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Logged in as: *brutzman* (Don Brutzman - developer)   2018-02-28 08:28 PST   Project: All Projects

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Issue #   Jump

Recently Visited: 0001209, 0000439

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ID	Project	Category	View Status	Date Submitted	Last Update
0001209	X3D	19775-1 (Abstract)	public	2018-02-14 04:55	2018-02-28 08:28

Reporter	walroy				
Assigned To	brutzman				
Priority	normal	**Severity**	minor	**Reproducibility**	N/A
Status	assigned	**Resolution**	open		

Summary   0001209: 13.3.5 Extrusion - Tesselation of quadrilaterals missing for various nodes

Description   -- Submitter indicates that this comment may be public: *Yes* --

Comment on 19775-1: Abstract X3D Definitions - V3.3
13.3.5 Extrusion
http://www.web3d.org/documents/specifications/19775-1/V3.3/Part01/components/geometry3D.html#Extrusion

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Subject: tesselation of quadrilaterals missing for various X3D nodes

Quadrilateral points might not be coplanar. Thus tesselation rules are necessary if renderings by different X3D players are going to look the same. Unfortunately such guidance is missing for most cases.

Only the X3D specification definition for ElevationGrid appears to define quadrilateral tesselation into triangles. Excerpt follows:

=====================
13.3.4 ElevationGrid
http://www.web3d.org/documents/specifications/19775-1/V3.3/Part01/components/geometry3D.html#ElevationGrid

"If the rendering algorithm being used requires tessellation, the quadrilaterals are split into triangles along the seam starting at the initial vertex of the quadrilateral and proceeding to the opposite vertex.
The positive direction for the normal of each triangle shall be on the same side of the quadrilateral. The triangles are defined either counterclockwise or clockwise depending on the value of the ccw field."
=====================

This solution description looks satisfactory to handle corresponding omissions in Extrusion, IndexedFaceSet, QuadSet, IndexedQuadSet and Rectangle2D nodes. Close scrutiny and also confirmation by implementers is suggested.

As an alternative to duplicating such an important paragraph for each relevant node, conceivably the statement might be placed in the following clause:

11.2.3 Common geometry fields
http://www.web3d.org/documents/specifications/19775-1/V3.3/Part01/components/rendering.html#CommonGeometryFields

... but the editorial wording would also need to be changed since that section describes specific fields, not general techniques.

Additional Information   Submitted on Wednesday, 2017, December 13 - 4:57pm
by brutzman (brutzman)
IP: 205.155.65.226

See: http://www.web3d.org/node/1694/submission/1636

Tags   No tags attached.

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⊟ **Relationships**

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related to   0000439   resolved   RFPuk   13.3.4 ElevationGrid - Tesselation Requirements [Delete]

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⊟ Notes

~0002267
walroy (developer)
2018-02-14 05:00
[Edit] [Delete] [Make Private]

Thanks to Sungmin Kwon for helping to identify this specification deficiency.

~0002278
brutzman (developer)
2018-02-28 08:20
Last edited: 2018-02-28 08:24
View 3 revisions
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Specification editors review:

a. Best approach is to create section 11.2.5 Tesselation considerations, and replace the corresponding prose in ElevatonGrid to point there.

b. Also need to consider polygons with greater than 4 points (n-gons), so that all normals are pointing in the same direction for planar polygons, or to the same side of the face for nonplanar polygons. The specified approach needs to be consistent with quadrilaterals.

c. Asking how implementers perform this may provide insight.

d. Additional option: might state that implementation is browser dependent (which is better than being silent about it).

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⊟ Issue History

Date Modified	Username	Field	Change
2018-02-14 04:55	walroy	New Issue	
2018-02-14 04:55	walroy	Relationship added	related to 0000439
2018-02-14 05:00	walroy	Note Added: 0002267	
2018-02-28 08:20	brutzman	Note Added: 0002278	
2018-02-28 08:23	brutzman	Note Edited: 0002278	View Revisions
2018-02-28 08:24	brutzman	Note Edited: 0002278	View Revisions
2018-02-28 08:28	brutzman	Assigned To	=> brutzman
2018-02-28 08:28	brutzman	Status	new => assigned