

## 8. Block Reference.

Blocks types are listed in the same order as the “Block Type Summary” table, which has page references. The meaning of the table entries is as follows:

<b>Name</b>	The 4-character block type, followed by the C language structure or type name, followed by a C language constant which is equal to the block type.	
<b>Desc.</b>	A brief description of the block type.	
<b>Content</b>	The contents of the block, which always starts with an Elmo header.	
<b>Offset</b>	The number of bytes from the start of the block to that particular element. The last offset listed is usually the subblock offset.	
<b>Size</b>	The number of bytes that particular element spans.	
<b>Type</b>	The C Language type of the element. See section 7, “Data Types” for an explanation. Some types are common structures which have sub-elements listed in “Data Types”, e.g. ElmoPoint3D has “x”, “y”, and “z” subelements.	
<b>Name</b>	The C Language name of the element. Some groups of elements (between horizontal lines) are part of a sub-structure of the block, with the name of the subblock is listed at the top of the group. E.g. Bookmark blocks have a set of “Movie_Camera_Elmo_Struct” elements.	
<b>Description and cases</b>	A brief description of the element, followed by any special values or usual values for that element (indented).	

<b>Name</b>	<b>elmo</b>	<b>ElmoFileHeader</b>	<b>KElmoFormatKind</b>
<b>Desc.</b>	The Elmo file header. Identifies the file type and size.		
<b>Content</b>	<b>Offset</b>	<b>Size</b>	<b>Type</b> <b>Name</b> <b>Description and cases</b>
	0	16	ElmoBlockHeader
	16	4	ElmoUInt32
	20	4	ElmoUInt32
	24	4	ElmoUInt32
	28		
<b>Subbl.</b>	All other blocks are subblocks of this one.		
<b>Context</b>	This block encompasses the entire file.		

Name	scen	Scene_Elmo_Block	kSceneElmoBlockType		
Desc.	An Infini-D scene. Usually there is one scene block at the start of each scene file.				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	Tag of the first block in the scene's object tree.
	1 6	4	ElmoTag	objectTree	Tag of the first block in the scene's outline list.
	2 0	4	ElmoTag	outlineList	Tag of the first block in the scene's surface list.
	2 4	4	ElmoTag	surfaceList	Tag of the first block in the scene's light list.
	2 8	4	ElmoTag	lightList	Tag of the first block in the scene's view list.
	3 2	4	ElmoTag	viewList	Tag of the first block in the scene's book mark list.
	3 6	4	ElmoTag	bookMarkList	Tag of the scene's sequencer into block.
	4 0	4	ElmoTag	sequencerInfoTag	Tag value reserved for "use parent's surface." There is no block with this tag value. If an object has a surfaceTag with this value, the symbolic meaning is "use the parent object's surface."
	4 4	4	ElmoTag	useParentSurfaceTag	
	4 8				
Subbl.	none				
Context	An elmo subblock, usually the first in a scene file.				

Name	Composite_Surface_Elmo_Block		KComposedSurfaceElmoBlockType
Desc.	A composite surface. Each composite surface has multiple layers as subblocks.		
Content	Offset	Size Type	Name Description and cases
	0	1 6 ElmoBlockHeader	
	1 6	4 ElmoTag	next Tag of next block in surface list
	2 0	2 ElmoSurfaceType (an ElmoUInt16)	type The type of this surface KElmoBasicSurface = 0 ('surf' blocks only) KElmoPictureSurface = 1 ('surf' with 'imag' subblock only) KElmoCompositeSurface = 2 ('csrf' blocks only)
	2 2	2 ElmoSurfaceType (an ElmoUInt16)	nextType The type of the next surface KElmoBasicSurface = 0 ('surf' blocks only) KElmoPictureSurface = 1 ('surf' with 'imag' subblock only) KElmoCompositeSurface = 2 ('csrf' blocks only)
	2 4	3 2 char (ElmoPString)	name The surface name
	5 6	4 ElmoFloat32	diffusion Diffuse reflection [0.0 to 1.0]
	6 0	4 ElmoFloat32	specularity Specular highlight [0.0 to 1.0]
	6 4	4 ElmoFloat32	reflectivity Specular reflection [0.0 to 1.0]
	6 8	4 ElmoFloat32	transmission Transparency [0.0 to 1.0]
	7 2	4 ElmoFloat32	glow Glow (ambient light) [0.0 to 1.0]
	7 6	4 ElmoFloat32	specularPower Shininess [20-220]
	8 0	4 ElmoFloat32	indexOfRefraction Ranges from 0.5 to 5.5
	8 4	4 ElmoFloat32	metallicity Metalicity [0.0 to 1.0]
	8 8	4 ElmoFloat32	colorTransmission
	9 2	4 ElmoTag	layerListTag Tag of first block in layer list
	9 6	4 ElmoUInt32	combinedSwitch Bitwise-OR of the "mapSwitch" field of the layers.
	1 0 0		
Subbl.	one or more csla blocks		
Context	An elmo subblock, in a list of basic and composed surfaces started by the Scene block's surfaceList tag.		

Name	cs1a Surface_Layer_Elmo_Block			kSurfaceLayerElmoBlockType	
Desc:	A composite surface layer.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader		
	16	4	ElmoTag	next	Tag of next block in layer list
	20	4	ElmoTag	material	Tag of the basic surface for this layer ('surf' block)
	24	2	ElmoInt16	inverseMappingID	
	26	2	ElmoInt16	transferMode	Surface layer transfer modes: K_copy = 0 K_matte = 1 K_transparent = 2 K_blend_copy = 3 K_blend_matte = 4 K_blend_transparent = 5 K_alpha_channel = 6
	28	72	ElmoAffine	transform	
	100	4	ElmoUInt32	mapSwitch	Map in use if TRUE for the following bits: kElmoTextureMap = 0x0001 kElmoSpecularMap = 0x0002 kElmoTransmitMap = 0x0004 kElmoReflectMap = 0x0008 kElmoGlowMap = 0x0010 kElmoBumpMap = 0x0020 kElmoSpecularPowerMap = 0x0040 kElmoIndexOfRefractionMap = 0x0080 kElmoMetallicityMap = 0x00100
	104	4	ElmoFloat32	textureValue	[0, 1]
	108	4	ElmoFloat32	specularValue	
	112	4	ElmoFloat32	transmitValue	
	116	4	ElmoFloat32	reflectValue	
	120	4	ElmoFloat32	glowValue	
	124	4	ElmoFloat32	bumpValue	
	128	4	ElmoFloat32	cylindricalAngle	Only for cylindrical, cylindrical cap, and spherical
	132	1	ElmoBoolean	invert	
	133	1	ElmoBoolean	padding1	Reserved, Set to 0.
	134	2	ElmoInt16	horizRepeat	These two fields do not apply to 3D textures.
	136	2	ElmoInt16	vertRepeat	

	1 3 8	1 ElmoUInt8	flip	surface layer flip mode: k_layer_flip_none = 0 k_layer_flip_horz = 1 k_layer_flip_vert = 2 k_layer_flip_both = 3 surface layer mapping rotate mode: k_layer_rotate_none = 0 k_layer_rotate_CW_90 = 1 k_layer_rotate_CW_180 = 2 k_layer_rotate_CW_270 = 3 for ST mapping for ST mapping
	1 3 9	1 ElmoUInt8	rotate	
	1 4 0	8 ElmoPointST	stMin	
	1 4 8	8 ElmoPointST	stMax	
	1 5 6			
Subbl.	none			
Context	A composed surface subblock, in a list of layers started by the surface's layerListTag element.			

Name	surf	Surface_Elmo_Block	kSurfaceElmoBlockType		
Desc.	A single "basic" surface, including color, image, or texture mapping and bump mapping.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader		
	16	4	ElmoTag	next	Tag of next block in surface list
	20	2	ElmoSurfaceType	type	The type of this surface kElmoBasicSurface = 0 ('surf' blocks only) kElmoPictureSurface = 1 ('surf' with 'imag' subblock only) kElmoCompositeSurface = 2 ('csrf' blocks only)
	22	2	ElmoSurfaceType	nextType	The type of the next surface kElmoBasicSurface = 0 ('surf' blocks only) kElmoPictureSurface = 1 ('surf' with 'imag' subblock only) kElmoCompositeSurface = 2 ('csrf' blocks only)
	24	32	char (ElmoPString)	name	The surface name
	56	4	ElmoFloat32	diffusion	Diffuse reflection [0.0 to 1.0]
	60	4	ElmoFloat32	specularity	Specular highlight [0.0 to 1.0]
	64	4	ElmoFloat32	reflectivity	Specular reflection [0.0 to 1.0]
	68	4	ElmoFloat32	transmission	Transparency [0.0 to 1.0]
	72	4	ElmoFloat32	glow	Glow (ambient light) [0.0 to 1.0]
	76	4	ElmoFloat32	specularPower	Shininess [20 - 220]
	80	4	ElmoFloat32	indexOfRefraction	Refraction during transparency [0.5 to 5.5]
	84	4	ElmoFloat32	metallicity	Metalicity [0.0 to 1.0]
	88	4	ElmoFloat32	colorTransmission	
	92	2	ElmoMappingType	mappingType	One of the following: kElmoHomogeneousMap = 0 kElmoMandelbrotMap = 1 kElmoJuliaMap = 2 kElmoTileMap = 3 kElmoNoiseMap = 4 kElmoMarbleMap = 5 kElmoWoodMap = 6 kElmoImageMap = 7 kElmoNaturalWoodMap = 8
	94	2	ElmoBumpType	bumpType	One of the following: kElmoNoBump = 0 kElmoWaveBump = 1

	9 6      4 ElmoTag      mappingTag 1 0 0      4 ElmoTag      bumpTag 1 0 4	KElmoNoiseBump = 2 KElmoCorrosionBump = 3 KElmoImageBump = 4 Tag of subblock with color/image mapping data Tag of block with bump mapping data
<i>Subbl.</i>	One surface mapping subblock from the following list: rgb , tile, frct, noise, marb, wood, natw, imag, and optionally one bump mapping subblock from this list: noise, wave, imag.	
<i>Context</i>	An elmo subblock, in a list of basic and composed surfaces started by the Scene block's surfacelist tag.	

Name	'rgb '	RGB_Color_Elmo_Block	KRGBColorElmoBlockType		
Desc.	A color specified as additive Red, Green, and Blue values from 0.0 to 1.0.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	1 2	ElmoRGBColor	color	
	2 8				
Subbl.	none				
Context	A basic surface subblock.				

Name	tile	Tile_Param_Elmo_Block	KTileElmoBlockType		
Desc.	A tile map. The tile colors are determined by the basic surface blocks referred to below. The surfaces must be basic surfaces in the surface list; image maps and composed surfaces can not be used.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	2	ElmoInt16	tilesPerX;	
	1 8	2	ElmoInt16	tilesPerY;	
	2 0	4	ElmoTag	oddTilesSurfaceTag;	tag of 'surf' block for odd tiles.
	2 4	4	ElmoTag	evenTilesSurfaceTag;	tag of 'surf' block for even tiles.
	2 8	1	ElmoBoolean	isCheckerBoard;	TRUE or FALSE
	2 9	1	ElmoUInt8	pad1	Reserved, set to 0.
	3 0	2	ElmoUInt8	pad2	Reserved, set to 0.
	3 2	1 6 0	ElmoIntPoint2D[40]	tile points	
		1 9 2			
Subbl.	none				
Context	A basic surface subblock.				

Name	frct	Fractal_Param_Elmo_Block	kFractalElmoBlockType		
Desc.	Parameters for a fractal surface				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	8	ElmoPoint2D	seed	
	2 4	1 6	ElmoRect	bound	
	4 0	2	ElmoUInt16	padding	Reserved, set to 0.
	4 2	2	ElmoInt16	maxIterations	
	4 4	2 8	ElmoColorTransition	transition	
	7 2				
Subbl.	none				
Context	A basic surface or terrain subblock.				

Name	nois	Noise_Param_Elmo_Block	kNoiseElmoBlockType		
Desc.	Noise parameters for a surface				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	2 8	ElmoColorTransition	transition	
	4 4	4	ElmoFloat32	density	
	4 8				
Subbl.	none				
Context	A basic surface subblock.				

Name	marb		Marble_Param_Elmo_Block	kMarbleElmoBlockType	
Desc.	A marble map.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	1 6	ElmoVector4D	weight	
	3 2	4	ElmoFloat32	magnitude	
	3 6	2 8	ElmoColorTransition	transition	
	6 4				
Subbl.	none				
Context	A basic surface subblock.				



<i>Name</i>	<b>wood</b>	Wood_Param_Elmo_Block	kWcodeElmoBlockType
<i>Desc.</i>	An original-style wood map.		
<i>Content</i>	<i>Offset</i>	<i>Size</i> <i>Type</i>	<i>Name</i> <i>Description and cases</i>
	0	1 6 ElmoBlockHeader	header
	1 6	2 8 ElmoColorTransition	transition
	4 4	1 2 ElmoPoint3D	scale
	5 6		The two wood colors Swirl, Grain, Cut.
<i>Subbl.</i>	none		
<i>Context</i>	A basic surface subblock.		

<i>Name</i>	<b>natw</b>	Natural_Wood_Param_Elmo_Block	kNaturalWoodElmoBlockType
<i>Desc.</i>	A "Natural Wood" map.		
<i>Content</i>	<i>Offset</i>	<i>Size</i> <i>Type</i>	<i>Name</i> <i>Description and cases</i>
	0	1 6 ElmoBlockHeader	header
	1 6	2 8 ElmoColorTransition	transition
	4 4	4 ElmoFloat32	angle
	4 8	4 ElmoFloat32	centerOffset
	5 2	4 ElmoFloat32	ringScale
	5 6	4 ElmoFloat32	gnarl
	6 0	4 ElmoFloat32	gnarlScale
	6 4		
<i>Subbl.</i>	none		
<i>Context</i>	A basic surface subblock.		

Name	wave	Wave_Param_Elmo_Block	kWaveElmoBlockType		
Desc.	A wave map.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	Tag of next wave block.
	1 6	4	ElmoTag	next	
	2 0	1 2	ElmoPoint3D	center	
	3 2	4	ElmoFloat32	amplitude	
	3 6	4	ElmoFloat32	frequency	
	4 0	4	ElmoFloat32	phase	
	4 4	4	ElmoFloat32	damp	
	4 8	4	ElmoFloat32	innerLimit	
	5 2	4	ElmoFloat32	outerLimit	
	5 6	4	ElmoFloat32	animRate	
	6 0	4	ElmoFloat32	initialPhase	
	6 4				
Subbl.	none				
Context	A basic surface subblock.				

Name	imag	Image_Param_Elmo_Block	KImageElmoBlockType		
Desc.	An image map (picture). This is either a surface subblock (for an image surface), or a terrain subblock (the terrain data).				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	Macintosh volume reference number
	1 6	3 2	char (ElmoPString)	fileName	
	4 8	2	ElmoInt16	vRefNum	
	5 0	2	ElmoInt16	id	Macintosh parent directory ID. Reserved, set to 0.
	5 2	4	ElmoInt32	parID	
	5 6	2	ElmoInt16	padding	
	5 8	2	ElmoUInt16	originalDepth	Actual image bit depth. Bit depth to promote or dither to in Infini-D. for monochrome images. One of the following: kElmoNoPicture = 0 kElmoPICTPicture = 1 kElmoPICSPicture = 2
	6 0	2	ElmoUInt16	depth	
	6 2	1 2	ElmoRGBColor	color	
	7 4	2	ElmoImageType (ElmoUInt16)	type	

	<div> <div> 7 6 7 7 </div> <div> 1 ElmoBoolean 1 ElmoAlphaMode </div> <div> hasAlpha alphaMode </div> </div> <div> <div> 7 8 7 9 8 0 </div> <div> 1 ElmoFilterType (ElmoUInt8) 1 ElmoUInt8 </div> <div> filterType padding2 </div> </div> <div> <div> KElmoMOVIEPicture = 3 KElmoSCRAPPicture = 4 </div> <div> Is there an alpha channel? (for 32-bit images only). One of the following: KElmoNoAlpha = 0 KElmoStraightAlpha = 1 KElmoMultipliedAlpha = 2 </div> <div> Reserved, set to 0. </div> </div>
Subbl.	alis
Context	A basic surface subblock.

Name	alis	(no block definition exists)	kMacAliasElmoBlockType
Desc.	An alias to a Macintosh file, using the Macintosh Toolbox "AliasRecord" type. Used to refer to a file of image data.		
Content	Offset	Size	Type
	0	1 6	ElmoBlockHeader
	1 6	varies	AliasRecord
Subbl.	none		
Context	A basic surface subblock.		

Name	lite	Light_Elmo_Block	KLightElmoBlockType		
Desc.	A light information block. A light is also an object, so this block also refers to a object block.				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	Tag of next light in list
	1 6	4	ElmoTag	next	Reserved, set to 0.
	2 0	2	ElmoUInt16	padding	One of the following:
	2 2	2	ElmoUInt16	type	point_light = 0
					sun_light = 1
					spot_light = 2
	2 4	4	ElmoTag	lightObject	Tag of the associated object
	Light_Info_Elmo_Struct data follows:				
	2 8	1 2	ElmoRGBColor	current	
	4 0	1 2	ElmoPoint3D	color	
	5 2	1 2	ElmoVector3D	position	direction of light; normalized and perpendicular to "up_vector"
	6 4	1 2	ElmoVector3D	direction	normalized and perpendicular to "direction"
	7 6	4	ElmoFloat32	up_vector	
	8 0	4	ElmoFloat32	distanceFalloffStart	
	8 4	4	ElmoFloat32	distanceFalloffEnd	
		4	ElmoFloat32	distanceFalloffExponent	Always set to 2.0
				ent	
	8 8	4	ElmoFloat32	innerAngle	
	9 2	4	ElmoFloat32	outerAngle	
	9 6	4	ElmoFloat32	angleDropExponent	
	1 0 0	4	ElmoFloat32	innerAngleCosine	Cosine of "innerAngle"
	1 0 4	4	ElmoFloat32	outerAngleCosine	Cosine of "outerAngle"
	1 0 8	4	ElmoFloat32	intensityScaler	
	1 1 2	4	ElmoTag	getSurfaceTag	Tag of surface block in surface list.
	1 1 6	4	ElmoTag	maskSurfaceTag	Tag of surface block in surface list.
	1 2 0	2	ElmoUInt16	padding1	Reserved, set to 0.
	1 2 2	1	ElmoUInt8	padding2	Reserved, set to 0.
1 2 3	1	ElmoBoolean	castsShadows		
1 2 4					
Subbl.	none				
Context	An elmo subblock, in a list of light blocks started by the Scene block's lightList tag.				

Name	obj	Object_Elmo_Block	kObjectElmoBlockType		
Desc.	A single object. EventMarks, terrain & model data are sub-blocks.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader	header	One of the following: k_sphere = 0 k_square = 1 k_plane = 2 k_cube = 3 k_cylinder = 4 k_cone = 5 k_CSG_object = 6 k_extrude = 7 k_lathe = 8 k_terrain = 9 (has 'terr' subblock) k_torus = 10 k_bicubic_patch = 11 k_light = 12 k_camera = 13 k_freeform = 14 k_mesh = 15 (has 'modl' subblock) k_font = 16 (Infini-D 2.6 and earlier polygonal text) k_pathpro = 17 (SplineForm object) k_pathpro_font = 18 (SplineForm text) One of the following: k_at_setting = 0 k_wireframe = 1 k_hidden_line = 2 k_shade_fast = 3 k_shade_better = 4 k_shade_best = 5 8 option flags using the following bit masks: kElmoObjOptVisible = 0x01 kElmoObjOptForceBackFaces = 0x02 kElmoObjOptNoShadows = 0x04 kElmoObjOptCubeObject = 0x08 ("bbox only")
	16	2	ElmoUInt16	objectType	
	18	1	ElmoUInt8	renderMode	
	19	1	ElmoUInt8	options	

	KElmoObjOptCubeTree = 0x10 ("fast tree") KElmoObjOptHiddenFromInterface = 0x20 (2nd-Nth characters) KElmoObjOptHeadOfGroup = 0x40 (1st text character) KElmoObjOptVisibleMotionPath = 0x80			
	20	4 ElmoTag	parentTag	Tag of parent object
	24	4 ElmoTag	siblingTag	Tag of sibling object
	28	4 ElmoTag	childTag	Tag of child object
	32	32 char (ElmoPString)	name	Object name
	64	28 ElmoConstraint3D	constraint.rotation	Rotation constraints
	92	28 ElmoConstraint3D	constraint.position	Position constraints
	120	28 ElmoConstraint3D	constraint.scale	Scale constraints
	148	72 ElmoAffine	currentAffine	Affine transformation parameters
	220	4 ElmoTag	surfaceTag	Tag of surface used for this object, or "useParentSurfaceTag" value of scene block.
	224	4 ElmoTag	eventListTag	Tag of events for this object ('evtm' subblock).
	228	1 ElmoBoolean	collapsed	Are the object's children hidden in the sequencer window?
	229	1 ElmoUInt8	patchBreakupMode	Patch breakup mode constants: k_patch_at_setting = 0 k_patch_low = 1 k_patch_medium = 2 k_patch_high = 3
	230	2 ElmoUInt16	pad1	Reserved, set to 0.
	232	4 ElmoTag	extraInfoTag	Tag of subblock with data specific to the object-type. k_light: 'lite' block in light list, k_camera: 'view' block in view list, k_mesh: 'modl' subblock, k_terrain: 'terr' subblock.
	236			
Subbl.	One eventListTag subblock of type 'evtm', plus an extraInfoTag subblock (depending on the "type" parameter) of type: terr or modl.			
Context	An Elmo subblock, in a tree of Object blocks started by the Scene block's objectTree tag.			

Name	terr	Terrain_Elmo_Block	kTerrainElmoBlockType			
Desc.	A terrain info block for terrain objects. For image and fractal terrains, the appropriate mapping data is stored in a sub-block.					
Content	Offset	Size	Type	Name	Description and cases	
	0	1 6	ElmoBlockHeader	header	The terrain type: JULIA_IN_MANDEL_FN = 0 ('frct' subblock) SQUARE_FN = 1 (no subblock) RIPPLE_FN = 2 (no subblock) BLACK_HOLE_FN = 3 (no subblock) STARR_FN = 4 (no subblock) BUMPS_FN = 5 (no subblock) (reserved) = 6 NOISE_FN = 7 ('nois' subblock) MANDEL_FN = 8 ('frct' subblock) JULIA_FN = 9 ('frct' subblock) IMAGE_FN = 10 ('imag' subblock)	
	1 6	2	ElmoUInt16	type		
	1 8	2	ElmoUInt16	gridSize	Size of terrain grid (e.g. 10 = 10 by 10) Apply matching surface?	
	2 0	1	ElmoBoolean	matching		
	2 1	1	ElmoBoolean	cliffs		
	2 2	2	ElmoUInt16	pad		Reserved, set to 0.
	2 4	4	ElmoTag	mapTag		Tag of terrain map subblock, if any.
2 8						
Subbl.	one nois, frct, or imag subblock, depending on the terrain type.					
Context	An object subblock.					

<i>Name</i>	<b>modl</b>	Model_Elmo_Block	kModelElmoBlockType
<i>Desc.</i>	A surface model block for polygon mesh objects. The vertex, face, and edge lists are sub-blocks.		
<i>Content</i>	<i>Offset</i>	<i>Size</i> <i>Type</i> <i>Name</i> <i>Description and cases</i>	
	0	1 6 ElmoBlockHeader	header
	1 6	1 ElmoBoolean	drawBackfaces
	1 7	1 ElmoBoolean	firstFaceForWireframeOnly
	1 8	1 ElmoBoolean	hasFrontCap
	1 9	1 ElmoBoolean	hasBackCap
			Unused, set to FALSE. Unused, set to FALSE.
	2 0	4 ElmoModelIndex	vertexCount
	2 4	4 ElmoTag	vertexListTag
	2 8	4 ElmoModelIndex	edgeCount
	3 2	4 ElmoTag	edgeListTag
	3 6	4 ElmoModelIndex	faceCount
	4 0	4 ElmoTag	faceListTag
	4 4		Tag of face list subblock
<i>Subbl.</i>	3 subblocks, one of each type: verl, edgl, facl		
<i>Context</i>	An object subblock.		

<i>Name</i>	<b>verl</b>	Vertex_List_Elmo_Block	kVertexListElmoBlockType
<i>Desc.</i>	A vertex list. A vertex is a 3D point on a polygonal model, using scene coordinates. Two vertices make an edge, and 3 or more edges make a polygon face.		
<i>Content</i>	<i>Offset</i>	<i>Size</i> <i>Type</i> <i>Name</i> <i>Description and cases</i>	
	0	1 6 ElmoBlockHeader	header
	1 6	4 ElmoModelIndex	vertexCount
			number of vertices to follow
	2 0	1 2 ElmoPoint3D	vertexList[0]
	3 2	1 2 ElmoPoint3D	vertexList[1]
	4 4	1 2 ElmoPoint3D	vertexList[2]
	...	...	...
<i>Subbl.</i>	none		
<i>Context</i>	A Model subblock		



<i>Name</i>	<b>edgl</b>	Edge_List_Elmo_Block	kEdjelisteElmoBlockType
<i>Desc.</i>	A list of edges. An edge is a 3D line segment defined by its two endpoint vertices. The vertex indexes in each edge are zero-origin (0, 1, 2, ...). Three or more edges, listed in counter-clockwise order, make a polygon face.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	4	ElmoModelIndex
	2 0	8	ElmoEdge
	2 8	8	ElmoEdge
	3 6	8	ElmoEdge
	...	...	...
<i>Subbl.</i>	none		
<i>Context</i>	A Model subblock		

<i>Name</i>	<b>facI</b>	Face_List_Elmo_Block	kFacelisteElmoBlockType
<i>Desc.</i>	A list of faces (the polygons) of a polygonal model. Each face has list of edges, and each edge has list of vertices (3D points). Care should be taken to list edges of a face in counter-clockwise order (viewed from the outside), and to have neighboring faces correspond to edges where applicable – see ElmoFace in the Data Structures section.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	4	ElmoModelIndex
	2 0	3 8	ElmoFace
	5 8	3 8	ElmoFace
	9 6	3 8	ElmoFace
	...	...	...
<i>Subbl.</i>	2 x (number of faces with 5 or more edges) subblocks of type: indl		
<i>Context</i>	A Model subblock		

<i>Name</i>	<i>indl</i>	<i>Index_List_Elmo_Block</i>	<i>KIndexListElmoBlockType</i>
<i>Desc.</i>	A list of model indices. The indexes are of edges or neighboring faces, depending on the context, and are zero-origin (0, 1, 2, ...). If the indices are of neighboring faces, use the constant 'K_no_neighboring_face' to indicate missing data – see ElmoFace in the Data Structures section.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	4	ElmoModelIndex
	2 0	4	ElmoModelIndex
	2 4	4	ElmoModelIndex
	2 8	4	ElmoModelIndex
	...	...	...
<i>Subbl.</i>	none		
<i>Context</i>	A face subblock, 2 index for each face that has 5 or more edges.		

<i>Name</i>	<i>evtm</i>	<i>EventMark_Elmo_Block</i>	<i>KEventMarkElmoBlockType</i>
<i>Desc.</i>	An event mark for an object. Event marks are formed as a linked list of object subblocks.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	4	ElmoTag
	2 0	4	ElmoTag
	2 4	4	ElmoFloat32
	2 8	2	ElmoUInt16
	3 0	1	ElmoBoolean
	3 1	1	ElmoBoolean
	3 2	2	ElmoInt16
	3 4	2	ElmoInt16
	<p>The following fields represent the values that the user can change at an eventmark. If a field is KNotAnElmoTag, the corresponding parameter isn't fixed at this eventmark. Otherwise, it is the tag of a structure that contains the value of the corresponding parameter at this event, and info on how to interpolate from that value to the appropriate values at later times</p> <p>3 6 4 ElmoTag positionTag Tag of a 'afev' subblock, or zero.  4 0 4 ElmoTag rotationTag Tag of a 'rfev' subblock, or zero.  4 4 4 ElmoTag scaleTag Tag of a 'afev' subblock, or zero.</p>		

	4 8	4 ElmoTag	offsetTag	Tag of a 'afev' subblock, or zero.
	5 2	4 ElmoTag	uniformScaleTag	Tag of a 'afev' subblock, or zero.
	5 6	4 ElmoTag	surfaceTag	Tag of a 'sfev' subblock, or zero.
	6 0	4 ElmoTag	objectInfoTag	Zero or the tag of a subblock of type: olev, ppev, ptev, txev, liev, caev, or trev.
	6 4			
<i>Subbl.</i>	afev, raev, sfev, olev, txev, ptev, liev, caev, trev, ppev			
<i>Context</i>	An 'obj' subblock			

**Event type constants:**

- kAllEventMarkTypes = 0
- kPositionEvent = 2
- kRotationEvent = 3
- kScaleEvent = 4
- kOffsetEvent = 5
- kUniformScaleEvent = 6
- kSurfaceEvent = 7
- kObjectInfoEvent = 8

**Event flags bit fields:**

kEventMark\_Spline = 0x0001 (Set if spline-based event interpolation)  
kEventMark\_Mixed = 0x0002 (For meta-eventmarks that have some parameters that are spline and some that aren't).

Name	AffineEvent_Elmo_Block			KAffineEventElmoBlockType	
Desc.	An Affine transformation event.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader	header	
	16	2	ElmoInt16	paramType	Event type (see Evtm block)
	18	2	ElmoUInt16	flags	Flags (see Evtm block)
	20	1	ElmoBoolean	sameAsPrevious	TRUE if this is a "null" event.
	21	1	ElmoUInt8	padding1	Reserved, set to 0.
	22	2	ElmoUInt16	padding2	Reserved, set to 0.
	24	4	ElmoFloat32	v_in	Velocity in - initially 0.
	28	4	ElmoFloat32	v_out	Velocity out - initially 0.
	32	4	ElmoFloat32	a_in	Acceleration in - initially 0.
	36	4	ElmoFloat32	a_out	Acceleration in - initially 0.
	40	4	ElmoFloat32	arclength	
	44	4	ElmoFloat32	tension	Arc parameter [-1.0 to 1.0]
	48	4	ElmoFloat32	continuity	Arc parameter [-1.0 to 1.0]
	52	4	ElmoFloat32	bias	Arc parameter [-1.0 to 1.0]
	56	12	ElmoVector3D	value	Position, scale, uniform scale, or offset value, depending on "paramType"
		68	1	ElmoBoolean	vlock
69		1	ElmoUInt8	padding3	Reserved, set to 0.
70		2	ElmoUInt16	padding4	Reserved, set to 0.
72					
Subbl.	none				
Context	An 'evtm' subblock referred to by: positionTag, scaleTag, offsetTag, or uniformScaleTag.				

Name	raev	RotAffineEvent_Elmo_Block	KRotAffineEventElmoBlockType
Desc.	A rotation "Affine" event.		
Content	Offset	Size Type	Name Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	2 ElmoInt16	paramType Event type (see Evtm block)
	1 8	2 ElmoUInt16	flags Flags (see Evtm block)
	2 0	1 ElmoBoolean	sameAsPrevious TRUE if this is a "null" event.
	2 1	1 ElmoUInt8	padding1 Reserved, set to 0.
	2 2	2 ElmoUInt16	padding2 Reserved, set to 0.
	2 4	4 ElmoFloat32	v_in Velocity in - initially 0.
	2 8	4 ElmoFloat32	v_out Velocity out - initially 0.
	3 2	4 ElmoFloat32	a_in Acceleration in - initially 0.
	3 6	4 ElmoFloat32	a_out Acceleration in - initially 0.
	4 0	4 ElmoFloat32	arclength
	4 4	4 ElmoFloat32	tension Arc parameter [-1.0 to 1.0]
	4 8	4 ElmoFloat32	continuity Arc parameter [-1.0 to 1.0]
	5 2	4 ElmoFloat32	bias Arc parameter [-1.0 to 1.0]
	5 6	1 2 ElmoVector3D	value X, Y, Z rotation at the event (0, 0, 0 = no rotation).
	6 8	1 ElmoBoolean	vlock
	6 9	1 ElmoUInt8	padding3 Reserved, set to 0.
	7 0	2 ElmoUInt16	padding4 Reserved, set to 0.
	7 2	1 6 ElmoQuaternion	qval Quaternion rotation value (1, 0, 0, 0 = no rotation).
	8 8		
Subbl.	none		
Context	An 'evtm' subblock		

Name	sfev	SurfaceEvent_Elmo_Block	kSurfaceEventElmoBlockType		
Desc.	A surface event.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader	header	
	16	2	ElmoInt16	paramType	Event type (see Evtm block)
	18	2	ElmoUInt16	flags	Flags (see Evtm block)
	20	1	ElmoBoolean	sameAsPrevious	TRUE if this is a "null" event.
	21	1	ElmoUInt8	padding1	Reserved, set to 0.
	22	2	ElmoUInt16	padding2	Reserved, set to 0.
	24	4	ElmoTag	metaSurfaceTag	Tag of 'surf' or 'csrf' block, or scene's "useParentSurfaceTag" value.
	28				
Subbl.	none				
Context	An 'evtm' subblock				

Name	olev	OutlineObjectEvent_Emo_Block	kOutlineObjEventElmoBlockType		
Desc.	An Outline Object event.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader	header	
	16	2	ElmoInt16	paramType	Event type (see Evtm block)
	18	2	ElmoUInt16	flags	Flags (see Evtm block)
	20	1	ElmoBoolean	sameAsPrevious	TRUE if this is a "null" event.
	21	1	ElmoUInt8	padding1	Reserved, set to 0.
	22	2	ElmoUInt16	padding2	Reserved, set to 0.
	24	4	ElmoTag	outlineTag	Tag of 'outl' block.
	28				
Subbl.	none				
Context	An 'evtm' subblock referred to by its objectInfoTag parameter.				

Name	txev	TextObjectEvent_Elmo_Block	KTextObjEventElmoBlockType
Desc.	Information about a text object's parameters at a given eventmark.		
Content	Offset	Size	Type
	0	16	ElmoBlockHeader
	16	2	ElmoInt16
	18	2	ElmoUInt16
	20	1	ElmoBoolean
	21	1	ElmoUInt8
	22	2	ElmoUInt16
	24	4	ElmoTag
	28	varies	ElmoPString
	varies		outlineTag textLength
			A length byte followed by 0-255 characters of text.
Subbl.	none		
Context	An 'evtm' subblock referred to by its objectInfoTag parameter.		

Name	liev	LightObjectEvent_Elmo_Block	KLightObjEventElmoBlockType
Desc.	Information about a light object's parameters at a given eventmark.		
Content	Offset	Size Type	Name Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	2 ElmoInt16	paramType Event type (see Evtm block)
	1 8	2 ElmoUInt16	flags Flags (see Evtm block)
	2 0	1 ElmoBoolean	sameAsPrevious TRUE if this is a "null" event.
	2 1	1 ElmoUInt8	padding1 Reserved, set to 0.
	2 2	2 ElmoUInt16	padding2 Reserved, set to 0.
	2 4	1 2 ElmoRGBColor	color
	3 6	4 ElmoFloat32	distanceFallOffStart
	4 0	4 ElmoFloat32	distanceFallOffEnd
	4 4	4 ElmoFloat32	distanceFallOffExponent
	4 8	4 ElmoFloat32	innerAngle 0 - p radians (0 - 180 degrees).
	5 2	4 ElmoFloat32	outerAngle 0 - p radians; must be larger than innerAngle.
	5 6	4 ElmoFloat32	angleDropExponent
	6 0	4 ElmoFloat32	innerAngleCosine
	6 4	4 ElmoFloat32	outerAngleCosine
	6 8	4 ElmoFloat32	intensityScaler
	7 2		
Subbl.	none		
Context	An 'evtm' subblock referred to by its objectInfoTag parameter.		



Name	caev	CameraObjectEvent_Elmo_Block	kCameraObjEventElmoBlockType
Desc.	Information about a camera object's parameters at a given eventmark.		
Content	Offset	Size	Type
	0	1 6	ElmoBlockHeader
	1 6	2	ElmoInt16
	1 8	2	ElmoUInt16
	2 0	1	ElmoBoolean
	2 1	1	ElmoUInt8
	2 2	2	ElmoUInt16
	2 4	4	ElmoFloat32
	2 8		lensSize
Subbl.	none		
Context	An 'evtm' subblock referred to by its objectInfoTag parameter.		

Name	tr ev	TerrainObjectEvent_Elmo_Block	kTerrainObjEventElmoBlockType
Desc.	Information about a terrain object's parameters at a given eventmark.		
Content	Offset	Size	Type
	0	1 6	ElmoBlockHeader
	1 6	2	ElmoInt16
	1 8	2	ElmoUInt16
	2 0	1	ElmoBoolean
	2 1	1	ElmoUInt8
	2 2	2	ElmoUInt16
	2 4	4	ElmoTag
	2 8		fractalTag
Subbl.	none		
Context	An 'evtm' subblock referred to by its objectInfoTag parameter.		

<i>Name</i>	<b>pprev</b>	PathProObjectEvent_Elmo_Block	kPathProObjEventElmoBlockType
<i>Desc.</i>	Information about a path-profile object's parameters at a given eventmark.		
	The associated path model is written as a sub-block.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	2	ElmoInt16
	1 8	2	ElmoUInt16
	2 0	1	ElmoBoolean
	2 1	1	ElmoUInt8
	2 2	2	ElmoUInt16
	2 4	4	ElmoTag
	2 8		
<i>Subbl.</i>	none		
<i>Context</i>	An 'evtm' subblock referred to by its objectInfoTag parameter.		

<i>Name</i>	<b>pte v</b>	PathProTextObjectEvent_Elmo_Block	kPProTextObjEventElmoBlockType
<i>Desc.</i>	Information about a path-profile object's parameters at a given eventmark.		
	The associated path model is written as a sub-block.		
<i>Content</i>	<i>Offset</i>	<i>Size</i>	<i>Type</i>
	0	1 6	ElmoBlockHeader
	1 6	2	ElmoInt16
	1 8	2	ElmoUInt16
	2 0	1	ElmoBoolean
	2 1	1	ElmoUInt8
	2 2	2	ElmoUInt16
	2 4	4	ElmoTag
	2 8	varies	ElmoPString
<i>Subbl.</i>	none		
<i>Context</i>	An 'evtm' subblock referred to by its objectInfoTag parameter.		

Name	pm dl	PathModel_Elmo_Block	kPa:ModelElmoBlockType		
Desc.	A "path model" object (a.k.a. SpineForm or Path Cross-Section model).				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	Tag of the pathpro subblock (3D data subblock)
	1 6	4	ElmoTag	pathProTag	Object viewing angle (rotation in X, Y, Z away from top view.)
	2 0	1 2	ElmoPoint3D	rotation	Object view - patch breakup flatness tolerance (default: 0.0)
	3 2	4	ElmoFloat32	flatness	Reserved, set to 0.
	3 6	2	ElmoUInt16	padding	Object view subpatch fineness.
	3 8	2	ElmoInt16	fineness	kLowDetail = 0 kMedDetail = 2 kHighDetail = 4
	4 0				
Subbl.	One ppro subblock				
Context	A pprev or ptev subblock.				

Name	PathPro_Elmo_Block		kPathProElmoBlockType		
Desc.	The 3D geometry of a Path-Profile object, a.k.a. SplineForm or Path-Cross Section object. These blocks are variable sized, since the profile2DTags array does not have a pre-set size.				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	Rendering subclass flags general object = 0 k_pathpro_is_extrude = 1 k_pathpro_is_lathe = 2
	1 6	4	ElmoUInt32	flags	
	2 0	4	ElmoUInt32	layoutID	Workshop layout to use Lathe1 = 0x0100 (hex values) Lathe2 = 0x1100 Extrude1 = 0x2100 Extrude2 = 0x3100 FreeFormVert = 0x4100 FreeFormHor = 0x5100
	2 4	4	ElmoFloat32	marker	Marker position on path
	2 8	4	ElmoFloat32	pixelsPerUnit	E.g. 72 (pixels per inch)

3 2	1 ElmoBoolean	pathActive	Is the path active in the workshop?
3 3	1 ElmoBoolean	railsActive	Are the rails active in the workshop?
3 4	1 ElmoBoolean	showTwist	Show twist in the workshop?
3 5	1 ElmoBoolean	capFront	Cap the object at start of path?
3 6	1 ElmoBoolean	capBack	Cap the object at end of path?
3 7	1 ElmoUInt8	orientMode	Flat or Pipeline mode? kParallelProfiles = 0 (Flat) kPipedProfiles = 1 (Pipeline)
3 8	1 ElmoUInt8	mirrorMode	Rail mirroring mode kMirrorNone = 0 kMirror2Way = 1 kMirror4Way = 2
3 9	1 ElmoUInt8	majorAxis	Axis used to grow/shrink/replace path. kXAxis = 0 kYAxis = 1 kZAxis = 2 (default)
4 0	1 ElmoInt8	bevelType	One of the following: k_bevel_none=0 k_bevel_straight=1 k_bevel_double=2 k_bevel_convex=3 k_bevel_concave=4 k_bevel_step=5 k_bevel_double_step=6 k_bevel_interpolated =-1
4 1	1 ElmoBoolean	hasBackBevel	
4 2	2 ElmoInt16	scaleUnits	
4 4	4 ElmoFloat32	bevelSize	Size of bevel [0 - 1]
4 8	4 ElmoFloat32	bevelDepth	Depth of bevel [0 - 1]
5 2	2 0 ElmoTag	curveTags [5]	tags of 3D spline sub-blocks. Index values are: kPath = 0 (path : spine curve of object) kRail_xpos = 1 (positive x-axis rail) kRail_xneg = 2 (negative x-axis rail) kRail_ypos = 3 (positive y-axis rail) kRail_yneg = 4 (negative y-axis rail)
7 2	4 ElmoUInt32	profile2DCount	number of Profile2D subblocks
7 6	4 ElmoTag	profile2DTag[0]	Tag of 1st profile (required)

	8 0	4 ElmoTag	profile2DTag[1]	Tag of 2nd profile (if exists)
	8 4	4 ElmoTag	profile2DTag[2]	Tag of 3rd profile (if exists)
<i>Subbl.</i>	...	...	...	...
<i>Context</i>	A pmdl subblock.			

Name	Profile2D_Elmo_Block		kProfile2DElmoBlockType		
Desc.	A "Profile 2D", a.k.a. Cross-Section of a SplineForm object. This is a block with a variable size list of 2D outlines, each of which is a 2D cubic bezier spline. The outlines are stored as subblocks.				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	Location of profile: Index of node on path.
	1 6	4	ElmoUInt32	pathIndex	Normal vector for profile plane (any non-zero length).
	2 0	1 2	ElmoVector3D	planeNormal	Up vector (3D orientation of Y-axis) for profile plane.
	3 2	1 2	ElmoVector3D	planeUp	Profile twist
	4 4	4	ElmoFloat32	twist	none = 0.0
	4 8	4	ElmoFloat32	xTilt	Tilt on profile's x-axis (in radians)
					none = 0.0
	5 2	4	ElmoFloat32	yTilt	Tilt on profile's y-axis (in radians)
					none = 0.0
	5 6	4	ElmoUInt32	outlineCount	Number of outline subblocks.
	6 0	4	ElmoTag	outlineTag[0]	Tag of the 1st outline subblock.
6 4	4	ElmoTag	outlineTag[1]	Tag of the 2nd outline subblock.	
6 8	4	ElmoTag	outlineTag[2]	Tag of the 3rd outline subblock.	
	...	...	...	...	
Subbl.	One or more 'o12d' blocks				
Context	A ppro subblock. There is one pf2d subblock for each cross-section of an object.				

<i>Name</i>	<b>o13d</b>	Outline3D_Elmo_Block	kOutline3DElmoBlockType
<i>Desc.</i>	A 3D "outline", which is a cubic Bezier spline. Every node on the spline straddles two cubic Bezier curves, or is the end of one spline if at the start or end of an open spline.		
	Each Bezier curve is defined by four 3D points of the nodes: (1) the position of the 1st node, (2) the right control of the 1st node, (3) the left control of the 2nd node, and (4) the position of the 2nd node.		

	This is a variable-sized block.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	2	ElmoUInt16	padding1	Reserved, set to 0.
	1 8	1	ElmoUInt8	padding2	Reserved, set to 0.
	1 9	1	ElmoBoolean	closed	TRUE if spline is closed.
	2 0	4	ElmoUInt32	numberOfPoints	number of point node structures to follow
	2 4	4 0	PtNode3D_Elmo_Struct	node[0]	First point node (required)
	6 4	4 0	PtNode3D_Elmo_Struct	node[1]	Second point node (required)
	1 0 4	4 0	PtNode3D_Elmo_Struct	node[2]	Third point node (optional)
	...	...	...	...	...
Subbl.	none				
Context	A ppro subblock. There are 5 o13d subblocks for each ppro.				

Name	o12d	Outline2D_Elmo_Block	kOutline2DElmoBlockType		
Desc.	A 2D "outline", which is a cubic Bezier spline. Every node on the spline straddles two cubic Bezier curves, or is the end of one spline if at the start or end of an open spline.				
	Each Bezier curve is defined by four 2D points of the nodes: (1) the position of the 1st node, (2) the right control of the 1st node, (3) the left control of the 2nd node, and (4) the position of the 2nd node.				
	This is a variable-sized block.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	Spline thickness in pixels default = 1.0
	1 6	4	ElmoFloat32	thickness	
	2 0	6	ElmoRGBIntColor	color	Spline color
	2 6	2	ElmoUInt16	padding1	Reserved, set to 0.
	2 8	1	ElmoUInt8	padding2	Reserved, set to 0.
	2 9	1	ElmoBoolean	closed	TRUE if spline is closed.
	3 0	4	ElmoUInt32	numberOfPoints	number of point node structures to follow
	3 4	2 8	PtNode2D_Elmo_Stru node[0]	ct	First point node (required)
	6 2	2 8	PtNode2D_Elmo_Stru node[1]	ct	Second point node (required)
	9 0	2 8	PtNode2D_Elmo_Stru node[2]	ct	Third point node (optional)
	...	...	...	...	...
Subbl.	none				
Context	A pf2d subblock. There is one o12d subblock for each curve in a cross-section.				

Name	envv	Env_Var_Elmo_Block	KEnvironmentVarElmoBlockType		
Desc.	An environment variables block. Contains the scene's environment data.				
Content	Offset	Size	Type Name Description and cases		
	0	1 6	ElmoBlockHeader	header	
	1 6	1 2	ElmoRGBColor	ambientLight	
	2 8	1 2	ElmoRGBColor	backgroundColor	
	4 0	4	ElmoTag	backgroundImageTag	Tag of a surface block in the surface list.
	4 4	2	ElmoUInt16	padding1	
	4 6	2	ElmoBGAlignment (ElmoUInt16)	backgroundAlignment	One of the following: KElmoAlignWithCenter = 1 KElmoAlignWithUpperLeft = 2 KElmoScaleToFit = 3
	4 8	4	ElmoTag	environmentTag	Tag of a surface block in the surface list.
	5 2	2	ElmoUInt16	padding2	
	5 4	1	ElmoUInt8	padding3	
	5 5	1	ElmoBoolean	doFog	
5 6	4	ElmoFloat32	fogStart		
6 0	4	ElmoFloat32	fogEnd	fogEnd must be greater than fogStart.	
6 4					
Subbl.	none				
Context	An elmo subblock, one per scene file.				



Name	seqv	SequenceVars_Elmo_Elock	kSequenceVarsElmoBlockType		
Desc.	A sequence variables block. Contains data about the scene's animation settings, including output options.				
Content	Offset	Size	Type	Name	Description and cases
	0	16	ElmoBlockHeader	header	
	16	4	ElmoFloat32	worldTime	Current time, in seconds.
	20	2	ElmoUInt16	fileLimit	limit of Pics file size, in kilobytes.
	22	2	ElmoUInt16	animateFrom	
	24	2	ElmoUInt16	outputAs	
	26	1	ElmoBoolean	rayTraceFrames	Ray-trace frames while spooling?
	27	1	ElmoBoolean	cropFrames	Crop frames while spooling?
	28	4	ElmoFloat32	beginningOfAnimation	"punch-in" time, in seconds.
	32	4	ElmoFloat32	endOfAnimation	"punch-out" time, in seconds.
	36	2	ElmoUInt16	bitDepth	Bit depth of Quicktime movie.
	38	2	ElmoUInt16	framesPerSecond	Frames per second, e.g. 30
	40	4	ElmoFloat32	snapshotIncrement	Snap shot increment, in seconds. E.g. 0.5
	44	4	ElmoFloat32	spoolBeginTime	In seconds.
	48	4	ElmoFloat32	spoolEndTime	In seconds.
	52	4	CodecType	codecType	Mac-specific image compression data.
	56	4	CodecComponent	compressor	Mac-specific image compression data.
	60	4	CodecQ	spatialQuality	Mac-specific image compression data.
	64				
Subbl.	none				
Context	An elmo subblock, one per scene file.				

Name	Bookmark_Elmo_Block		kBookmarkElmoBlockType
Desc.	A camera bookmark for views.		
Content	Offset	Size Type Name	Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	4 ElmoTag	next
	2 0	3 2 char (ElmoPString)	name
	5 2	1 ElmoBoolean	padding
	5 3	1 ElmoUInt8	viewType
	Tag of next bookmark in list.  One of the following: TOP_view = 1 FRONT_view = 2 RIGHT_view = 3 BOTTOM_view = 4 BACK_view = 5 LEFT_view = 6 CAMERA_view = 7		
	5 4	1 ElmoBoolean	cantKill
	5 5	1 ElmoBoolean	defaultBM
	Movie_Camera_Elmo_Struct "theCam" elements: Reserved, set to 0.		
	5 6	2 ElmoUInt16	theCam.padding
	5 8	2 ElmoInt16	theCam.type
	6 0	1 2 ElmoPoint3D	theCam.position
	7 2	1 2 ElmoVector3D	theCam.rotation
	8 4	4 ElmoFloat32	theCam.lensSize
	8 8	4 ElmoFloat32	theCam.eyeDistance
	9 2	4 ElmoFloat32	theCam.orthoWindowSize
	9 6		
Subbl.	none		
Context	An elmo subblock, in a list of bookmarks started by the Scene block's bookMarkList tag.		

Name	view	View_Elmo_Block	KViewElmoBlockType
Desc.	A view structure.		
Content	Offset	Size Type	Name Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	4 ElmoTag	next
	2 0	2 ElmoUInt16	windowKind
	2 2	2 ElmoUInt16	viewType
	Tag of next view block in list.  One of the following: TOP_view = 1 FRONT_view = 2 RIGHT_view = 3 BOTTOM_view = 4 BACK_view = 5 LEFT_view = 6 CAMERA_view = 7		
	2 4	32 char (ElmoPString)	name
	5 6	1 ElmoUInt8	View_Options_Elmo_Struct mode
	"viewingOptions" elements: View rendering mode: K_view_fast_wireframe = 0 (wireframe, really) K_view_wireframe = 1 (bounding box, really) K_view_hidden_line = 2 (reserved) K_view_shade_fast = 3 K_view_shade_better = 4 K_view_shade_best = 5 K_view_ray_trace = 6 View bit depth: K_automatic_depth = 0 K_1_bit = 1 K_2_bit = 2 K_4_bit = 3 K_8_bit = 4 K_16_bit = 5 K_32_bit = 6		
	5 7	1 ElmoUInt8	offscreenDepth
	5 8	1 ElmoBoolean	doShadow
	5 9	1 ElmoBoolean	doReflection
	6 0	1 ElmoBoolean	doRefraction
	6 1	1 ElmoBoolean	doSuperSampling

62	1 ElmobBoolean	doDither	
63	1 ElmobBoolean	displayBackdrop	
64	1 ElmobBoolean	forceVisibleWireframe	
65	1 ElmobBoolean	showInvisibleObjects	
66	1 ElmolUInt8	tracerSuperSamplingLevel	
67	1 ElmolUInt8	shaderSuperSamplingLevel	
68	1 ElmolUInt8	alphaMode	
k_no_alpha = 0 k_straight_alpha = 1 k_multiplied_alpha = 2			
69	1 ElmobBoolean	doShaderShadows	
70	1 ElmobBoolean	doShaderTransparency	
71	1 ElmolUInt8	wireframe_quality_level	
72	2 ElmolInt16	maxReflectionDepth	
74	2 ElmolInt16	maxRefractionDepth	
76	4 ElmofFloat32	supersamplingThreshold	
80	4 ElmofFloat32	lightTraceThreshold	
84	4 ElmofFloat32	moveIncrement	
88	4 ElmofFloat32	swivelIncrement	
92	4 ElmofFloat32	zoomIncrement	
96	4 ElmofFloat32	zoomOrthographicIncrement	
100	1 ElmolUInt8	padding	Reserved, set to 0.
101	1 ElmobBoolean	visible	
102	1 ElmolUInt8	renderMenuItem	
103	1 ElmobBoolean	moveSwivel	
104	32 char (ElmoPString)	bookMarkString	
Movie_Camera_Elmo_Struct "movieCam" elements: 136 2 ElmolInt16 movieCam.padding Reserved, set to 0. 138 2 ElmolInt16 movieCam.type 140 12 Elmopoint3D movieCam.position 152 12 Elmovector3D movieCam.rotation 164 4 ElmofFloat32 movieCam.lensSize 168 4 ElmofFloat32 movieCam.eyeDistance 172 4 ElmofFloat32 movieCam.orthoWindowSize 174 2 ElmolInt16 magnification 176 2 ElmolInt16 WDEFItem 178 8 ElmolIntRect viewRect 196			

<i>Subbl.</i>	none
<i>Context</i>	An elmo subblock, in a list of views started by the Scene block's viewList tag.

<i>Name</i>	<b>outl</b>	Outline_Elmo_Block	kOutlineElmoBlockType
<i>Desc.</i>	An outline model. These are the 5-way polyline models (Lathe, Extrusion, FreeForm) created with Infini-D 2.6 or earlier.		
<i>Content</i>	Offset	Size	Type      Name      Description and cases
	0	1 6	ElmoBlockHeader      header
	1 6	4	ElmoTag      next
	2 0	4	ElmoTag      previous
	2 4	2	ElmoInt16      type
	One of the following: k_generic_outline = 0 k_SoR_outline = 1 k_prism_outline = 2 k_font_outline = 3		
	Elmo_Bevel_Info elements:		
	2 6	2	ElmoInt16      bevel.type      One of the following: k_bevel_none=0 k_bevel_straight=1 k_bevel_double=2 k_bevel_convex=3 k_bevel_concave=4 k_bevel_step=5 k_bevel_double_step=6 k_bevel_interpolated =-1
	2 8	1	ElmoUInt8      bevel.padding
	2 9	1	ElmoBoolean      bevel.hasBackBevel
	3 0	4	ElmoFloat32      bevel.size
	3 4	4	ElmoFloat32      bevel.depth
	3 8	4	ElmoTag      posXTag      Tag of PolyPoint block for X+ profile.
	4 2	4	ElmoTag      negXTag      Tag of PolyPoint block for X- profile.
	4 6	4	ElmoTag      posYTag      Tag of PolyPoint block for Y+ profile.
	5 0	4	ElmoTag      negYTag      Tag of PolyPoint block for Y- profile.
	5 4	4	ElmoTag      crossTag      Tag of PolyPoint block for cross-section profile.
	5 8		
<i>Subbl.</i>	5 PolyPoint subblocks		
<i>Context</i>	An elmo subblock, in a list of outlines started by the Scene block's outlinelist tag.		

Name	Polypoint_Elmo_Block		kPolypointElmoBlockType
Desc.	A polypoint block. Each polypoint can have multiple loops, each of which can have a variable number of points. Each loop is stored in a PolypointLoop subblock.		
Content	Offset	Size Type Name	Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	2 ElmoUInt16	padding
	1 8	2 ElmoUInt16	loopCount
	2 0	4 ElmoTag	loopTags[0]
	2 4	4 ElmoTag	loopTags[1]
	2 8	4 ElmoTag	loopTags[2]
	...	...	...
Subbl.	a number of Polypoint Loop subblocks equal to "loopCount"		
Context	One of 5 Polypoint subblocks of an Outline block.		

Name	Polypoint_Loop_Elmo_Block		kPolypointLoopElmoBlockType
Desc.	A polypoint loop block.		
Content	Offset	Size Type Name	Description and cases
	0	1 6 ElmoBlockHeader	header
	1 6	2 ElmoUInt16	padding
	1 8	2 ElmoUInt16	pointCount
	2 0	8 Elmo_Polypoint_Node nodes[0]	First Polypoint.
	2 8	8 Elmo_Polypoint_Node nodes[1]	Second Polypoint.
	3 6	8 Elmo_Polypoint_Node nodes[2]	Third Polypoint.
	...	...	...
Subbl.	none		
Context	A polypoint subblock.		

Name	sqin	Seq_Obj_List_Elmo_Elblock	kSequencerInfoElmoBlockType
Desc.	A sequencer information block. Lists the objects known by the sequencer. The subblock order is significant, and determines the order objects appear in the sequencer.		
Content	Offset	Size	Type Name Description and cases
	0	1 6	ElmoBlockHeader header
	1 6	4	ElmoUInt32 objectCount
	2 0		Number of sqob subblocks.
Subbl.	A number of 'sqob' subblocks equal to objectCount.		
Context	An elmo subblock.		

Name	sqob	Seq_Obj_Elmo_Block	kSequencerObjectElmoBlockType		
Desc.	A sequencer object block. Contains sequencer information pertaining to one object in a scene.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
	1 6	4	ElmoTag	worldInfoTag	Tag of object block.
	2 0	1	ElmoBoolean	collapsed	Are the names of this object's children hidden?
	2 1	1	ElmoBoolean	hidden	TRUE for text objects only.
	2 2	1	ElmoBoolean	showParams	Are the object's position, rotation, etc. visible?
	2 3	1	ElmoUInt8	cellCount	Number of cells used vertically.
	2 4	4	ElmoUInt32	indentLevel	Object tree indentation, 0 or more.
	2 8	1	ElmoBoolean	expandPosition	Reserved, set to 0.
	2 9	1	ElmoBoolean	expandRotation	Reserved, set to 0.
	3 0	1	ElmoBoolean	expandScale	Reserved, set to 0.
	3 1	1	ElmoBoolean	expandOffset	Reserved, set to 0.
	3 2				
Subbl.	none				
Context	A Sequencer Info subblock.				

Name	endl	(no block definition exists)	kElmoEOFKind		
Desc.	The end-of-file block. Always the last block of the file.				
Content	Offset	Size	Type	Name	Description and cases
	0	1 6	ElmoBlockHeader	header	
Subbl.	none				
Context	An elmo subblock.				

