

# Updates on Projective Texture Mapping

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**Web3D Standards Meeting**

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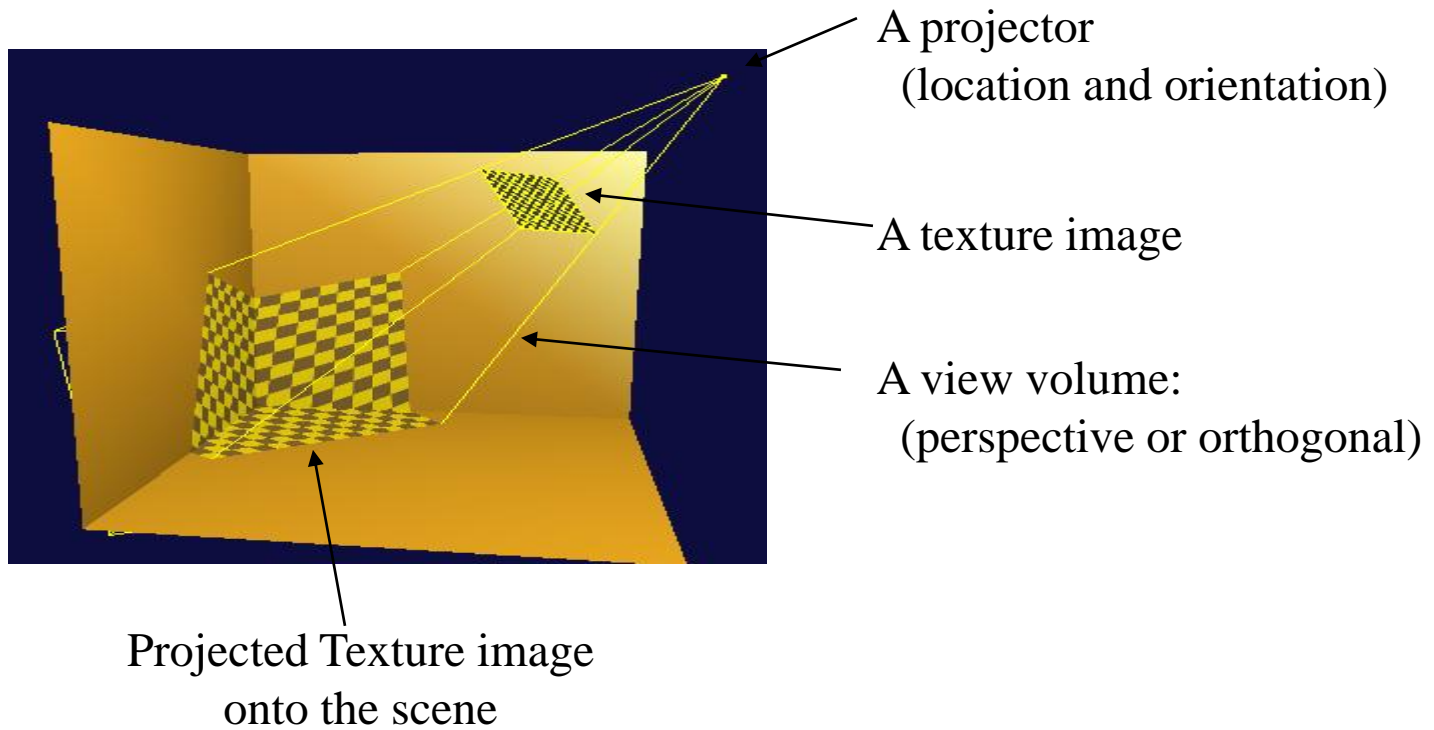
I **Brief Discussion**

II **Proposed Nodes**

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# 1. On Projective Texture Mapping

- A method for texture mapping which allows the texture image to be projected onto the scene as if by a slide projector[Cass Everitt, 1999)



DEMO

## 1. History

- The projective texture mapping was proposed as standardization item into X3D at SC24 WC6 Meeting, 2008

- \* Any nodes for projective texture mapping are not specified into X3D yet

- For last four years, several sample examples for projective texture mapping have been developed.

- Current, implementation results of projective texture mapping has transferred into X3D browsers such as freeWRL, etc.

## II. Proposed Nodes

**X3DProjectiveTextureNode**

**OrthoTexture:X3DProjectiveTextureNode**

**PerspectiveTexture:X3DProjectiveTextureNode**

**ProjectiveTextureGroup:X3DChildNode**

## II . Proposed Nodes

### X3DProjectiveTextureNode

```
X3DProjectiveTextureNode: X3DChildNode {  
    SFNode [in,out] metadata NULL [X3DMetadataObject]  
    SFString [in,out] description ""  
}
```

```
<xs:complexType name="X3DProjectiveTextureNode" abstract="true" mixed="false">  
  <xs:annotation>  
    <xs:appinfo/>  
    <xs:documentation source="http://www.web3d.org/x3d/specifications/ISO-IEC-  
19775-1.2-X3D-AbstractSpecification/Part01/components/projectivetexturing.html  
#X3DProjectiveTextureNode"/>  
  </xs:annotation>  
  <xs:complexContent>  
    <xs:extension base="X3DChildNode">  
      <xs:attribute name="containerField" type="xs:NMTOKEN" default="texture"/>  
    </xs:extension>  
  </xs:complexContent>  
</xs:complexType>
```

## II. Proposed Nodes

### OrthoTexture:X3DProjectiveTextureNode

```
OrthoTexture: X3DProjectiveTextureNode {  
    SFNode [in,out] metadata          NULL [X3DMetadataObject]  
    SFString [in,out] description ""  
    SFVec4f [in,out] position 0 0 1 0  
    SFVec3f [in,out] direction 0 0 1  
    MFFloat [in,out] viewVolume      -1 1 -1 1 -1 1  
    MFString [in,out] url [] [URI]    // image or movie  
}
```

```
<xs:complexType name="OrthoTexture" abstract="true" mixed="false">
  <xs:annotation>
    <xs:appinfo/>
    <xs:documentation source="http://www.web3d.org/x3d/specifications/ISO-IEC-19775-1.2-X3D-
      AbstractSpecification/Part01/components/projectivetexturing.html#Orthotexture"/>
  </xs:annotation>
  <xs:complexContent>
    <xs:extension base="X3DProjectiveTextureNode">
      <xs:attribute name="position" type="SFVec4f" default="0 0 1 0"/>
      <xs:attribute name="direction" type="SFVec3f" default="0 0 1"/>
      <xs:attribute name="viewVolume" type="MFFloat" default="-1 1 -1 1 -1 1"/>
      <xs:attribute name="url" type="MFString"/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```



## II. Proposed Nodes

### PerspectiveTexture:X3DProjectiveTextureNode

```
PerspectiveTexture: X3DProjectiveTextureNode {  
    SFNode [in,out] metadata          NULL [X3DMetadataObject]  
    SFString [in,out] description ""  
    SFVec4f [in,out] position 0 0 1 1  
    SFVec3f [in,out] direction 0 0 1  
    SFFloat [in,out] fieldOfView 45  
    SFFloat [in,out] aspectRatio 1  
    MFFloat [in,out] nearFar 1 10  
    MFString [in,out] url [] [URI]      // image or movie  
}
```

```
<xs:complexType name="PerspectiveTexture" abstract="true" mixed="false" >
  <xs:annotation >
    <xs:appinfo/>
    <xs:documentation source="http://www.web3d.org/x3d/specifications/ISO-IEC-19775-1.2-X3D-
      AbstractSpecification/Part01/components/projectivetexturing.html#Orthotexture"/>
  </xs:annotation >
  <xs:complexContent >
    <xs:extension base="X3DProjectiveTextureNode" >
      <xs:attribute name="position" type="SFVec4f" default="0 0 1 1"/>
      <xs:attribute name="direction" type="SFVec3f" default="0 0 1"/>
      <xs:attribute name="fieldOfView" type="SFFloat" default="45"/>
      <xs:attribute name="aspectRatio" type="SFFloat" default="1"/>
      <xs:attribute name="nearFar" type="MFFloat" default="1 10"/>
      <xs:attribute name="url" type="MFString"/>
    </xs:extension >
  </xs:complexContent >
</xs:complexType >
```

## II. Proposed Nodes

### ProjectiveTextureGroup:X3DProjectiveTextureNode

```
ProjectiveTextureGroup : X3DProjectiveTextureNode {  
    SFNode [in,out] metadata NULL [X3DMetadataObject]  
    SFString [in,out] description ""  
    SFFloat [in,out] alpha 1 [0,1]  
    SFColor [in,out] color 1 1 1 [0,1]  
    MFString [in,out] function []  
    MFString [in,out] mode []  
    MFString [in,out] source []  
    SFBool [in,out] transparent false  
    MFNode [in,out] projectiveTexture [] [X3DProjectiveNode]  
}
```

```

<xs:element name="ProjectiveTextureGroup">
  <xs:annotation>
    <xs:appinfo/>
    <xs:documentation source="http://www.web3d.org/x3d/specifications/ISO-IEC-19775-1.2-X3D
-AbstractSpecification/Part01/components/projectivetexturing.html#ProjectiveTextureGroup"/>
  </xs:annotation>
  <xs:complexType>
    <xs:complexContent>
      <xs:extension base="X3DProjectiveTextureNode">
        <xs:choice minOccurs="0" maxOccurs="unbounded">
          <xs:element ref=" OrthoTexture "/>
          <xs:element ref=" PerspectiveTexture "/>
        </xs:choice>
        <xs:attribute name="alpha" type="SFFloat" default="1"/>
        <xs:attribute name="color" type="SFColor" default="1 1 1"/>
        <xs:attribute name="function" type="MFString"/>
        <xs:attribute name="mode" type="MFString"/>
        <xs:attribute name="source" type="MFString"/>
        <xs:attribute name="transparent" type="SFBool" default="false"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
</xs:element>

```

# Documentation