| legacyObliqueTopRight (Legacy Oblique Top Right) | [*Example*: Consider the following example of the camera preset type: | |
| legacyPerspectiveBottom (Legacy Perspective Bottom) | [*Example*: Consider the following example of the camera preset type: | |
| legacyPerspectiveBottomLeft (Legacy Perspective Bottom Left) | [*Example*: Consider the following example of the camera preset type: | |
| legacyPerspectiveBottomRight (Legacy Perspective Bottom Right) | [*Example*: Consider the following example of the camera preset type: | |
| legacyPerspectiveFront (Legacy Perspective Front) | | [*Example*: Consider the following example of the camera preset type: |
| legacyPerspectiveLeft (Legacy Perspective Left) | | [*Example*: Consider the following example of the camera preset type: |
| legacyPerspectiveRight (Legacy Perspective Right) | | [*Example*: Consider the following example of the camera preset type: |
| legacyPerspectiveTop (Legacy Perspective Top) | | [*Example*: Consider the following example of the camera preset type: |
| legacyPerspectiveTopLeft (Legacy Perspective Top Left) | | [*Example*: Consider the following example of the camera preset type: |
| legacyPerspectiveTopRight (Legacy Perspective Top Right) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueBottom (Oblique Bottom) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueBottomLeft (Oblique Bottom Left) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueBottomRight (Oblique Bottom Right) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueLeft (Oblique Left) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueRight (Oblique Right) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueTop (Oblique Top) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueTopLeft (Oblique Top Left) | | [*Example*: Consider the following example of the camera preset type: |
| obliqueTopRight (Oblique Top Right) | | [*Example*: Consider the following example of the camera preset type: |
| orthographicFront (Orthographic Front) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveAbove (Orthographic Above) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveAboveLeftFacing (Perspective Above Left Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveAboveRightFacing (Perspective Above Right Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveBelow (Perspective Below) | | [*Example*: Consider the following example of the |
| perspectiveContrastingLeftFacing (Perspective Contrasting Left Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveContrastingRightFacing (Perspective Contrasting Right Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveFront (Perspective Front) | | [*Example*: Consider the following example of the |
| perspectiveHeroicExtremeLeftFacing (Perspective Heroic Extreme Left Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveHeroicExtremeRightFacing (Perspective Heroic Extreme Right Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveHeroicLeftFacing (Perspective Heroic Left Facing) | | [*Example*: Consider the following example of the |
| perspectiveHeroicRightFacing (Perspective Heroic Right Facing) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveLeft (Perspective Left) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveRelaxed (Perspective Relaxed) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveRelaxedModerately (Perspective Relaxed Moderately) | | [*Example*: Consider the following example of the camera preset type: |
| perspectiveRight (Perspective Right) | | [*Example*: Consider the following example of the camera preset type: |

#### ST\_PresetColorVal (Preset Color Value)

This simple type represents a preset color value.

#### ST\_PresetLineDashVal (Preset Line Dash Value)

This simple type represents preset line dash values. The description for each style shows an illustration of the line style. Each style also contains a precise binary representation of the repeating dash style. Each 1 corresponds to a line segment of the same length as the line width, and each 0 corresponds to a space of the same length as the line width.

#### ST\_PresetMaterialType (Preset Material Type)

Describes surface appearance of a shape. The material type combines with lighting characteristics to create the final look and feel of a shape. The set of material properties which can be combined together to create the presets below consist of the following characteristics:

#### ST\_PresetPatternVal (Preset Pattern Value)

This simple type indicates a preset type of pattern fill. The description of each value contains an illustration of the fill type.

#### ST\_PresetShadowVal (Preset Shadow Type)

This simple type indicates one of 20 preset shadow types. Each enumeration value description illustrates the type of shadow represented by the value. Each description contains the parameters to the outer shadow effect represented by the preset, in addition to those attributes common to all prstShdw effects.

#### ST\_RectAlignment (Rectangle Alignments)

This simple type describes how to position two rectangles relative to each other.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| b (Rectangle Alignment Enum ( Bottom )) | Bottom |
| bl (Rectangle Alignment Enum ( Bottom Left )) | Bottom Left |
| br (Rectangle Alignment Enum ( Bottom Right )) | Bottom Right |
| ctr (Rectangle Alignment Enum ( Center )) | Center |
| l (Rectangle Alignment Enum ( Left )) | Left |
| r (Rectangle Alignment Enum ( Right )) | Right |
| t (Rectangle Alignment Enum ( Top )) | Top |
| tl (Rectangle Alignment Enum ( Top Left )) | Top Left |
| tr (Rectangle Alignment Enum ( Top Right )) | Top Right |

#### ST\_SchemeColorVal (Scheme Color)

This simple type represents a scheme color value.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| accent1 (Accent Color 1) | Extra scheme color 1 |
| accent2 (Accent Color 2) | Extra scheme color 2 |
| accent3 (Accent Color 3) | Extra scheme color 3 |
| accent4 (Accent Color 4) | Extra scheme color 4 |
| accent5 (Accent Color 5) | Extra scheme color 5 |
| accent6 (Accent Color 6) | Extra scheme color 6 |
| bg1 (Background Color 1) | Semantic background color |
| bg2 (Background Color 2) | Semantic additional background color |
| dk1 (Dark Color 1) | Main dark color 1 |
| dk2 (Dark Color 2) | Main dark color 2 |
| folHlink (Followed Hyperlink Color) | Followed Hyperlink Color |
| hlink (Hyperlink Color) | Regular Hyperlink Color |
| lt1 (Light Color 1) | Main Light Color 1 |
| lt2 (Light Color 2) | Main Light Color 2 |
| phClr (Style Color) | A color used in theme definitions which means to use the color of the style. |
| tx1 (Text Color 1) | Semantic text color |
| tx2 (Text Color 2) | Semantic additional text color |

#### ST\_ShapeID (Shape ID)

Specifies the shape ID for legacy shape identification purposes.

#### ST\_ShapeType (Preset Shape Types)

This simple type specifies the preset shape geometry that is to be used for a shape. An enumeration of this simple type is used so that a custom geometry does not have to be specified but instead can be constructed automatically by the generating application. For each enumeration listed there is also the corresponding DrawingML code that would be used to construct this shape were it a custom geometry. Within the construction code for each of these preset shapes there are predefined guides that the generating application shall maintain for calculation purposes at all times. The necessary guides should have the following values. Formula syntax components are defined in the fmla attribute of the gd element (§20.1.9.11).

#### ST\_StyleMatrixColumnIndex (Style Matrix Column Index)

This simple type specifies an index into one of the lists in the style matrix specified by the fmtScheme element (bgFillStyleLst, effectStyleLst, fillStyleLst, or lnStyleLst).

#### ST\_SystemColorVal (System Color Value)

This simple type specifies a system color value. This color is based upon the value that this color currently has within the system on which the document is being viewed.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| 3dDkShadow (3D Dark System Color) | Specifies a Dark shadow color for three-dimensional display elements. |
| 3dLight (3D Light System Color) | Specifies a Light color for three-dimensional display elements (for edges facing the light source). |
| activeBorder (Active Border System Color) | Specifies an Active Window Border Color. |
| activeCaption (Active Caption System Color) | Specifies the active window title bar color. In particular the left side color in the color gradient of an active window's title bar if the gradient effect is enabled. |
| appWorkspace (Application Workspace System Color) | Specifies the Background color of multiple document interface (MDI) applications. |
| background (Background System Color) | Specifies the desktop background color. |
| btnFace (Button Face System Color) | Specifies the face color for three-dimensional display elements and for dialog box backgrounds. |
| btnHighlight (Button Highlight System Color) | Specifies the highlight color for three-dimensional display elements (for edges facing the light source). |
| btnShadow (Button Shadow System Color) | Specifies the shadow color for three-dimensional display elements (for edges facing away from the light source). |
| btnText (Button Text System Color) | Specifies the color of text on push buttons. |
| captionText (Caption Text System Color) | Specifies the color of text in the caption, size box, and scroll bar arrow box. |
| gradientActiveCaption (Gradient Active Caption System Color) | Specifies the right side color in the color gradient of an active window's title bar. |
| gradientInactiveCaption (Gradient Inactive Caption System Color) | Specifies the right side color in the color gradient of an inactive window's title bar. |
| grayText (Gray Text System Color) | Specifies a grayed (disabled) text. This color is set to 0 |
| highlight (Highlight System Color) | Specifies the color of Item(s) selected in a control. |
| highlightText (Highlight Text System Color) | Specifies the text color of item(s) selected in a control. |
| hotLight (Hot Light System Color) | Specifies the color for a hyperlink or hot-tracked item. |
| inactiveBorder (Inactive Border System Color) | Specifies the color of the Inactive window border. |
| inactiveCaption (Inactive Caption System Color) | Specifies the color of the Inactive window caption. Specifies the left side color in the color gradient of an inactive window's title bar if the gradient effect is enabled. |
| inactiveCaptionText (Inactive Caption Text System Color) | Specifies the color of text in an inactive caption. |
| infoBk (Info Back System Color) | Specifies the background color for tooltip controls. |
| infoText (Info Text System Color) | Specifies the text color for tooltip controls. |
| menu (Menu System Color) | Specifies the menu background color. |
| menuBar (Menu Bar System Color) | Specifies the background color for the menu bar when menus appear as flat menus. |
| menuHighlight (Menu Highlight System Color) | Specifies the color used to highlight menu items when the menu appears as a flat menu. |
| menuText (Menu Text System Color) | Specifies the color of Text in menus. |
| scrollBar (Scroll Bar System Color) | Specifies the scroll bar gray area color. |
| window (Window System Color) | Specifies window background color. |
| windowFrame (Window Frame System Color) | Specifies the window frame color. |
| windowText (Window Text System Color) | Specifies the color of text in windows. |

#### ST\_TextAlignType (Text Alignment Types)

This simple type specifies the text alignment types

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| ctr (Text Alignment Enum ( Center )) | Align text in the center. |
| dist (Text Alignment Enum ( Distributed )) | Distributes the text words across an entire text line. |
| just (Text Alignment Enum ( Justified )) | Align text so that it is justified across the whole line. It is smart in the sense that it does not justify sentences which are short. |
| justLow (Text Alignment Enum ( Justified Low )) | Aligns the text with an adjusted kashida length for Arabic text. |
| l (Text Alignment Enum ( Left )) | Align text to the left margin. |
| r (Text Alignment Enum ( Right )) | Align text to the right margin. |
| thaiDist (Text Alignment Enum ( Thai Distributed )) | Distributes Thai text specially, because each character is treated as a word. |

#### ST\_TextAnchoringType (Text Anchoring Types)

This simple type specifies a list of available anchoring types for text.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| b (Text Anchor Enum ( Bottom )) | Anchor the text at the bottom of the bounding rectangle. |
| ctr (Text Anchor Enum ( Center )) | Anchor the text at the middle of the bounding rectangle. |
| dist (Text Anchor Enum ( Distributed )) | Anchor the text so that it is distributed vertically. When text is horizontal, this spaces out the actual lines of text and is almost always identical in behavior to anchorJustified (special case: if only 1 line, then anchored in middle). When text is vertical, then it distributes the letters vertically. This is different than anchorJustified, because it always forces distribution of the words, even if there are only one or two words in a line. |
| just (Text Anchor Enum ( Justified )) | Anchor the text so that it is justified vertically. When text is horizontal, this spaces out the actual lines of text and is almost always identical in behavior to 'distrib' (special case: if only 1 line, then anchored at top). When text is vertical, then it justifies the letters vertically. This is different than anchorDistributed, because in some cases such as very little text in a line, it does not justify. |
| t (Text Anchoring Type Enum ( Top )) | Anchor the text at the top of the bounding rectangle. |

#### ST\_TextAutonumberScheme (Text Auto-number Schemes)

This simple type specifies a list of automatic numbering schemes.

|  |  |  |
| --- | --- | --- |
| **Enumeration Value** | **Description** | |
| alphaLcParenBoth (Autonumber Enum ( alphaLcParenBoth )) | (a), (b), (c), … | |
| alphaLcParenR (Autonumbering Enum ( alphaLcParenR )) | a), b), c), … | |
| alphaLcPeriod (Autonumbering Enum ( alphaLcPeriod | a., b., c., … | |
| alphaUcParenBoth (Autonumbering Enum ( alphaUcParenBoth )) | (A), (B), (C), … | |
| alphaUcParenR (Autonumbering Enum ( alphaUcParenR )) | A), B), C), … | |
| alphaUcPeriod (Autonumbering Enum ( alphaUcPeriod )) | A., B., C., … | |
| arabic1Minus (Autonumbering Enum ( arabic1Minus | Bidi Arabic 1 (AraAlpha) with ANSI minus symbol | |
| arabic2Minus (Autonumbering Enum ( arabic2Minus | Bidi Arabic 2 (AraAbjad) with ANSI minus symbol | |
| arabicDbPeriod (Autonumbering Enum ( arabicDbPeriod )) | Dbl-byte Arabic numbers w/ double-byte period | |
| arabicDbPlain (Autonumbering Enum ( arabicDbPlain | Dbl-byte Arabic numbers | |
| arabicParenBoth (Autonumbering Enum ( arabicParenBoth )) | (1), (2), (3), … | |
| arabicParenR (Autonumbering Enum ( arabicParenR )) | 1), 2), 3), … | |
| arabicPeriod (Autonumbering Enum ( arabicPeriod )) | 1., 2., 3., … | |
| arabicPlain (Autonumbering Enum ( arabicPlain )) | 1, 2, 3, … | |
| circleNumDbPlain (Autonumbering Enum ( circleNumDbPlain )) | Dbl-byte circle numbers (1-10 circle[0x2460-], 11- arabic numbers) | |
| circleNumWdBlackPlain (Autonumbering Enum ( circleNumWdBlackPlain )) | | Wingdings black circle numbers |
| circleNumWdWhitePlain (Autonumbering Enum ( circleNumWdWhitePlain )) | | Wingdings white circle numbers (0-10 circle[0x0080-], 11- arabic numbers) |
| ea1ChsPeriod (Autonumbering Enum ( ea1ChsPeriod | | EA: Simplified Chinese w/ single-byte period |
| ea1ChsPlain (Autonumbering Enum ( ea1ChsPlain )) | | EA: Simplified Chinese (TypeA 1-99, TypeC 100-) |
| ea1ChtPeriod (Autonumbering Enum ( ea1ChtPeriod | | EA: Traditional Chinese w/ single-byte period |
| ea1ChtPlain (Autonumbering Enum ( ea1ChtPlain )) | | EA: Traditional Chinese (TypeA 1-19, TypeC 20-) |
| ea1JpnChsDbPeriod (Autonumbering Enum ( ea1JpnChsDbPeriod )) | | EA: Japanese w/ double-byte period |
| ea1JpnKorPeriod (Autonumbering Enum ( ea1JpnKorPeriod )) | | EA: Japanese/Korean w/ single-byte period |
| ea1JpnKorPlain (Autonumbering Enum ( ea1JpnKorPlain )) | | EA: Japanese/Korean (TypeC 1-) |
| hebrew2Minus (Autonumbering Enum ( hebrew2Minus )) | | Bidi Hebrew 2 with ANSI minus symbol |
| hindiAlpha1Period (Autonumbering Enum ( hindiAlpha1Period )) | | Hindi alphabet period - consonants |
| hindiAlphaPeriod (Autonumbering Enum ( hindiAlphaPeriod )) | | Hindi alphabet period - vowels |
| hindiNumParenR (Autonumbering Enum ( hindiNumParenR )) | | Hindi numerical parentheses - right |
| hindiNumPeriod (Autonumbering Enum ( hindiNumPeriod )) | | Hindi numerical period |
| romanLcParenBoth (Autonumbering Enum ( romanLcParenBoth )) | | (i), (ii), (iii), … |
| romanLcParenR (Autonumbering Enum ( romanLcParenR )) | | i), ii), iii), … |
| romanLcPeriod (Autonumbering Enum ( romanLcPeriod )) | | i., ii., iii., … |
| romanUcParenBoth (Autonumbering Enum ( romanUcParenBoth )) | | (I), (II), (III), … |
| romanUcParenR (Autonumbering Enum ( romanUcParenR )) | | I), II), III), … |
| romanUcPeriod (Autonumbering Enum ( romanUcPeriod )) | | I., II., III., … |
| thaiAlphaParenBoth (Autonumbering Enum ( | | Thai alphabet parentheses - both |
| thaiAlphaParenR (Autonumbering Enum ( thaiAlphaParenR )) | | Thai alphabet parentheses - right |
| thaiAlphaPeriod (Autonumbering Enum ( thaiAlphaPeriod )) | | Thai alphabet period |
| thaiNumParenBoth (Autonumbering Enum ( thaiNumParenBoth )) | | Thai numerical parentheses - both |
| thaiNumParenR (Autonumbering Enum ( thaiNumParenR )) | | Thai numerical parentheses - right |
| thaiNumPeriod (Autonumbering Enum ( thaiNumPeriod )) | | Thai numerical period |

#### ST\_TextBulletSizePercent (Bullet Size Percentage)

This simple type specifies the range that the bullet percent can be. A bullet percent is the size of the bullet with respect to the text that should follow it.

#### ST\_TextBulletStartAtNum (Start Bullet At Number)

This simple type specifies the range that the start at number for a bullet's auto-numbering sequence can begin at. When the numbering is alphabetical, then the numbers map to the appropriate letter. 1->a, 2->b, etc. If the numbers go above 26, then the numbers begin to double up. For example, 27->aa and 53->aaa.

#### ST\_TextCapsType (Text Cap Types)

This simple type specifies the cap types of the text.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| all (Text Caps Enum ( All )) | Apply all caps on the text. All lower case letters are converted to upper case even though they are stored differently in the backing store. |
| none (Text Caps Enum ( None )) | The reason we cannot implicitly have noCaps be the scenario where capitalization is not specified is because not being specified implies deriving from a particular style and the user might want to override that and make some text not have a capitalization scheme even though the style says otherwise. |
| small (Text Caps Enum ( Small )) | Apply small caps to the text. All letters are converted to lower case. |

#### ST\_TextColumnCount (Text Column Count)

This simple type specifies the number of columns.

#### ST\_TextFontAlignType (Font Alignment Types)

This simple type specifies the different kinds of font alignment.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| auto (Font Alignment Enum ( Automatic )) | When the text flow is horizontal or simple vertical same as fontBaseline but for other vertical modes same as fontCenter. |
| b (Font Alignment Enum ( Bottom )) | The letters are anchored to the very bottom of a single line. This is different than the bottom baseline because of letters such as "g," "q," "y," etc. |
| base (Font Alignment Enum ( Baseline )) | The letters are anchored to the bottom baseline of a single line. |
| ctr (Font Alignment Enum ( Center )) | The letters are anchored between the two baselines of a single line. |
| t (Font Alignment Enum ( Top )) | The letters are anchored to the top baseline of a single line. |

#### ST\_TextFontScalePercentOrPercentString (Text Font Scale Percentage)

This simple type specifies that its contents will contain a text font scale percent percentage. See the union's member types for details.

#### ST\_TextFontSize (Text Font Size)

This simple type specifies the size of any text in hundredths of a point. Shall be at least 1 point.

#### ST\_TextHorzOverflowType (Text Horizontal Overflow Types)

This simple type specifies the text horizontal overflow types

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| clip (Text Horizontal Overflow Enum ( Clip )) | When a big character does not fit into a line, clip it at the proper horizontal overflow. |
| overflow (Text Horizontal Overflow Enum ( Overflow | When a big character does not fit into a line, allow a horizontal overflow. |

#### ST\_TextIndent (Text Indentation)

This simple type specifies the text indentation amount to be used.

#### ST\_TextIndentLevelType (Text Indent Level Type)

This simple type specifies the indent level type. We support list level 0 to 8, and we use -1 and -2 for outline mode levels that should only exist in memory.

#### ST\_TextMargin (Text Margin)

This simple type specifies the margin that is used and its corresponding size.

#### ST\_TextNonNegativePoint (Text Non-Negative Point)

This simple type specifies a non-negative font size in hundredths of a point. This is restricted to the range [0, 400000].

#### ST\_TextPoint (Text Point)

This simple type specifies a coordinate within the document. This can be used for measurements or spacing; its maximum size is +/- 4000 points.

#### ST\_TextPointUnqualified (Text Point)

This simple type specifies a font size in hundredths of a point. This is restricted to the range [-400000, 400000], i.e from -4000 pt to 4000 pt.

#### ST\_TextShapeType (Preset Text Shape Types)

This simple type specifies the preset text shape geometry that is to be used for a shape. An enumeration of this simple type is used so that a custom geometry does not have to be specified but instead can be constructed automatically by the generating application. For each enumeration listed there is also the corresponding DrawingML code that would be used to construct this shape were it a custom geometry. Within the construction code for each of these preset text shapes there are predefined guides that the generating application shall maintain for calculation purposes at all times. The necessary guides should have the following values. Formula syntax components are defined in the fmla attribute of the gd element (§20.1.9.11).

#### ST\_TextSpacingPercentOrPercentString (Text Spacing Percent)

This simple type specifies that its contents will contain a text font spacing percentage. See the union's member types for details.

#### ST\_TextSpacingPoint (Text Spacing Point)

This simple type specifies the Text Spacing that is used in terms of font point size.

#### ST\_TextStrikeType (Text Strike Type)

This simple type specifies the strike type.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| dblStrike (Text Strike Enum ( Double Strike )) | A double strikethrough applied on the text |
| noStrike (Text Strike Enum ( No Strike )) | No strike is applied to the text |
| sngStrike (Text Strike Enum ( Single Strike )) | A single strikethrough is applied to the text |

#### ST\_TextTabAlignType (Text Tab Alignment Types)

This simple type specifies the text tab alignment types.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| ctr (Text Tab Alignment Enum ( Center )) | The text at this tab stop is center aligned. |
| dec (Text Tab Alignment Enum ( Decimal )) | At this tab stop, the decimals are lined up. From a user's point of view, the text here behaves as right aligned until the decimal, and then as left aligned after the decimal. |
| l (Text Tab Alignment Enum ( Left)) | The text at this tab stop is left aligned. |
| r (Text Tab Alignment Enum ( Right )) | The text at this tab stop is right aligned. |

#### ST\_TextTypeface (Text Typeface)

This simple type specifies the way we represent a font typeface.

#### ST\_TextUnderlineType (Text Underline Types)

This simple type specifies the text underline types that is used.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| dash (Text Underline Enum ( Dashed )) | Underline the text with a single, dashed line of normal thickness. |
| dashHeavy (Text Underline Enum ( Heavy Dashed )) | Underline the text with a single, dashed, thick line. |
| dashLong (Text Underline Enum ( Long Dashed )) | Underline the text with a single line consisting of long dashes of normal thickness. |
| dashLongHeavy (Text Underline Enum ( Heavy Long Dashed )) | Underline the text with a single line consisting of long, thick dashes. |
| dbl (Text Underline Enum ( Double )) | Underline the text with two lines of normal thickness. |
| dotDash (Text Underline Enum ( Dot Dash )) | Underline the text with a single line of normal thickness consisting of repeating dots and dashes. |
| dotDashHeavy (Text Underline Enum ( Heavy Dot Dash )) | Underline the text with a single, thick line consisting of repeating dots and dashes. |
| dotDotDash (Text Underline Enum ( Dot Dot Dash )) | Underline the text with a single line of normal thickness consisting of repeating two dots and dashes. |
| dotDotDashHeavy (Text Underline Enum ( Heavy Dot Dot Dash )) | Underline the text with a single, thick line consisting of repeating two dots and dashes. |
| dotted (Text Underline Enum ( Dotted )) | Underline the text with a single, dotted line of normal thickness. |
| dottedHeavy (Text Underline Enum ( Heavy Dotted )) | Underline the text with a single, thick, dotted line. |
| heavy (Text Underline Enum ( Heavy )) | Underline the text with a single, thick line. |
| none (Text Underline Enum ( None )) | The reason we cannot implicitly have noUnderline be the scenario where underline is not specified is because not being specified implies deriving from a particular style and the user might want to override that and make some text not be underlined even though the style says otherwise. |
| sng (Text Underline Enum ( Single )) | Underline the text with a single line of normal thickness. |
| wavy (Text Underline Enum ( Wavy )) | Underline the text with a single wavy line of normal thickness. |
| wavyDbl (Text Underline Enum ( Double Wavy )) | Underline the text with two wavy lines of normal thickness. |
| wavyHeavy (Text Underline Enum ( Heavy Wavy )) | Underline the text with a single, thick wavy line. |
| words (Text Underline Enum ( Words )) | Underline just the words and not the spaces between them. |

#### ST\_TextVerticalType (Vertical Text Types)

If there is vertical text, determines what kind of vertical text is going to be used.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| eaVert (Vertical Text Type Enum ( East Asian Vertical )) | A special version of vertical text, where some fonts are displayed as if rotated by 90 degrees while some fonts (mostly East Asian) are displayed vertical. |
| horz (Vertical Text Type Enum ( Horizontal )) | Horizontal text. This should be default. |
| mongolianVert (Vertical Text Type Enum ( Mongolian | A special version of vertical text, where some fonts are displayed as if rotated by 90 degrees while some fonts |
| vert (Vertical Text Type Enum ( Vertical )) | Determines if all of the text is vertical orientation (each line is 90 degrees rotated clockwise, so it goes from top to bottom; each next line is to the left from the previous one). |
| vert270 (Vertical Text Type Enum ( Vertical 270 )) | Determines if all of the text is vertical orientation (each line is 270 degrees rotated clockwise, so it goes from bottom to top; each next line is to the right from the previous one). |
| wordArtVert (Vertical Text Type Enum ( WordArt | Determines if all of the text is vertical ("one letter on top of another"). |
| wordArtVertRtl (Vertical WordArt Right to Left) | Specifies that vertical WordArt should be shown from right to left rather than left to right. |

#### ST\_TextVertOverflowType (Text Vertical Overflow)

This simple type specifies the text vertical overflow.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| clip (Text Overflow Enum ( Clip )) | Pay attention to top and bottom barriers. Provide no indication that there is text which is not visible. |
| ellipsis (Text Overflow Enum ( Ellipsis )) | Pay attention to top and bottom barriers. Use an ellipsis to denote that there is text which is not visible. |
| overflow (Text Overflow Enum ( Overflow )) | Overflow the text and pay no attention to top and bottom barriers. |

#### ST\_TextWrappingType (Text Wrapping Types)

Text Wrapping Types

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| none (Text Wrapping Type Enum ( None )) | No wrapping occurs on this text body. Words spill out without paying attention to the bounding rectangle boundaries. |
| square (Text Wrapping Type Enum ( Square )) | Determines whether we wrap words within the bounding rectangle. |

#### ST\_TileFlipMode (Tile Flip Mode)

This simple type indicates whether/how to flip the contents of a tile region when using it to fill a larger fill region.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| none (None) | Tiles are not flipped. |
| x (Horizontal) | Tiles are flipped horizontally. |
| xy (Horizontal and Vertical) | Tiles are flipped both horizontically and vertically. |
| y (Vertical) | Tiles are flipped vertically. |

#### ST\_TextBulletSize (Bullet Size Percentage)

This simple type specifies the range that the bullet percent can be. A bullet percent is the size of the bullet with respect to the text that should follow it, with a minimum size of 25% and maximum size of 400%.

## DrawingML - Picture

These elements encompass the definition of pictures within the DrawingML framework. While pictures are in many ways very similar to shapes they have specific properties that are unique in order to optimize for picturespecific scenarios. Some of these properties include Fill behavior, Border behavior and Resize behavior.

### Elements

The following section defines the Picture portion of the DrawingML framework.

#### blipFill (Picture Fill)

This element specifies the type of picture fill that the picture object has. Because a picture has a picture fill already by default, it is possible to have two fills specified for a picture object. An example of this is shown below.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dpi (DPI Setting) | Specifies the DPI (dots per inch) used to calculate the size of the blip. If not present or zero, the DPI in the blip is used. |
| rotWithShape | Specifies that the fill should rotate with the shape. That is, when the shape that has been filled with a picture and the containing shape (say a rectangle) is transformed with a rotation then the fill is transformed with the same rotation. |

#### cNvPicPr (Non-Visual Picture Drawing Properties)

This element specifies the non-visual properties for the picture canvas. These properties are to be used by the generating application to determine how certain properties are to be changed for the picture object in question.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| preferRelativeResi ze (Relative Resize | Specifies if the user interface should show the resizing of the picture based on the picture's current size or its original size. If this attribute is set to true, then scaling is relative to the original picture size as opposed to the current picture size. |

#### cNvPr (Non-Visual Drawing Properties)

This element specifies non-visual canvas properties. This allows for additional information that does not affect the appearance of the picture to be stored.

|  |  |  |
| --- | --- | --- |
| **Attributes** | **Description** | |
| descr (Alternative | Specifies alternative text for the current DrawingML object, for use by assistive technologies or applications which do not display the current object. | |
| hidden (Hidden) | Specifies whether this DrawingML object is displayed. When a DrawingML object is displayed within a document, that object can be hidden (i.e., present, but not visible). This attribute determines whether the object is rendered or made hidden. [*Note*: An application can have settings which allow this object to be viewed. *end note*] | |
| id (Unique | | Specifies a unique identifier for the current DrawingML object within the current document. This ID can be used to assist in uniquely identifying this object so that it can be referred to by other parts of the document. |
| name (Name) | | Specifies the name of the object. [*Note*: Typically, this is used to store the original file name of a picture object. *end note*] |
| title (Title) | | Specifies the title (caption) of the current DrawingML object. |

#### nvPicPr (Non-Visual Picture Properties)

This element specifies the non visual properties for a picture. This allows for additional information that does not affect the appearance of the picture to be stored.

#### pic (Picture)

This element specifies the existence of a picture object within the document.

#### spPr (Shape Properties)

This element specifies the visual shape properties that can be applied to a picture. These are the same properties that are allowed to describe the visual properties of a shape but are used here to describe the visual appearance of a picture within a document. This allows for a picture to have both the properties of a shape as well as picture specific properties that are allowed under the pic element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bwMode (Black and | Specifies that the picture should be rendered using only black and white coloring. That is the coloring information for the picture should be converted to either black or white when rendering the picture. |

## DrawingML - Locked Canvas

Within a DrawingML object, a *locked canvas* allows DrawingML objects to be placed in a format where they can be viewed but not edited by the hosting application. This allows DrawingML objects not supported by an application to be included and viewed in applications where they cannot be edited.

### Basics

This section specifies a locked canvas within the basic DrawingML framework.

#### lockedCanvas (Locked Canvas Container)

The locked canvas element acts as a container for more advanced drawing objects. The notion of a locked canvas comes from the fact that the generating application opening the file cannot create this object and can thus not perform edits either. Thus the drawing object is locked from all UI adjustments that would normally take place.

## DrawingML - WordprocessingML Drawing

Within a WordprocessingML document, it is possible to include graphical DrawingML objects:

### Elements

The following elements define the contents of the WordprocessingML Drawing namespace:

#### align (Relative Horizontal Alignment)

This element specifies how a DrawingML object shall be horizontally aligned relative to the horizontal alignment base defined by the parent element. Once an alignment base is defined, this element shall determine how the DrawingML object shall be aligned relative to that location.

#### align (Relative Vertical Alignment)

This element specifies how a DrawingML object shall be vertically aligned relative to the vertical alignment base defined by the parent element. Once an alignment base is defined, this element shall determine how the DrawingML object shall be aligned relative to that location.

#### anchor (Anchor for Floating DrawingML Object)

This element specifies that the DrawingML object located at this position in the document is a floating object. Within a WordprocessingML document, drawing objects can exist in two states:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Attributes** | | | | **Description** | | |
| allowOverlap | | | | Specifies whether a DrawingML object which intersects another DrawingML object at display time is allowed to overlap the contents of the other DrawingML object. If a DrawingML object cannot overlap other DrawingML object, it shall be repositioned when displayed to prevent this overlap as needed. | | |
| behindDoc (Display | | | | Specifies whether this floating DrawingML object is displayed behind the text of the document when the document is displayed. When a DrawingML object is displayed within a WordprocessingML document, that object can intersect with text in the document. This attribute shall determine whether the text or the object is rendered on top in case of overlapping. | | |
| distB (Distance From Text on | | | | Specifies the minimum distance which shall be maintained between the bottom edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | | |
| distL (Distance From Text on Left | | | | Specifies the minimum distance which shall be maintained between the left edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | | |
| distR (Distance From Text on Right | | | | Specifies the minimum distance which shall be maintained between the right edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | | |
| distT (Distance From Text on Top | | | | Specifies the minimum distance which shall be maintained between the top edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | | |
| hidden (Hidden) | | | | Specifies whether this floating DrawingML object is displayed. When a DrawingML object is displayed within a WordprocessingML document, that object can be hidden (i.e. present, but not visible). This attribute shall determine whether the object is rendered or made hidden. [*Note*: An application can have settings which allow this object to be viewed. *end note*] | | |
| layoutInCell (Layout In Table | | | | Specifies how this DrawingML object behaves when its anchor is located in a table cell; and its specified position would cause it to intersect with a table cell displayed in the document. That behavior shall be as follows: | | |
| locked (Lock Anchor) | Specifies that the anchor location for this object shall not be modified at runtime when an application edits the contents of this document. [*Guidance*: An application might have automatic behaviors which reposition the anchor for a DrawingML object based on user interaction - for example, moving it from one page to another as needed. This element must tell applications not to perform any such behaviors. *end guidance*] | | |
| relativeHeight (Relative Z-Ordering | Specifies the relative Z-ordering of all DrawingML objects in this document. Each floating DrawingML object shall have a Z-ordering value, which determines which object is displayed when any two objects intersect. Higher values shall indicate higher Z-order; lower values shall indicate lower Z-order. | | |
| simplePos (Page Positioning) | Specifies that this object shall be positioned using the positioning information in the simplePos child element (§20.4.2.13). This positioning, when specified, positions the object on the page by placing its top left point at the x-y coordinates specified by that element. | | |

#### cNvGraphicFramePr (Common DrawingML Non-Visual Properties)

This element specifies common non-visual DrawingML object properties for the parent DrawingML object. These properties are specified as child elements of this element.

#### docPr (Drawing Object Non-Visual Properties)

This element specifies non-visual object properties for the parent DrawingML object. These properties are specified as child elements of this element.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| descr (Alternative | Specifies alternative text for the current DrawingML object, for use by assistive technologies or applications which do not display the current object. |
| hidden (Hidden) | Specifies whether this DrawingML object is displayed. When a DrawingML object is displayed within a document, that object can be hidden (i.e., present, but not visible). This attribute determines whether the object is rendered or made hidden. [*Note*: An application can have settings which allow this object to be viewed. *end note*] |
| id (Unique | Specifies a unique identifier for the current DrawingML object within the current document. This ID can be used to assist in uniquely identifying this object so that it can be referred to by other parts of the document. |
| name (Name) | Specifies the name of the object. [*Note*: Typically, this is used to store the original file name of a picture object. *end note*] |
| title (Title) | Specifies the title (caption) of the current DrawingML object. |

#### effectExtent (Object Extents Including Effects)

This element specifies the additional extent which shall be added to each edge of the image (top, bottom, left, right) in order to compensate for any drawing effects applied to the DrawingML object.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes** | | **Description** | |
| b (Additional Extent on Bottom Edge) | | Specifies the additional length, in EMUs, which shall be added to the bottom edge of the DrawingML object to determine its actual bottom edge including effects. | |
| l (Additional Extent on Left Edge) | | Specifies the additional length, in EMUs, which shall be added to the bottom edge of the DrawingML object to determine its actual bottom edge including effects. | |
| r (Additional Extent on Right Edge) | | Specifies the additional length, in EMUs, which shall be added to the bottom edge of the DrawingML object to determine its actual bottom edge including effects. | |
| t (Additional Extent on Top Edge) | | Specifies the additional length, in EMUs, which shall be added to the bottom edge of the DrawingML object to determine its actual bottom edge including effects. | |

#### extent (Drawing Object Size)

This element specifies the extents of the parent DrawingML object within the document (i.e. its final height and width).

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| cx (Extent Length) | Specifies the length of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |
| cy (Extent Width) | Specifies the width of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |

#### inline (Inline DrawingML Object)

This element specifies that the DrawingML object located at this position in the document is an inline object.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes** | | **Description** | |
| distB (Distance From Text on | | Specifies the minimum distance which shall be maintained between the bottom edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distL (Distance From Text on Left | | Specifies the minimum distance which shall be maintained between the left edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distR (Distance From Text on Right | | Specifies the minimum distance which shall be maintained between the right edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distT (Distance From Text on Top | | Specifies the minimum distance which shall be maintained between the top edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |

#### lineTo (Wrapping Polygon Line End Position)

This element specifies a single point on the wrapping polygon for a DrawingML object. This point shall be the termination of the edge of the wrapping polygon started by the previous start or lineTo element in document order, and shall be the origin of the next edge on the same polygon.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### positionH (Horizontal Positioning)

This element specifies the horizontal positioning of a floating DrawingML object within a WordprocessingML document. This positioning is specified in two parts:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| relativeFrom (Horizontal Position | Specifies the base to which the relative horizontal positioning of this object shall be calculated. |

#### positionV (Vertical Positioning)

This element specifies the vertical positioning of a floating DrawingML object within a WordprocessingML document. This positioning is specified in two parts:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| relativeFrom (Vertical Position | Specifies the base to which the relative vertical positioning of this object shall be calculated. |

#### posOffset (Absolute Position Offset)

This element specifies an absolute measurement for the positioning of a floating DrawingML object within a WordprocessingML document. This measurement shall be calculated relative to the top left edge of the positioning base specified by the parent element's relativeFrom attribute.

#### simplePos (Simple Positioning Coordinates)

This element specifies the coordinates at which a DrawingML object shall be positioned relative to the top-left edge of its page, when the simplePos attribute is specified on the anchor element (§20.4.2.3).

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### start (Wrapping Polygon Start)

This element specifies the starting point on the wrapping polygon for a DrawingML object. This point shall be the start and termination of the wrapping polygon for the parent object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### wrapNone (No Text Wrapping)

This element specifies that the parent DrawingML object shall not cause any text wrapping within the contents of the host WordprocessingML document based on its display location. In effect, this setting shall place the object in one of two locations:

#### wrapPolygon (Wrapping Polygon)

This element specifies the wrapping polygon which shall be used to determine the extents to which text can wrap around the specified object in the document. This polygon shall be defined by the following:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| edited (Wrapping | Specifies that the wrap points for the wrapping polygon have been edited, and the |
| Points Modified) | resulting extents shall be recalculated to compensate when the document is next opened. |

#### wrapSquare (Square Wrapping)

This element specifies that text shall wrap around a virtual rectangle bounding this object. The bounds of the wrapping rectangle shall be dictated by the extents including the addition of the effectExtent element as a child of this element (if present) or the effectExtent present on the parent element.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes** | | **Description** | |
| distB (Distance From Text on | | Specifies the minimum distance which shall be maintained between the bottom edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distL (Distance From Text on Left | | Specifies the minimum distance which shall be maintained between the left edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distR (Distance From Text on Right | | Specifies the minimum distance which shall be maintained between the right edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distT (Distance From Text (Top)) | | Specifies the minimum distance which shall be maintained between the top edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| wrapText (Text Wrapping Location) | | Specifies how text shall wrap around the object's left and right sides. | |

#### wrapThrough (Through Wrapping)

This element specifies that text shall wrap around the wrapping polygon bounding this object as defined by the child wrapPolygon element. When this element specifies a wrapping polygon, it shall allow text to wrap within the object's maximum left and right extents.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| distL (Distance From Text on Left | Specifies the minimum distance which shall be maintained between the left edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. |
| distR (Distance From Text on Right | Specifies the minimum distance which shall be maintained between the right edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. |
| wrapText (Text Wrapping Location) | Specifies how text shall wrap around the object's left and right sides. |

#### wrapTight (Tight Wrapping)

This element specifies that text shall wrap around the wrapping polygon bounding this object as defined by the child wrapPolygon element. When this element specifies a wrapping polygon, it shall not allow text to wrap within the object's maximum left and right extents.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes** | | **Description** | |
| distL (Distance From Test on Left | | Specifies the minimum distance which shall be maintained between the left edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| distR (Distance From Text on Right | | Specifies the minimum distance which shall be maintained between the right edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. | |
| wrapText (Text Wrapping Location) | | Specifies how text shall wrap around the object's left and right sides. | |

#### wrapTopAndBottom (Top and Bottom Wrapping)

This element specifies that text shall wrap around the top and bottom of this object, but not its left or right edges.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| distB (Distance From Text on | Specifies the minimum distance which shall be maintained between the bottom edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. |
| distT (Distance From Text on Top | Specifies the minimum distance which shall be maintained between the top edge of this drawing object and any subsequent text within the document when this graphical object is displayed within the document's contents. |

#### bg (Background Formatting)

This element defines formatting that can be applied to the background shape of the document. The background shape can hold formatting options just as a normal shape can hold within DrawingML.

#### bodyPr (Body Properties)

This element defines the body properties for the text body within a shape.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attributes** | | **Description** | |
| anchor (Anchor) | | Specifies the anchoring position of the txBody within the shape. If this attribute is omitted, then a value of t, or top is implied. | |
| anchorCtr (Anchor Center) | | Specifies the centering of the text box. The way it works fundamentally is to determine the smallest possible "bounds box" for the text and then to center that "bounds box" accordingly. This is different than paragraph alignment, which aligns the text within the "bounds box" for the text. This flag is compatible with all of the different kinds of anchoring. If this attribute is omitted, then a value of 0 or false is implied. | |
| bIns (Bottom Inset) | | Specifies the bottom inset of the bounding rectangle. Insets are used just as internal margins for text boxes within shapes. If this attribute is omitted, a value of 45720 or 0.05 inches is implied. | |
| compatLnSpc | | Specifies that the line spacing for this text body is decided in a simplistic manner using the font scene. If this attribute is omitted, a value of 0 or false is implied. | |
| forceAA (Force Anti-Alias) | | Forces the text to be rendered anti-aliased regardless of the font size. Certain fonts can appear grainy around their edges unless they are anti-aliased. Therefore this attribute allows for the specifying of which bodies of text should always be anti-aliased and which ones should not. If this attribute is omitted, then a value of 0 or false is implied. | |
| fromWordArt | | Specifies that text within this textbox is converted text from a WordArt object. This is more of a backwards compatibility attribute that is useful to the application from a tracking perspective. WordArt was the former way to apply text effects and therefore this attribute is useful in document conversion scenarios. If this attribute is omitted, then a value of 0 or false is implied. | |
| horzOverflow (Text | | Determines whether the text can flow out of the bounding box horizontally. This is used to determine what happens in the event that the text within a shape is too large for the bounding box it is contained within. If this attribute is omitted, then a value of overflow is implied. | |
| lIns (Left Inset) | | Specifies the left inset of the bounding rectangle. Insets are used just as internal margins for text boxes within shapes. If this attribute is omitted, then a value of 91440 or 0.1 inches is implied. | |
| numCol (Number of Columns) | | Specifies the number of columns of text in the bounding rectangle. When applied to a text run this property takes the width of the bounding box for the text and divides it by the number of columns specified. These columns are then treated as overflow containers in that when the previous column has been filled with text the next column acts as the repository for additional text. When all columns have been filled and text still remains then the overflow properties set for this text body are used and the text is reflowed to make room for additional text. If this attribute is omitted, then a value of 1 is implied. | |
| rIns (Right Inset) | | Specifies the right inset of the bounding rectangle. Insets are used just as internal margins for text boxes within shapes. If this attribute is omitted, then a value of 91440 or 0.1 inches is implied. | |
| rot (Rotation) | | Specifies the rotation that is being applied to the text within the bounding box. If it not specified, the rotation of the accompanying shape is used. If it is specified, then this is applied independently from the shape. That is the shape can have a rotation applied in addition to the text itself having a rotation applied to it. If this attribute is omitted, then a value of 0, is implied. | |
| rtlCol (Columns Right-To-Left) | | Specifies whether columns are used in a right-to-left or left-to-right order. The usage of this attribute only sets the column order that is used to determine which column overflow text should go to next. If this attribute is omitted, then a value of 0 or falseis implied in which case text starts in the leftmost column and flow to the right. | |
| spcCol (Space Between Columns) | | Specifies the space between text columns in the text area. This should only apply when there is more than 1 column present. If this attribute is omitted, then a value of 0 is implied. | |
| spcFirstLastPara (Paragraph Spacing) | | Specifies whether the before and after paragraph spacing defined by the user is to be respected. While the spacing between paragraphs is helpful, it is additionally useful to be able to set a flag as to whether this spacing is to be followed at the edges of the text body, in other words the first and last paragraphs in the text body. More precisely since this is a text body level property it should only effect the before paragraph spacing of the first paragraph and the after paragraph spacing of the last paragraph for a given text body. If this attribute is omitted, then a value of 0, or false is implied. | |
| tIns (Top Inset) | | Specifies the top inset of the bounding rectangle. Insets are used just as internal margins for text boxes within shapes. If this attribute is omitted, then a value of 45720 or 0.05 inches is implied. | |
| upright (Text Upright) | | Specifies whether text should remain upright, regardless of the transform applied to it | |
| vert (Vertical Text) | | Determines if the text within the given text body should be displayed vertically. If this attribute is omitted, then a value of horz, or no vertical text is implied. | |
| vertOverflow (Text Vertical Overflow) | | Determines whether the text can flow out of the bounding box vertically. This is used to determine what happens in the event that the text within a shape is too large for the bounding box it is contained within. If this attribute is omitted, then a value of overflow is implied. | |
| wrap (Text Wrapping Type) | | Specifies the wrapping options to be used for this text body. If this attribute is omitted, then a value of square is implied which wraps the text using the bounding text box. | |

#### cNvCnPr (Non-Visual Connector Shape Drawing Properties)

This element specifies the non-visual drawing properties specific to a connector shape. This includes information specifying the shapes to which the connector shape is connected.

#### cNvContentPartPr (Non-Visual Content Part Drawing Properties)

This element specifies the non-visual drawing properties for a content part. This allows for additional information that does not affect the appearance of the content part to be stored.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| isComment (Is a | Specifies whether the content part is a comment or an annotation. If true, it is a comment; otherwise, it is a general annotation. |

#### cNvFrPr (Non-Visual Graphic Frame Drawing Properties)

This element specifies the non-visual drawing properties for a graphic frame. These non-visual properties are properties that the generating application would utilize when rendering.

#### cNvGrpSpPr (Non-Visual Group Shape Drawing Properties)

This element specifies the non-visual drawing properties for a group shape. These non-visual properties are properties that the generating application would utilize when rendering.

#### cNvPr (Non-Visual Drawing Properties)

This element specifies non-visual canvas properties. This allows for additional information that does not affect the appearance of the picture to be stored.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| descr (Alternative | Specifies alternative text for the current DrawingML object, for use by assistive technologies or applications that do not display the current object. |
| hidden (Hidden) | Specifies whether this DrawingML object is displayed. When a DrawingML object is displayed within a document, that object can be hidden (i.e., present, but not visible). This attribute determines whether the object is rendered or made hidden. [*Note*: An application can have settings which allow this object to be viewed. *end note*] |
| id (Unique | Specifies a unique identifier for the current DrawingML object within the current document. This ID can be used to assist in uniquely identifying this object so that it can be referred to by other parts of the document. |
| name (Name) | Specifies the name of the object. [*Note*: Typically, this is used to store the original file name of a picture object. *end note*] |
| title (Title) | Specifies the title (caption) of the current DrawingML object. |

#### cNvSpPr (Non-Visual Drawing Properties for a Shape)

This element specifies the non-visual drawing properties for a shape. These properties are to be used by the generating application to determine how the shape should be dealt with.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| txBox (Text Box) | Specifies that the corresponding shape is a text box and thus should be treated as such by the generating application. If this attribute is omitted then it is assumed that the corresponding shape is not specifically a text box. |

#### contentPart (Content Part)

This element specifies a reference to XML content in a format not defined by ECMA-376. [*Note*: This part allows the native use of other commonly used interchange formats, such as:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bwMode (Black and White Mode) | Specifies how to interpret color information contained within a content part to achieve a color, black and white, or grayscale rendering of the content part. This attribute specifies only the rendering mode applied to the content part; it does not affect how the actual color information is persisted. |
| id (Relationship to | Specifies the relationship ID to a specified part. |

#### extLst (Extension List)

This element specifies an extension list, within which all future extensions are defined within ext elements.

#### graphicFrame (Graphical object container)

This element specifies a container for a graphical object in WordprocessingML.

#### grpSp (Group Shape)

This element specifies a group shape that represents many shapes grouped together. This shape is to be treated just as if it were a regular shape but instead of being described by a single geometry it is made up of all the shape geometries encompassed within it. Within a group shape each of the shapes that make up the group are specified just as they normally would. The idea behind grouping elements however is that a single transform can apply to many shapes at the same time.

#### grpSpPr (Group Shape Properties)

This element specifies the properties that are to be common across all of the shapes within the corresponding group. If there are any conflicting properties within the group shape properties and the individual shape properties then the individual shape properties should take precedence.

|  |  |  |
| --- | --- | --- |
| **Attributes** | **Description** | |
| bwMode (Black and White Mode) | | Specifies that the group shape should be rendered using only black and white coloring. That is the coloring information for the group shape should be converted to either black or white when rendering the corresponding shapes. |

#### linkedTxbx (Textual contents of shape)

This element specifies the textual contents of a shape that is not the first in the series of shapes for the same text box story.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| id (ID) | Specifies the identity of the text box story begun by a txbx element. This value shall be unique across a document for each txbx element. |
| seq (sequence index) | Specifies the position of the owning shape in the given text box story. |

#### spPr (Shape Properties)

This element specifies the visual shape properties that can be applied to a shape. These properties include the shape fill, outline, geometry, effects, and 3D orientation.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bwMode (Black and | Specifies that the picture should be rendered using only black and white coloring. That is the coloring information for the picture should be converted to either black or white when rendering the picture. |

#### style (Shape Style)

This element specifies the style information for a shape. This is used to define a shape's appearance in terms of the preset styles defined by the style matrix for the theme.

#### txbx (Textual contents of shape)

This element specifies the textual contents of a shape which is the first in the series of shapes for the same text box story. This element shall be present only in the CT\_WordprocessingShape element that is the first in a series of CT\_WordprocessingShape elements that refer to the same text box story.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| id (ID) | Specifies the identity of the text box story begun by a txbx element. This value shall be unique across a document for each txbx element. |

#### txbxContent (Rich Text Box Content Container)

This element specifies that its contents shall be any rich WordprocessingML content, and that this content is the rich contents of a drawing object defined using DrawingML syntax.

#### wgp (WordprocessingML Shape Group)

This element specifies a shape group in WordprocessingML.

#### whole (Whole E2O Formatting)

Formatting that applies to the entire diagram object, and not just the background, includes line and effect properties.

#### wpc (WordprocessingML Drawing Canvas)

This element specifies a drawing canvas in WordprocessingML. A drawing canvas is a logical grouping of shapes.

#### wsp (WordprocessingML Shape)

This element specifies a shape in WordprocessingML.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| normalEastAsianFl ow (East Asian | Specifies that the text flow of the text contents of the shape shall ignore the text flow value specified by the vert attribute of the bodyPr element. |

#### xfrm (2D Transform for Graphic Frames)

This element specifies a two dimensional transform for a Graphic Frame.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| flipH (Horizontal Flip) | Specifies a horizontal flip. When true, this attribute defines that the shape is flipped horizontally about the center of its bounding box. |
| flipV (Vertical Flip) | Specifies a vertical flip. When true, this attribute defines that the group is flipped vertically about the center of its bounding box. |
| rot (Rotation) | Specifies the rotation of the Graphic Frame. The units for which this attribute is specified in reside within the simple type definition referenced below. |

### Simple Types

This is the complete list of simple types dedicated to DrawingML – WordprocessingML Drawing.

#### ST\_AlignH (Relative Horizontal Alignment Positions)

This simple type contains the possible settings specifying how a DrawingML object can be horizontally aligned relative to the horizontal alignment base defined by the parent element.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| center (Center Alignment) | Specifies that the object shall be centered with respect to the horizontal alignment base. |
| inside (Inside) | Specifies that the object shall be inside of the horizontal alignment base. |
| left (Left Alignment) | Specifies that the object shall be left aligned to the horizontal alignment base. |
| outside (Outside) | Specifies that the object shall be outside of the horizontal alignment base. |
| right (Right Alignment) | Specifies that the object shall be right aligned to the horizontal alignment base. |

#### ST\_AlignV (Vertical Alignment Definition)

This simple type contains the possible settings specifying how a DrawingML object can be vertically aligned relative to the vertical alignment base defined by the parent element.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| bottom (Bottom) | Specifies that the object shall be at the bottom of the vertical alignment base. |
| center (Center Alignment) | Specifies that the object shall be centered with respect to the vertical alignment base. |
| inside (Inside) | Specifies that the object shall be inside of the horizontal alignment base. |
| outside (Outside) | Specifies that the object shall be outside of the vertical alignment base. |
| top (Top) | Specifies that the object shall be at the top of the vertical alignment base. |

#### ST\_PositionOffset (Absolute Position Offset Value)

This simple type represents a one dimensional distance which shall be used to offset an objet from its base positioning location stored in EMUs.

#### ST\_RelFromH (Horizontal Relative Positioning)

This simple type specifies the possible values for the base from which the relative horizontal positioning of an object shall be calculated.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| character (Character) | Specifies that the horizontal positioning shall be relative to the position of the anchor within its run content. |
| column (Column) | Specifies that the horizontal positioning shall be relative to the extents of the column which contains its anchor. |
| insideMargin (Inside Margin) | Specifies that the horizontal positioning shall be relative to the inside margin of the current page (the left margin on odd pages, right on even pages). |
| leftMargin (Left Margin) | Specifies that the horizontal positioning shall be relative to the left margin of the page. |
| margin (Page Margin) | Specifies that the horizontal positioning shall be relative to the page margins. |
| outsideMargin (Outside Margin) | Specifies that the horizontal positioning shall be relative to the outside margin of the current page (the right margin on odd pages, left on even pages). |
| page (Page Edge) | Specifies that the horizontal positioning shall be relative to the edge of the page. |
| rightMargin (Right Margin) | Specifies that the horizontal positioning shall be relative to the right margin of the page. |

#### ST\_RelFromV (Vertical Relative Positioning)

This simple type specifies the possible values for the base from which the relative vertical positioning of an object shall be calculated.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| bottomMargin (Bottom Margin) | Specifies that the vertical positioning shall be relative to the bottom margin of the current page. |
| insideMargin (Inside Margin) | Specifies that the vertical positioning shall be relative to the inside margin of the current page. |
| line (Line) | Specifies that the vertical positioning shall be relative to the line containing the anchor character. |
| margin (Page Margin) | Specifies that the vertical positioning shall be relative to the page margins. |
| outsideMargin (Outside Margin) | Specifies that the vertical positioning shall be relative to the outside margin of the current page. |
| page (Page Edge) | Specifies that the vertical positioning shall be relative to the edge of the page. |
| paragraph (Paragraph) | Specifies that the vertical positioning shall be relative to the paragraph which contains the drawing anchor. |
| topMargin (Top Margin) | Specifies that the vertical positioning shall be relative to the top margin of the current page. |

#### ST\_WrapDistance (Distance from Text)

This simple type represents a one dimensional distance which shall be used to offset an object from text, stored in EMUs.

#### ST\_WrapText (Text Wrapping Location)

This simple type specifies the possible settings for how text can wrap around the object's left and right sides.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| bothSides (Both Sides) | Specifies that text shall wrap around both sides of the object. |
| largest (Largest Side Only) | Specifies that text shall only wrap around the largest side of the object. |
| left (Left Side Only) | Specifies that text shall only wrap around the left side of the object. |
| right (Right Side Only) | Specifies that text shall only wrap around the right side of the object. |

## DrawingML - SpreadsheetML Drawing

Within a SpreadsheetML document, it is possible to include graphical DrawingML objects:

### Elements

The following elements define the contents of the Spreadsheet Drawing namespace:

#### absoluteAnchor (Absolute Anchor Shape Size)

This element is used as an anchor placeholder for a shape or group of shapes. It anchors the object in the same position relative to sheet position and its extents are in EMU units.

#### blipFill (Picture Fill)

This element specifies the type of picture fill that the picture object has. Because a picture has a picture fill already by default, it is possible to have two fills specified for a picture object. An example of this is shown below.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| dpi (DPI Setting) | Specifies the DPI (dots per inch) used to calculate the size of the blip. If not present or zero, the DPI in the blip is used. |
| http://purl.oclc.or g/ooxml/drawing ml/main | [*Note*: This attribute is primarily used to keep track of the picture quality within a document. There are different levels of quality needed for print than on-screen viewing and thus a need to track this information. *end note*] |
| rotWithShape | Specifies that the fill should rotate with the shape. That is, when the shape that has been filled with a picture and the containing shape (say a rectangle) is transformed with a rotation then the fill is transformed with the same rotation. |

#### clientData (Client Data)

This element is used to set certain properties related to a drawing element on the client spreadsheet application.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fLocksWithSheet | This attribute indicates whether to disable selection on drawing elements when the sheet is protected. |
| fPrintsWithSheet (Prints With Sheet | This attribute indicates whether to print drawing elements when printing the sheet. |

#### cNvCxnSpPr (Non-Visual Connector Shape Drawing Properties)

This element specifies the non-visual properties for a connector shape. These are the set of properties on a shape which do not affect its display within a spreadsheet.

#### cNvGraphicFramePr (Non-Visual Graphic Frame Drawing Properties)

This element specifies the non-visual properties for a single graphical object frame within a spreadsheet. These are the set of properties of a frame which do not affect its display within a spreadsheet.

#### cNvGrpSpPr (Non-Visual Group Shape Drawing Properties)

This element specifies the non-visual properties of a hierarchical grouping of shapes, graphical object frames, and child groups. These are the set of properties of a group which do not affect its display within a spreadsheet.

#### cNvPicPr (Non-Visual Picture Drawing Properties)

This element describes the non-visual properties of a picture within a spreadsheet. These are the set of properties of a picture which do not affect its display within a spreadsheet.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| preferRelativeResi ze (Relative Resize | Specifies if the user interface should show the resizing of the picture based on the picture's current size or its original size. If this attribute is set to true, then scaling is relative to the original picture size as opposed to the current picture size. |

#### cNvPr (Non-Visual Drawing Properties)

This element specifies the set of non-visual properties for the parent element. These properties specify all the data about the parent which does not affect its display within the spreadsheet.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| descr (Alternative | Specifies alternative text for the current DrawingML object, for use by assistive technologies or applications which do not display the current object. |
| hidden (Hidden) | Specifies whether this DrawingML object is displayed. When a DrawingML object is displayed within a document, that object can be hidden (i.e., present, but not visible). |
| Namespace: | This attribute determines whether the object is rendered or made hidden. [*Note*: An application can have settings which allow this object to be viewed. *end note*] |
| id (Unique | Specifies a unique identifier for the current DrawingML object within the current document. This ID can be used to assist in uniquely identifying this object so that it can be referred to by other parts of the document. |
| name (Name) | Specifies the name of the object. [*Note*: Typically, this is used to store the original file name of a picture object. *end note*] |
| title (Title) | Specifies the title (caption) of the current DrawingML object. |

#### cNvSpPr (Connection Non-Visual Shape Properties)

This element specifies the set of non-visual properties for a connection shape. These properties specify all data about the connection shape which do not affect its display within a spreadsheet.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| txBox (Text Box) | Specifies that the corresponding shape is a text box and thus should be treated as such by the generating application. If this attribute is omitted then it is assumed that the corresponding shape is not specifically a text box. |

#### col (Column))

This element specifies the column that is used within the from and to elements to specify anchoring information for a shape within a spreadsheet

#### colOff (Column Offset)

This element is used to specify the column offset within a cell. The units for which this attribute is specified in reside within the simple type definition referenced below.

#### contentPart (Content Part)

This element specifies a reference to XML content in a format not defined by ECMA-376. [*Note*: This part allows the native use of other commonly used interchange formats, such as:

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| id (Relationship to | Specifies the relationship ID to a content part. |

#### cxnSp (Connection Shape)

This element specifies the properties for a connection shape drawing element. A connection shape is a line, etc. that connects two other shapes in this drawing.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fPublished (Publish to Server Flag) | This attribute indicates whether the shape shall be published with the worksheet when sent to the server. |
| macro (Reference to Custom Function) | This element specifies the custom function associated with the object. [*Example*: A macro script, add-in function, and so on. *end example*] |

#### ext (Shape Extent)

This element describes the length and width properties for how far a drawing element should extend for.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| cx (Extent Length) | Specifies the length of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |
| cy (Extent Width) | Specifies the width of the extents rectangle in EMUs. This rectangle shall dictate the size of the object as displayed (the result of any scaling to the original object). |

#### from (Starting Anchor Point)

This element specifies the first anchor point for the drawing element. This is used to anchor the top and left sides of the shape within the spreadsheet. That is when the cell that is specified in the from element is adjusted, the shape is also adjusted.

#### graphicFrame (Graphic Frame)

This element describes a single graphical object frame for a spreadsheet which contains a graphical object.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fPublished (Publish to Server Flag) | This attribute indicates whether the shape shall be published with the worksheet when sent to the server. |
| macro (Reference To Custom Function) | This element specifies the custom function associated with the object. [*Example*: A macro script, add-in function, and so on. *end example*] |

#### grpSp (Group Shape)

This element specifies a group shape that represents many shapes grouped together. This shape is to be treated just as if it were a regular shape but instead of being described by a single geometry it is made up of all the shape geometries encompassed within it. Within a group shape each of the shapes that make up the group are specified just as they normally would. The idea behind grouping elements however is that a single transform can apply to many shapes at the same time.

#### grpSpPr (Group Shape Properties)

This element specifies the properties that are to be common across all of the shapes within the corresponding group. If there are any conflicting properties within the group shape properties and the individual shape properties then the individual shape properties should take precedence.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bwMode (Black and | Specifies that the group shape should be rendered using only black and white coloring. That is the coloring information for the group shape should be converted to either black or white when rendering the corresponding shapes. |

#### nvCxnSpPr (Non-Visual Properties for a Connection Shape)

This element specifies all non-visual properties for a connection shape. This element is a container for the nonvisual identification properties, shape properties and application properties that are to be associated with a connection shape. This allows for additional information that does not affect the appearance of the connection shape to be stored.

#### nvGraphicFramePr (Non-Visual Properties for a Graphic Frame)

This element specifies all non-visual properties for a graphic frame. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a graphic frame. This allows for additional information that does not affect the appearance of the graphic frame to be stored.

#### nvGrpSpPr (Non-Visual Properties for a Group Shape)

This element specifies all non-visual properties for a group shape. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a group shape. This allows for additional information that does not affect the appearance of the group shape to be stored.

#### nvPicPr (Non-Visual Properties for a Picture)

This element specifies all non-visual properties for a picture. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a picture. This allows for additional information that does not affect the appearance of the picture to be stored.

#### nvSpPr (Non-Visual Properties for a Shape)

This element specifies all non-visual properties for a shape. This element is a container for the non-visual identification properties, shape properties and application properties that are to be associated with a shape. This allows for additional information that does not affect the appearance of the shape to be stored.

#### oneCellAnchor (One Cell Anchor Shape Size)

This element specifies a one cell anchor placeholder for a group, a shape, or a drawing element. It moves with the cell and its extents is in EMU units.

#### pic (Picture)

This element specifies the existence of a picture object within the spreadsheet.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fPublished (Publish to Server Flag) | This attribute indicates whether the shape shall be published with the worksheet when sent to the server. |
| macro (Reference | This element specifies the custom function associated with the object. [*Example*: A macro script, add-in function, and so on. *end example*] |

#### pos (Position)

This element describes the position of a drawing element within a spreadsheet.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| x (X-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |
| y (Y-Axis | Specifies a coordinate on the x-axis. The origin point for this coordinate shall be specified by the parent XML element. |

#### row (Row)

This element specifies the row that is used within the from and to elements to specify anchoring information for a shape within a spreadsheet.

#### rowOff (Row Offset)

This element is used to specify the row offset within a cell. The units for which this attribute is specified in reside within the simple type definition referenced below.

#### sp (Shape)

This element specifies the existence of a single shape. A shape can either be a preset or a custom geometry, defined using the SpreadsheetDrawingML framework. In addition to a geometry each shape can have both visual and non-visual properties attached. Text and corresponding styling information can also be attached to a shape. This shape is specified along with all other shapes within either the shape tree or group shape elements.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| fLocksText (Lock Text Flag) | This attribute indicates whether to allow text editing within this drawing object when the parent worksheet is protected. |
| fPublished (Publish to Server Flag) | This attribute indicates whether the shape shall be published with the worksheet when sent to the server. |
| macro (Reference to Custom Function) | This element specifies the custom function associated with the object. [*Example*: A macro script, add-in function, and so on. *end example*] |
| textlink (Text Link) | This attribute specifies a formula linking to spreadsheet cell data. |

#### spPr (Shape Properties)

This element specifies the visual shape properties that can be applied to a special shape such as a connector shape or picture. These are the same properties that are allowed to describe the visual properties of a shape but are used here to describe additional object-specific properties within a document. This allows for these shapes to have both the properties of a shape as well as specific properties that are unique to only them.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| bwMode (Black and | Specifies that the picture should be rendered using only black and white coloring. That is the coloring information for the picture should be converted to either black or white when rendering the picture. |

#### style (Shape Style)

The element specifies the style that is applied to a shape and the corresponding references for each of the style components such as lines and fills.

#### to (Ending Anchor Point)

This element specifies the second anchor point for the drawing element. This is used to anchor the bottom and right sides of the shape within the spreadsheet. That is when the cell that is specified in the to element is adjusted, the shape is also adjusted.

#### twoCellAnchor (Two Cell Anchor Shape Size)

This element specifies a two cell anchor placeholder for a group, a shape, or a drawing element. It moves with cells and its extents are in EMU units.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| editAs (Positioning and Resizing Behaviors) | Specifies how the DrawingML contents shall be moved and/or resized when the rows and columns between its start and ending anchor (the from and to child elements) are resized, or have additional rows/columns inserted within them, or additional row/columns are added before them. The behaviors are discussed in the simple type referenced below. |

#### txBody (Shape Text Body)

This element specifies the existence of text to be contained within the corresponding shape. All visible text and visible text related properties are contained within this element. There can be multiple paragraphs and within paragraphs multiple runs of text.

#### wsDr (Worksheet Drawing)

This element specifies all drawing objects within the worksheet. It acts much like the spTree element within the DrawingML framework. Allowing for the specification of all shapes for a given part of a document, in this case a single Worksheet.

#### xfrm (2D Transform for Graphic Frames)

This element specifies a two dimensional transform for a Graphic Frame.

|  |  |
| --- | --- |
| **Attributes** | **Description** |
| flipH (Horizontal | Specifies a horizontal flip. When true, this attribute defines that the shape is flipped horizontally about the center of its bounding box. |
| flipV (Vertical Flip) | Specifies a vertical flip. When true, this attribute defines that the group is flipped vertically about the center of its bounding box. |
| rot (Rotation) | Specifies the rotation of the Graphic Frame. The units for which this attribute is specified in reside within the simple type definition referenced below. |

### Simple Types

This is the complete list of simple types dedicated to DrawingML – SpreadsheetML Drawing.

#### ST\_ColID (Column ID)

This simple type specifies a column identification. The numerical value used for the column id should be nonnegative and never exceed the number of total columns within the spreadsheet document.

#### ST\_EditAs (Resizing Behaviors)

This simple type specifies all possible settings for how DrawingML contents shall be resized when the rows and columns between its start and ending anchor (the from and to child elements) are resized, or have additional rows/columns inserted within them.

|  |  |
| --- | --- |
| **Enumeration Value** | **Description** |
| absolute (Do Not Move or Resize With Underlying Rows/Columns) | Specifies that the current start and end positions shall be maintained with respect to the distances from the absolute start point of the worksheet. |
| oneCell (Move With Cells but Do Not Resize) | Specifies that the current drawing shall move with its row and column (i.e. the object is anchored to the actual from row and column), but that the size shall remain absolute. |
| twoCell (Move and Resize With Anchor Cells) | Specifies that the current drawing shall move and resize to maintain its row and column anchors (i.e. the object is anchored to the actual from and to row and column). |

#### ST\_RowID (Row ID)

This simple type specifies a row identification. The numerical value used for the row id should be non-negative and never exceed the number of total rows within the spreadsheet document.