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Edition 2

JT file format specification

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Contents

	Page
Introduction	xviii
1 Scope	2
2 Normative references	3
3 Terms, definitions and abbreviated terms	4
3.1 Terms and definitions	4
3.2 Abbreviated terms	7
4 Notational conventions	9
4.1 Diagrams and field descriptions	9
4.2 Data Types	13
4.3 Empty field	15
5 File Format	17
5.1 File Structure	17
5.1.1 File Header	17
5.1.2 TOC Segment	19
5.1.3 Data Segment	20
5.2 Data Segments	25
6 LSG Segment	27
6.1 Graph Elements	27
6.1.1 Node Elements	28
6.1.2 Attribute Elements	48
6.2 Property Atom Elements	83
6.2.1 Base Property Atom Element	83
6.2.2 String Property Atom Element	84
6.2.3 Integer Property Atom Element	84
6.2.4 Floating Point Property Atom Element	85
6.2.5 JT Object Reference Property Atom Element	86
6.2.6 Date Property Atom Element	86
6.2.7 Late Loaded Property Atom Element	88
6.2.8 Vector4f Property Atom Element	89
6.3 Property Table	90
6.3.1 Element Property Table	91
7 Shape LOD Segment	92
7.1 Shape LOD Element	92
7.1.1 Tri-Strip Set Shape LOD Element	92
7.1.2 Polyline Set Shape LOD Element	93
7.1.3 Point Set Shape LOD Element	93
7.1.4 Polygon Set LOD Element	94
7.1.5 Null Shape LOD Element	107
7.2 Primitive Set Shape Element	107
7.2.1 Lossless Compressed Primitive Set Data	109
7.2.2 Lossy Quantized Primitive Set Data	111
8 Precise Geometry Segment	115
8.1 JT B-Rep Element (deprecated)	115
8.2 XT B-Rep Element	115
8.3 JT ULP Segment	115
8.4 STEP B-Rep Segment	115
9 JT LWPA Segment	117
9.1 JT LWPA Element	117
9.1.1 Analytic Surface Geometry	118

10	Wireframe Segment	122
10.1	Wireframe Rep Element	122
10.1.1	Wireframe MCS Curves Geometric Data	124
10.1.2	Wireframe Rep CAD Tag Data	124
11	Meta Data Segment	125
11.1	Property Proxy Meta Data Element	125
11.1.1	Date Property Value	127
11.2	PMI Manager Meta Data Element	128
11.2.1	PMI Design Group Entities	130
11.2.2	PMI Associations	133
11.2.3	PMI User Attributes	135
11.2.4	PMI String Table	136
11.2.5	PMI Model Views	136
11.2.6	Generic PMI Entities	141
11.2.7	PMI CAD Tag Data	152
11.2.8	PMI Polygon Data	153
11.2.9	PMI Properties	156
11.2.10	PMI Model View Sort Orders	157
12	Data Compression and Encoding	157
12.1	Common Compression Data Collection Formats	158
12.1.1	Int32 Compressed Data Packet	158
12.1.2	Int64 Compressed Data Packet	164
12.1.3	Compressed Vertex Coordinate Array	167
12.1.4	Compressed Vertex Normal Array	168
12.1.5	Compressed Vertex Texture Coordinate Array	170
12.1.6	Compressed Vertex Colour Array	171
12.1.7	Compressed Vertex Flag Array	173
12.1.8	Compressed Auxiliary Fields Array	173
12.1.9	Point Quantizer Data	177
12.1.10	Texture Quantizer Data	178
12.1.11	Colour Quantizer Data	178
12.1.12	Uniform Quantizer Data	180
12.1.13	Compressed Entity List for Non-Trivial Knot Vector	180
12.1.14	Compressed Control Point Weights Data	184
12.1.15	Compressed Curve Data	184
12.1.16	Compressed CAD Tag Data	189
12.2	Encoding Algorithms	190
12.2.1	Uniform Data Quantization	190
12.2.2	Bitlength CODEC	191
12.2.3	Arithmetic CODEC	192
12.2.4	Deering Normal CODEC	197
12.3	LZMA compression	199
13	Conformance requirements	200
13.1	Conformance Classes	200
13.1.1	Visualization (CC0x)	200
13.1.2	Engineering, Production & Long-Term Data Retention (CC1x)	200
14	Common Data Conventions and Constructs	202
14.1	Late-Loading Data	202
14.2	TOC Segment Location	202
14.3	Bit Fields	202
14.4	Empty Field	202
14.5	Local version numbers	202
14.5.1	Version numbers	203
14.6	Hash Value	203
14.7	Scene graph construction	203
14.8	Metadata Conventions	204
14.8.1	Property Key Naming Conventions	204

14.8.2	PMI Properties	205
14.8.3	CAD Properties	205
14.8.4	Tessellation Properties	207
14.8.5	Miscellaneous Properties	208
14.8.6	The SUBNODE property and Reference Sets	209
14.9	LSG Attribute Accumulation Semantics	213
14.10	LSG Part Structure	214
14.11	Range LOD Node Alternative Rep Selection	214
14.12	B-Rep Face Group Associations	215
14.13	Watermark Image	215
14.14	State Flags	216
	Annex A Object Type Identifiers	217
	Annex B Coding Algorithms – An Implementation	220
	Annex C Hashing – An Implementation	244
	Annex D Polygon Mesh Topology Coder	247
	Annex E (deprecated) JT B-Rep Segment	266
E.1.1	Topological Entity Counts	268
E.1.2	Geometric Entity Counts	269
E.1.3	Topology Data	270
E.1.4	Geometric Data	279
E.1.5	Topological Entity Tag Counters	288
E.1.6	B-Rep CAD Tag Data	289
	Annex F XT B- Rep data segment	290
F.1	XT B-Rep Element	290
F.1.1	XT B-Rep Data	291
F.1.2	Integer Attribute Data	292
F.1.3	MultiXT B-Rep Segment	292
F.2	XT B-Rep Data Segment Description	294
F.2.1	Logical Layout	294
F.2.2	Physical Layout	298
F.2.3	Model Structure	299
F.2.4	Schema Definition	305
F.2.5	Node Types	364
F.2.6	Node Classes	366
F.2.7	System Attribute Definitions	366
F.3	XT Moniker Attributes	372
F.3.1	Moniker IDs	373
	Annex G JT ULP Segment	377
G.1	JT ULP Element	377
G.1.1	Topology Data	379
G.1.2	Geometric Data	396
G.1.3	Material Attribute Element Properties	420
G.1.4	Information Recovery	421
	Annex H (deprecated) STEP B-Rep Segment	426
	Annex I (deprecated) PMI Data Segment	427
	Annex J Change History	428
J.1	High Level Summary of changes from JT IAP V1	428
J.2	Detailed Format changes for JT IAP V2	428
J.2.1	Reading 9.5 JT - format changes	428
J.2.2	File Format	429
J.2.4	LSG Segment	435
1.1.2	Attribute Elements	457
1.2	Property Atom Elements	499
1.2.1	Base Property Atom Element	499

1.2.2 String Property Atom Element	500
1.2.3 Integer Property Atom Element	500
1.2.4 Floating Point Property Atom Element	501
1.2.5 JT Object Reference Property Atom Element.....	502
1.2.6 Date Property Atom Element.....	502
1.2.7 Late Loaded Property Atom Element	504
1.2.8 Vector4f Property Atom Element	505
1.3 Property Table	506
1.3.1 Element Property Table	507
J.2.5 Shape LOD Segment	508
J.2.6 Shape LOD Element – see core spec	508
J.2.7 Primitive Set Shape Element	521
J.2.8 Wireframe Segment.....	524
J.3 Meta Data Segment	527
J.3.1 Property Proxy Meta Data Element.....	527
J.3.2 PMI Manager Meta Data Element	530
J.4 Data Compression and Encoding	564
J.4.1 Common Compression Data Collection Formats	564
J.4.2 Encoding Algorithms – see core spec	589
J.4.3 zlib compression	589
Annex K Mapping table JT ISO to STEP	590
K.1 Wireframe Geometry	590
K.2 Surfaces without topology	590
K.3 Shapes represented by wireframe models with topology.....	591
K.4 Manifold Surfaces with Topology	591
K.5 Advanced boundary representation solids	592
K.6 Color	593
K.7 Name	593
K.8 Wireframe style	594
K.9 Visibility	594
Annex L Procedural Geometry – Evaluation and Approximation	595
L.1 Introduction & Scope	595
L.2 Notation	595
L.3 Pseudocode	595
L.4 Intersection Curve	595
L.4.1 Intersection Curve Basics	595
L.4.2 Populating Chart Points.....	597
L.4.3 Computing a Point & Tangent on an Intersection Curve	603
L.4.4 Approximating an Intersection Curve	605
L.5 Rolling-Ball Blend Surface	614
L.5.1 Computing a Point on a Blend Surface..	614
L.5.2 Approximating a Blend Surface	619
L.6 Blend Surface Questions and Answers	624
L.7 Annex Bibliography.....	627
Annex M PMI Properties	628
Bibliography.....	740
Figures	
Figure 1 — rectangle box diagram	9
Figure 2 — folder diagram	9
Figure 3 — rectangle box with lines at left and right sides diagram	10
Figure 4 — rectangle box with clipped right side corners	10
Figure 5 — compressed data packet diagram.....	10
Figure 6 — data type : field name diagram	11
Figure 7 — data filed dependency example.....	12
Figure 8 — loop construct example	12

Figure 9 — loop construct with iterations example	12
Figure 10 — JT File Structure.....	17
Figure 11 — File Header data collection	18
Figure 12 — TOC Segment data collection	19
Figure 13 — TOC Entry data collection	20
Figure 14 — Data Segment data collection.....	21
Figure 15 — Segment Header data collection	21
Figure 16 — Data collection	23
Figure 17 — Logical Element Header data collection.....	23
Figure 18 — Element Header data collection	23
Figure 19 — Logical Element Header Compressed data collection.....	25
Figure 20 — LSG Segment data collection	27
Figure 21 — Base Node Element data collection	28
Figure 22 — Base Node Data collection.....	28
Figure 23 — Partition Node Element data collection	30
Figure 24 — Vertex Count Range data collection	31
Figure 25 — Group Node Element data collection.....	32
Figure 26 — Group Node Data collection	33
Figure 27 — Instance Node Element data collection	34
Figure 28 — Part Node Element data collection.....	34
Figure 29 — Meta Data Node Element data collection	35
Figure 30 — Meta Data Node Data collection	35
Figure 31 — LOD Node Element data collection	36
Figure 32 — LOD Node Data collection.....	36
Figure 33 — Range LOD Node Element data collection	37
Figure 34 — Switch Node Element data collection	38
Figure 35 — Base Shape Node Element data collection	39
Figure 36 — Base Shape Data collection.....	39
Figure 37 —Vertex Count Range data collection	40
Figure 38 — Vertex Shape Node Element data collection.....	41
Figure 39 — Vertex Shape Data collection	42
Figure 40 — Polyline Set Shape Node Element data collection	43
Figure 41 — Point Set Shape Node Element data collection	44
Figure 42 — Polygon Set Shape Node Element data collection	45
Figure 43 — NULL Shape Node Element data collection	46
Figure 44 — Primitive Set Shape Node Element data collection.....	47
Figure 45 — Primitive Set Quantization Parameters data collection	47
Figure 46 — Base Attribute Data collection.....	49
Figure 47 — Material Attribute Element data collection	51
Figure 48 — Texture Image Attribute Element data collection	54
Figure 49 — Texture Vers-1 Data collection	55
Figure 50 — Texture Environment data collection	58
Figure 51 — Texture Coord Generation Parameters data collection	61
Figure 52 — Inline Texture Image Data collection	62
Figure 53 — Image Format Description data collection	63
Figure 54 — Draw Style Attribute Element data collection	66
Figure 55 — Light Set Attribute Element data collection	67
Figure 56 — Infinite Light Attribute Element data collection	68
Figure 57 — Base Light Data collection	69
Figure 58 — Point Light Attribute Element data collection.....	71
Figure 59 — Spread Angle value with respect to the light cone	72
Figure 60 — Attenuation Coefficients data collection	73
Figure 61 — Linestyle Attribute Element data collection	74
Figure 62 — Pointstyle Attribute Element data collection	75
Figure 63 — Geometric Transform Attribute Element data collection	76
Figure 64 — Texture Coordinate Generator Attribute Element data collection	78
Figure 65 — Mapping Plane Element data collection	79
Figure 66 — Mapping Cylinder Element data collection	80
Figure 67 — Mapping Sphere Element data collection	81
Figure 68 — Mapping TriPlanar Element data collection	82

Figure 69 — Base Property Atom Element data collection	83
Figure 70 — Base Property Atom Data collection.....	83
Figure 71 — String Property Atom Element data collection	84
Figure 72 — Integer Property Atom Element data collection	85
Figure 73 — Floating Point Property Atom Element data collection	85
Figure 74 — JT Object Reference Property Atom Element data collection	86
Figure 75 — Date Property Atom Element data collection.....	87
Figure 76 — Late Loaded Property Atom Element data collection	88
Figure 77 — Vector4f Property Atom Element data collection	89
Figure 78 — Property Table data collection	90
Figure 79 — Element Property Table data collection	91
Figure 80 —Shape LOD Segment data collection	92
Figure 81 — Tri-Strip Set Shape LOD Element data collection	92
Figure 82 — Polyline Set Shape LOD Element data collection.....	93
Figure 83 — Point Set Shape LOD Element data collection	94
Figure 84 — Polygon Set LOD Element data collection	94
Figure 85 — Vertex Shape LOD Data collection.....	95
Figure 86 — Base Shape LOD Data collection	97
Figure 87 — TopoMesh Compressed LOD Data collection.....	97
Figure 88 — TopoMesh LOD Data collection.....	98
Figure 89 — TopoMesh Compressed Rep Data data collection	99
Figure 90 — Quantization Parameters data collection	101
Figure 91 — TopoMesh Topologically Compressed LOD Data collection	102
Figure 92 — Topologically Compressed Rep Data Collection.....	103
Figure 93 — Topologically Compressed Vertex Records data collection	106
Figure 94 — Null Shape LOD Element data collection	107
Figure 95 —Primitive Set Shape Element data collection	108
Figure 96 — Lossless Compressed Primitive Set Data collection	109
Figure 97 — Lossy Quantized Primitive Set Data collection	111
Figure 98 — Compressed params1 data collection	113
Figure 99 — JT LWPA Segment data collection	117
Figure 100 — JT LWPA Element data collection	118
Figure 101 — Analytic Surface Geometry data collection	119
Figure 102 — Analytic Surface Creation	121
Figure 103 —Wireframe Segment data collection.....	122
Figure 104 — Wireframe Rep Element data collection	123
Figure 105 — Wireframe MCS Curves Geometric Data collection	124
Figure 106 — Wireframe Rep CAD Tag Data collection	125
Figure 107 — Meta Data Segment data collection	125
Figure 108 —Property Proxy Meta Data Element data collection.....	126
Figure 109 — Date Property Value data collection	127
Figure 110 — PMI Manager Meta Data Element data collection	129
Figure 111 — PMI Design Group Entities data collection	131
Figure 112 — Design Group Attribute data collection.....	132
Figure 113 — PMI Associations data collection	133
Figure 114 — PMI User Attributes data collection	135
Figure 115 — PMI String Table data collection	136
Figure 116 — PMI Model Views data collection	137
Figure 117 — PMI Property data collection	139
Figure 118 — Key PMI Property Atom data collection	141
Figure 119 —Generic PMI Entity data collection.....	142
Figure 120 — PMI 2D Data collection	144
Figure 121 — PMI Base Data collection	145
Figure 122 — 2D-Reference Frame data collection	146
Figure 123 — 2D Text Data collection	147
Figure 124 — Text Box data collection	148
Figure 125 — Constructing Text Polylines from data arrays.....	149
Figure 126 — Text Polyline Data collection	149
Figure 127 — Constructing Non-Text Polylines from packed 2D data arrays	150
Figure 128 — Non-Text Polyline Data collection.....	151

Figure 129 — PMI CAD Tag Data collection.....	152
Figure 130 — PMI Polygon Data	154
Figure 131 — PMI Model View Sort Orders data collection	157
Figure 132 — Int32 Compressed Data Packet data collection	160
Figure 133 — Int32 Probability Context	162
Figure 134 — Int32 Probability Context Table Entry data collection	163
Figure 135 — Int64 Compressed Data Packet data collection	165
Figure 136 — Int64 Probability Context data collection	166
Figure 137 — Int64 Probability Context Table Entry data collection	167
Figure 138 — Compressed Vertex Coordinate Array data collection	167
Figure 139 — Compressed Vertex Normal Array data collection	169
Figure 140 — Compressed Vertex Texture Coordinate Array data collection	171
Figure 141 — Compressed Vertex Colour Array data collection.....	172
Figure 142 — Compressed Vertex Flag Array data collection	173
Figure 143 — Compressed Auxiliary Fields Array data collection	175
Figure 144 — Point Quantizer Data collection.....	177
Figure 145 — Texture Quantizer Data collection.....	178
Figure 146 — Colour Quantizer Data collection	179
Figure 147 — Uniform Quantizer Data collection	180
Figure 148 — Compressed Entity List for Non-Trivial Knot Vector data collection	182
Figure 149 — Compressed Control Point Weights Data collection	184
Figure 150 — Compressed Curve Data collection	185
Figure 151 — Non-Trivial Knot Vector NURBS Curve Indices data collection.....	188
Figure 152 — NURBS Curve Control Point Weights data collection	188
Figure 153 — NURBS Curve Control Points data collection.....	188
Figure 154 — Compressed CAD Tag Data collection	189
Figure 155 — Sextant Coding on the Sphere	198
Figure 156 — Assembly node with SUBNODE	210
Figure 157 — Assembly node without SUBNODE	210
Figure 158 — Displaying Nodes that have SUBNODE properties	210
Figure 159 — CAD Component with Reference sets	211
Figure 160 — JT Format Convention for Modeling each Part in LSG	214
Figure 161 —data collection.....	266
Figure 162 — JT B-Rep Element data collection.....	267
Figure 163 — Topological Entity Counts data collection	268
Figure 164 — Geometric Entity Counts data collection	269
Figure 165 — Topology Data collection	270
Figure 166 — Regions Topology Data collection	271
Figure 167 — Shells Topology Data collection	272
Figure 168 — Trim Loop example in parameter Space - One Face with 2 Holes	273
Figure 169 — Faces Topology Data collection	274
Figure 170 — Loops Topology Data collection	275
Figure 171 — CoEdges Topology Data collection	276
Figure 172 — Edges Topology Data collection	277
Figure 173 — Vertices Topology Data collection	278
Figure 174 — Geometric Data collection	279
Figure 175 — Surfaces Geometric Data collection	280
Figure 176 — Non-Trivial Knot Vector NURBS Surface Indices data collection.....	281
Figure 177 — NURBS Surface Degree data collection	282
Figure 178 — NURBS Surface Control Point Counts data collection	282
Figure 179 — NURBS Surface Control Point Weights data collection	283
Figure 180 — NURBS Surface Control Points data collection	283
Figure 181 — NURBS Surface Knot Vectors data collection	284
Figure 182 — PCS Curves Geometric Data collection.....	284
Figure 183 — Trivial PCS Curves data collection	285
Figure 184 — Equality of corresponding curve end coordinates of opposite sides of the box	286
Figure 185 — MCS Curves Geometric Data collection	288
Figure 186 — Point Geometric Data collection	288
Figure 187 — Topological Entity Tag Counters data collection	289
Figure 188 — B-Rep CAD Tag Data collection	289

Figure 189 — XT B-Rep Element data collection	291
Figure 190 — Integer Attribute Data collection	292
Figure 191 — MultiXT B-Rep Element data collection	293
Figure 192 — Split a face	375
Figure 193 — Merge faces	375
Figure 194 — JT ULP Segment data collection	377
Figure 195 — JT ULP Element data collection	378
Figure 196 — Topology Data collection	379
Figure 197 — Topological Entity Counts data collection	380
Figure 198 — Combined Predictor Type data collection	381
Figure 199 — Regions Topology Data collection	382
Figure 200 — Shells Topology Data collection	383
Figure 201 — Faces Topology Data collection	384
Figure 202 — Loops Topology Data collection	387
Figure 203 — CoEdges Topology Data collection	389
Figure 204 — Sample Model with Randomly Assigned Edge Indices	390
Figure 205 — Sample Model with Sequentially Assigned Edge Indices	390
Figure 206 — Surface Domain Classification	392
Figure 207 — Edges Topology Data collection	394
Figure 208 — Geometric Data collection	396
Figure 209 — Geometric Entity Counts	397
Figure 210 — Degree Table data collection	398
Figure 211 — Recover Nurbs Degree	399
Figure 212 — Number of Control Points Table data collection	400
Figure 213 — Recover Number of Control Points	401
Figure 214 — Dimension Table data collection	402
Figure 215 — Recover Dimension	403
Figure 216 — 3D Unit Vector Table data collection	404
Figure 217 — Recover Dimension	405
Figure 218 — 2D Unit Vector Table data collection	406
Figure 219 — Recover 2D Unit Vector	406
Figure 220 — 3D MCS Point Table data collection	407
Figure 221 — Recover 3D MCS Points	409
Figure 222 — Knot Vector Table data collection	410
Figure 223 — Recover Knot Vectors	411
Figure 224 — 1D MCS Table data collection	413
Figure 225 — Recover 1D MCS Table	415
Figure 226 — PCS Value Table data collection	416
Figure 227 — Recover PCS Value Table	417
Figure 228 — Radian Table data collection	418
Figure 229 — Recover Radian Table	418
Figure 230 — Weight Table data collection	419
Figure 231 — Recover Weight Table	420
Figure 232 — Material Attribute Element Properties	421
Figure 233 — Information Recovery	422
Figure 234 — PCS Curve Recovery from Surface Domain	423
Figure 235 — MCS Curve Recovery	424
Figure 236 — MCS Curve Recovery from Surface Geometry	425
Figure 237 — Data Segment data collection	429
Figure 238 — Segment Header data collection	429
Figure 239 — Data collection	431
Figure 240 — Logical Element Header data collection	431
Figure 241 — Element Header data collection	432
Figure 242 — Logical Element Header Compressed data collection	433
Figure 243 — Base Node Element data collection	435
Figure 244 — Base Node Data collection	435
Figure 245 — Partition Node Element data collection	437
Figure 246 — Vertex Count Range data collection	438
Figure 247 — Group Node Element data collection	439
Figure 248 — Group Node Data collection	440

Figure 249 — Instance Node Element data collection	441
Figure 250 — Part Node Element data collection.....	441
Figure 251 — Meta Data Node Element data collection	442
Figure 252 — Meta Data Node Data collection	442
Figure 253 — LOD Node Element data collection	443
Figure 254 — LOD Node Data collection.....	443
Figure 255 — Range LOD Node Element data collection	444
Figure 256 — Switch Node Element data collection	445
Figure 257 — Base Shape Node Element data collection	446
Figure 258 — Base Shape Data collection	447
Figure 259 — Vertex Count Range data collection	448
Figure 260 — Vertex Shape Node Element data collection.....	449
Figure 261 — Vertex Shape Data collection	450
Figure 262 — Quantization Parameters data collection	450
Figure 263 — Tri-Strip Set Shape Node Element data collection	451
Figure 264 — Polyline Set Shape Node Element data collection	452
Figure 265 — Point Set Shape Node Element data collection	453
Figure 266 — Polygon Set Shape Node Element data collection	454
Figure 267 — NULL Shape Node Element data collection	454
Figure 268 — Primitive Set Shape Node Element data collection	455
Figure 269 — Primitive Set Quantization Parameters data collection	456
Figure 270 — Base Attribute Data collection.....	457
Figure 271 — Material Attribute Element data collection	459
Figure 272 — Texture Image Attribute Element data collection	462
Figure 273 — Texture Vers-1 Data collection	463
Figure 274 — Texture Environment data collection	466
Figure 275 — Texture Coord Generation Parameters data collection	468
Figure 276 — Inline Texture Image Data collection	469
Figure 277 — Image Format Description data collection	470
Figure 278 — Texture Vers-2 Data collection	473
Figure 279 — Texture Vers-1 Data collection	476
Figure 280 — Draw Style Attribute Element data collection	479
Figure 281 — Light Set Attribute Element data collection	480
Figure 282 — Infinite Light Attribute Element data collection	481
Figure 283 — Base Light Data collection	482
Figure 284 — Shadow Parameters data collection	483
Figure 285 — Point Light Attribute ElementPoint Light Attribute Element data collection	485
Figure 286 — Spread Angle value with respect to the light cone	486
Figure 287 — Attenuation Coefficients data collection.....	486
Figure 288 — Linestyle Attribute Element data collection	487
Figure 289 — Pointstyle Attribute Element data collection	489
Figure 290 — Geometric Transform Attribute Element data collection	490
Figure 291 — Shader Effects Attribute Element data collection	492
Figure 292 — Texture Coordinate Generator Attribute Element data collection	494
Figure 293 — Mapping Plane Element data collection	495
Figure 294 — Mapping Cylinder Element data collection	496
Figure 295 — Mapping Sphere Element data collection	497
Figure 296 — Mapping TriPlanar Element data collection	498
Figure 297 — Base Property Atom Element data collection	499
Figure 298 — Base Property Atom Data collection	499
Figure 299 — String Property Atom Element data collection	500
Figure 300 — Integer Property Atom Element data collection	501
Figure 301 — Floating Point Property Atom Element data collection	501
Figure 302 — JT Object Reference Property Atom Element data collection	502
Figure 303 — Date Property Atom Element data collection.....	503
Figure 304 — Late Loaded Property Atom Element data collection	504
Figure 305 — Vector4f Property Atom Element data collection	505
Figure 306 — Property Table data collection	506
Figure 307 — Element Property Table data collection	507
Figure 308 —Tri-Strip Set Shape LOD Element data collection	508

Figure 309 — Polyline Set Shape LOD Element data collection.....	509
Figure 310 — Point Set Shape LOD Element data collection	509
Figure 311 — Vertex Shape LOD Data collection.....	511
Figure 312 — Base Shape LOD Data collection	513
Figure 313 — TopoMesh Compressed LOD Datacollection.....	513
Figure 314 — TopoMesh LOD Data collection.....	513
Figure 315 — TopoMesh Compressed Rep Data V1 data collection.....	514
Figure 316 — TopoMesh Compressed Rep Data V2 data collection.....	517
Figure 317 — TopoMesh Topologically Compressed LOD Data collection	520
Figure 318 — Null Shape LOD Element data collection	521
Figure 319 — Primitive Set Shape Element data collection	522
Figure 320 — Wireframe Rep Element data collection	525
Figure 321 — Meta Data Segment data collection	527
Figure 322 — Meta Data Segment data collection	528
Figure 323 — Date Property Value data collection	530
Figure 324 — PMI Manager Meta Data Element data collection	531
Figure 325 — PMI Entities data collection	533
Figure 326 — PMI Dimension Entities data collection.....	533
Figure 327 — PMI 2D Data collection	534
Figure 328 — PMI Base Data collection	535
Figure 329 — 2D-Reference Frame data collection	536
Figure 330 — 2D Text Data collection	537
Figure 331 — Text Box data collection	538
Figure 332 — Constructing Text Polylines from data arrays.....	539
Figure 333 — Text Polyline Data collection	540
Figure 334 — Constructing Non-Text Polylines from packed 2D data arrays	541
Figure 335 — Non-Text Polyline Data collection	542
Figure 336 — PMI Note Entities data collection	543
Figure 337 — PMI Datum Feature Symbol Entities data collection	544
Figure 338 — PMI Datum Target Entities data collection	544
Figure 339 — PMI Feature Control Frame Entities data collection	545
Figure 340 — PMI Line Weld Entities data collection	545
Figure 341 — PMI Spot Weld Entities data collection	546
Figure 342 — PMI 3D Data collection	547
Figure 343 — PMI Surface Finish Entities data collection	548
Figure 344 — PMI Measurement Point Entities data collection	549
Figure 345 — PMI Locator Entities data collection	550
Figure 346 — PMI Reference Geometry Entities data collection	550
Figure 347 — PMI Design Group Entities data collection	551
Figure 348 — PMI Associations data collection.....	552
Figure 349 — PMI Model Views data collection	555
Figure 350 — Generic PMI Entities data collection	557
Figure 351 — PMI Property data collection	559
Figure 352 — Key PMI Property Atom data collection	561
Figure 353 — PMI CAD Tag Data collection.....	562
Figure 354 — Int32 Compressed Data Packet data collection	565
Figure 355 — Int32 Probability Contexts data collection	566
Figure 356 — Int32 Probability Context Table Entry data collection	568
Figure 357 — Int32 Compressed Data Packet Mk. 2 data collection	570
Figure 358 — Int32 Probability Context	572
Figure 359 — Int32 Probability Context Table Entry data collection	573
Figure 360 — Float64 Compressed Data Packet data collection	575
Figure 361 — Float64 Probability Contexts data collection	577
Figure 362 — Float64 Probability Context Table Entry data collection	577
Figure 363 — Compressed Vertex Coordinate Array data collection	578
Figure 364 — Compressed Vertex Normal Array data collection	580
Figure 365 — Compressed Vertex Texture Coordinate Array data collection	582
Figure 366 — Compressed Vertex Colour Array data collection	584
Figure 367 — Compressed Vertex Flag Array data collection	586
Figure 368 — Compressed CAD Tag Data collection	587

Figure 369 — Compressed CAD Tag Type-2 Data collection588

Tables

Table 1 — Symbols.....	9
Table 2 — Predictor Type	11
Table 3 — Basic Data Types.....	13
Table 4 — Composite Data Types.....	13
Table 5 — Segment attributes	20
Table 6 — Segment Types	21
Table 7 — Object Base Types	24
Table 8 — Compression flag values	25
Table 9 — Compression algorithm values	25
Table 10 — Node Flag values	29
Table 11 — Partition flag bits	31
Table 12 — Compression level values	41
Table 13 — Texture Coord Gen Type values	47
Table 14 — Version Number values	47
Table 15 — State Flag values	49
Table 16 — Material Attribute data field inhibit values	50
Table 17 — Material Attribute Version number value	51
Table 18 — Material Attribute Data Flag values	52
Table 19 — Texture Image Attribute data field inhibit values	53
Table 20 — Texture Image Version Number values	54
Table 21 — Texture Vers-1 Texture Type values.....	56
Table 22 — Texture Vers-1 Inline Image Storage Flag values	57
Table 23 — Texture Vers-1 Texture Environment Border Mode values.....	58
Table 24 — Texture Vers-1 Texture Environment Mipmap Magnification Filter values	59
Table 25 — Texture Vers-1 Texture Environment Mipmap Minification Filter values	59
Table 26 — Texture Vers-1 Texture Environment S-Dimen Wrap Mode values.....	59
Table 27 — Texture Vers-1 Texture Environment Blend Type values	60
Table 28 — Texture Vers-1 Texture Environment Internal Compression Level values	60
Table 29 — Texture Vers-1 Texture Coord Generation Gen Mode values.....	61
Table 30 — Texture Vers-1 Image Format Description Pixel Format values.....	63
Table 31 — Texture Vers-1 Image Format Description Pixel Data values	64
Table 32 — Texture Vers-1 Image Format Description Dimensionality values	64
Table 33 — Texture Vers-1 Image Format Description Shared Image Flag values	65
Table 34 — Draw Style Attribute Field Inhibit flag values	65
Table 35 — Draw Style Attribute Data Flag values.....	66
Table 36 — Light Set Attribute Version Number values	68
Table 37 — Base Light Data Cood System values	70
Table 38 — Base Light Data Shadow Caster Flag values	70
Table 39 — Point Light Attribute Version Number values	72
Table 40 — Point Light Attribute Spread Angle values	72
Table 41 — Linestyle Attribute Data Flag values	74
Table 42 — Pointstyle Attribute Data Flag values.....	75
Table 43 — Geometric Transform Attribute Stored Value Mask individual bit-flag values	77
Table 44 — Mapping Plane Matrix Coordinate System values	79
Table 45 — Mapping Cylinder Matrix Coordinate System values	80
Table 46 — Mapping Sphere Matrix Coordinate System values.....	81
Table 47 — Mapping TriPlanar Matrix Coordinate System values	82
Table 48 — Vertex Shape LOD Bindings values	95
Table 49 — Primitive Set Shape Version Number values	109
Table 50 — Primitive Set Shape Texture Coord Gen Type values	109
Table 51 — Lossless Compressed Primitive Set Data Field values.....	110
Table 52 — Primitive Set “params#” Data Fields Interpretation.....	110
Table 53 — Property Proxy Meta Data Property Value Type values	127
Table 54 — PMI Design Group Attribute Type values.....	132
Table 55 — PMI Associations Source Data values	134
Table 56 — PMI Associations Reason Code values	134
Table 57 — PMI Model Views Active Flag values	138

Table 58 — Common Property Keys and Their Value Encoding formats.....	139
Table 59 — PMI Property Atom Hidden Flag values	141
Table 60 — Generic PMI Entity Type values	143
Table 61 — Generic PMI User Flag values	144
Table 62 — PMI 2D Base Data Font values	147
Table 63 — PMI 2D Non-Text Polyline Type values	151
Table 64 — Int32 Probability Contexts CODEC Type values	161
Table 65 — TopoMesh Compressed Rep Data V2 Field Type values	175
Table 66 — Colour Quantizer values	178
Table 67 — Colour Quantizer HSV Flag values	179
Table 68 — Knot Type Exist Flag values.....	182
Table 69 — Compressed Curve Base Type values	185
Table 70 — NURB UV Curve entity dimensionality values.....	186
Table 71 — NURB XYZ Curve entity dimensionality values.....	186
Table 72 — Compressed CAD Tag Type values	190
Table 73 — Example assigned probability values	193
Table 74 — Example “probability line” values	194
Table 75 — Example input integer sequence values.....	194
Table 76 — Example integer number sequence values	195
Table 77 — CAD Properties	206
Table 78 — Tessellation Property values.....	207
Table 79 — Miscellaneous Property values.....	208
Table 80 — SUBNODE Property	210
Table 81 — Reference Set Properties.....	212
Table 82 — Properties related to the use of Reference Sets	212
Table 83 — REFSET_CURRENT property	213
Table 84 Texture watermark properties	216
Table 85 — JT B-Rep Shell Topology Anti-Hole Flag values	272
Table 86 — JT B-Rep Face Reverse Normal Flag values	274
Table 87 — JT B-Rep Loops Topology Data Anti-Hole Flag values	275
Table 88 — JT B-Rep MCS Curve Reversed Flag values	277
Table 89 — JT B-Rep Surface Base Type value	280
Table 90 — JT B-Rep NURBS Surface Control Point Dimensionality values	281
Table 91 — Trivial Domain Loops Exist Flag values	286
Table 92 — Trivial Box Loops Exist Flag values	286
Table 93 — Trivial Domain UV Curves Exist Flag values	286
Table 94 — Trivial UV Curve Para Domain Side Codes values.....	287
Table 95 — Moniker attribute use example.....	374
Table 96 — MONIKER/GUID_TABLE_ATTRIB and MONIKER/MONIKER_DATA_ATTRIB	376
Table 97 — MONIKER/BODY_ID_ATTRIB	376
Table 98 — JT ULP Shell Anti-Hole Flag values	383
Table 99 — JT ULP Flag Bit Array Look Index values	385
Table 100 — JT ULP Supported Surface Type values	386
Table 101 — JT ULP Supported Knot Type Values	386
Table 102 — JT ULP Face Reverse Normal Flag values	386
Table 103 — JT ULP Loops Topology Flag Bit Array values	387
Table 104 — JT ULP Loops Topology Reverse Normal Flag values	388
Table 105 — JT ULP Recover Edge Indices Flag Bit Array values	391
Table 106 — JT ULP Recover Edge Indices PCS curve type values	392
Table 107 — JT ULP PCS Curve Type values	392
Table 108 — JT ULP PCS Curve Type XYZ Reversed Flag values	392
Table 109 — JT ULP PCS Curve Type isUVInc Flag values	393
Table 110 — JT ULP Edges Topology Recover MCS Curve Indices Flag Bit Array values	395
Table 111 — JT ULP Edges Topology Recover MCS Curve Type values	395
Table 112 — Parameter Domain	414
Table 113 — Segment Types	430
Table 114 — Object Base Types	432
Table 115 — Compression flag values	433
Table 116 — Compression algorithm values	433
Table 117 — Node Flag values	436

Table 118 — Partition flag bits	437
Table 119 — Compression level values	448
Table 120 — Texture Coord Binding values	455
Table 121 — Version Number values	456
Table 122 — Texture Coord Gen Type values	456
Table 123 — State Flag values	457
Table 124 — Material Attribute data field inhibit values	458
Table 125 — Material Attribute Version number value	459
Table 126 — Material Attribute Data Flag values	460
Table 127 — Texture Image Attribute data field inhibit values	461
Table 128 — Texture Image Version Number values	462
Table 129 — Texture Vers-1 type values	464
Table 130 — Texture Vers-1 Inline Image Storage Flag values	464
Table 131 — Texture Vers-1 Texture Environment Border Mode values	466
Table 132 — Texture Vers-1 Texture Environment Mipmap Magnification Filter values	466
Table 133 — Texture Vers-1 Texture Environment Mipmap Minification Filter values	466
Table 134 — Texture Vers-1 Texture Environment S-Dimen Wrap Mode values	467
Table 135 — Texture Vers-1 Texture Environment Blend Type values	467
Table 136 — Texture Vers-1 Texture Environment Internal Compression Level values	468
Table 137 — Texture Vers-1 Texture Coord Generation Gen Mode values	468
Table 138 — Texture Vers-1 Image Format Description Pixel Format values	470
Table 139 — Texture Vers-1 Image Format Description Pixel Data values	471
Table 140 — Texture Vers-1 Image Format Description Dimensionality values	471
Table 141 — Texture Vers-1 Image Format Description Shared Image Flag values	472
Table 142 — Texture Vers-2 Texture Type values	474
Table 143 — Texture Vers-2 Inline Image Storage Flag values	475
Table 144 — Texture Vers-3 Texture Type values	477
Table 145 — Texture Vers-3 Inline Image Storage Flag values	478
Table 146 — Draw Style Attribute Field Inhibit flag values	478
Table 147 — Draw Style Attribute Data Flag values	479
Table 148 — Light Set Attribute Version Number values	481
Table 149 — Base Light Data Cood System values	483
Table 150 — Base Light Data Shadow Caster Flag values	483
Table 151 — Point Light Attribute Version Number values	485
Table 152 — Point Light Attribute Spread Angle values	486
Table 153 — Linestyle Attribute Data Flag values	488
Table 154 — Pointstyle Attribute Data Flag values	489
Table 155 — Geometric Transform Attribute Stored Value Mask individual bit-flag values	491
Table 156 — Shader Effects Attribute Enable Flag values	492
Table 157 — Shader Effects Attribute Phong Shading Flag values	493
Table 158 — Mapping Plane Matrix Coordinate System values	495
Table 159 — Mapping Cylinder Matrix Coordinate System values	496
Table 160 — Mapping Sphere Matrix Coordinate System values	498
Table 161 — Mapping TriPlanar Matrix Coordinate System values	499
Table 162 — Vertex Shape LOD Bindings values	511
Table 163 — TopoMesh Compressed Rep Data V2 Field Type values	518
Table 164 — Primitive Set Shape Texture Coord Binding values	522
Table 165 — Primitive Set Shape Version Number values	523
Table 166 — Primitive Set Shape Texture Coord Gen Type values	523
Table 167 — Property Proxy Meta Data Property Value Type values	529
Table 168 — PMI Manager Meta Data Version Number values	532
Table 169 — PMI 2D Base Data Font values	537
Table 170 — PMI 2D Non-Text Polyline Type values	542
Table 171 — PMI 3D Data Polyline Dimensionality values	547
Table 172 — PMI Reference Geometry Entity values	550
Table 173 — PMI Associations Source Data values	552
Table 174 — PMI Associations Reason Code values	553
Table 175 — PMI Model Views Active Flag values	556
Table 176 — Generic PMI Entity Type values	558
Table 177 — Generic PMI User Flag values	559

Table 178 — Common Property Keys and Their Value Encoding formats.....	560
Table 179 — PMI Property Atom Hidden Flag values	561
Table 180 — Common Compression CODEC Type values	565
Table 181 — Int32 Probability Contexts CODEC Type values	570
Table 182 — Float64 Compressed Data Packet CODEC Type values.....	575
Table 183 — Compressed CAD Tag Type values.....	588
Table 184 — PMI Properties	628

Introduction

The JT format is an industry focused, high-performance, lightweight, flexible file format for capturing and repurposing 3D product definition data that enables collaboration, validation and visualization throughout the extended enterprise.

The JT format is both robust, and streamable, and contains compression for compact and efficient representation. The format was designed to be easily integrated into enterprise translation solutions, producing a single set of 3D digital assets that support a full range of downstream processes from lightweight web-based viewing to full product digital mockups.

Some of the highlights of the JT format include:

- built-in support for assemblies, sub-assemblies and part constructs;
- a flexible partitioning scheme, supporting single or multiple files;
- b-rep solid shape representations;
- product manufacturing information in support of paperless manufacturing initiatives;
- precise and imprecise wireframe shape representations;
- discrete purpose-built levels of detail;
- triangle sets, polygon sets, point sets, line sets and implicit primitive sets (such as cylinder, cone and sphere);
- a full array of visual attributes such as for materials, textures, lights;
- hierarchical bounding box and bounding spheres;
- data compression that allows producers of JT files to fine tune the trade-off between compression ratio and fidelity of the data.

Beyond the data contents description of the JT format, the overall physical structure/organization of the format is also designed to support operations such as:

- offline optimizations of the data contents, i.e. file granularity and flexibility optimized to meet the needs of enterprise data translation solutions;
- asynchronous streaming of content, i.e. viewing optimizations such as view frustum and occlusion culling and fixed-framerate display modes;
- layers, and layer filters.

Remarks with regard to ISO JT (ISO 14306)

JTIAP defines the syntax and semantics of the JT file format and is compatible to the JT file format specification in ISO 14306 (in its version from 2012 and successors) as well as to the essential implementations currently available to the market. Thereby, JTIAP comes along with enhanced functionalities required by the ProSTEP iViP JT Workflow Forum and ProSTEP iViP JT Implementor Forum.

In industry, JT is broadly used e.g. for:

- visualization,
- data exchange between partners and/or CAD systems and
- long-term data retention.

***When implementing ISO 14306, for supporting use cases
that require the representation of 3D exact geometry, the
usage of XT B-Rep shall be treated as normative and the
usage is mandatory.***

Addition: For e.g. complex kinematic simulations or complex assembly structures, the combined application of JT together with STEP AP 242 XML (ISO 10303-242) offers a comprehensive solution. Both formats are harmonized with each other. This especially offers solutions to industrial players which have set up highly complex process chains, and therefore need effective standards.

Siemens PLM Software
JT Data Format Reference Patent Clarification Notice

Siemens Product Lifecycle Management Software Inc. (SPLM) owns or holds exclusive rights to one or more patents covering technology that is disclosed and documented in the JT File Format Specification and in ISO standard 14306 JT file format specification for 3D visualization, version 9.5 and later. SPLM desires to promote the use of JT Data Format for information interchange among diverse products and applications.

Accordingly, the following patents are licensed on a royalty-free, non-exclusive basis for the term of each patent and for the sole purpose of developing software that produces, consumes, and interprets JT Data files that are compliant with the specification, and the distribution and use thereof:

U.S. Patent Number: USA 20110199382, 8019788
and its corresponding patents in foreign jurisdictions.

The above license is limited to only those rights required to implement the JT Data Format and no others. SPLM grants only those rights in the above-referenced patent(s) necessarily practiced in the implementation, and subsequent distribution or utilization of such implementation, of the above named specifications, and does not grant any rights not required to implement the above named specifications. The license does not grant the right to practice any patent covering other technologies, such as implementation techniques that are not explicitly disclosed in the above named specifications, nor does it allow the use of any patented feature for any purpose other than as set forth in the applicable license grant. SPLM has other patents in various fields, none of which are hereby licensed.