The State of the Art

3D in the Browser
Who Am I?

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GPU Rendered Web 3D

- Stage3D (ActionScript)
- WebGL (JavaScript)
- Unity3D (JavaScript, C#, Boo)
Stage3D

- Flash 11 API
- Enables GPU accelerated 2D/3D graphics
- 3D Engines:
  - Away 3D 4
  - Alternativa 8
  - Flare 3D
WebGL

- Open Standard Library
- Implemented directly in browser
- 3D Engines:
  - Three.js
  - J3D
  - Processing.js
Supported Platforms

• Hardware Requirements
• Recent Graphics Card

• Browser Requirements
  • Stage3D - Flash Player 11
  • WebGL - Chrome, Firefox, Safari and Opera
Core 3D Concepts

- Renderer
- Scene
- Camera
- Geometry, Vertices
- Materials
- Lights
Code Comparison

- **Away3D**

```javascript
var cube:Cube = new Cube(material, 100,100,100);
view.scene.appendChild(cube);
```

- **Three.js**

```javascript
var geometry = new THREE.CubeGeometry(100, 100, 100);
var cube = new THREE.Mesh(geometry, material);
scene.add(cube);
```
Particle Systems

- Allow great number of simultaneous particles
- Each particle must have the same texture
Generative Geometry

- Quads
- Lines
Shaders

- Work directly on GPU
- Vertex Shaders - modify vertices
- Pixel Shaders - draw pixels
- Written in AGAL (Flash) or GLSL (WebGL)
Ready for Primetime?

• Can use WebGL for client sites now
• Need to build alternative content for various devices
Looking Forward

• More devices will support GPU 3D
• Sophisticated 3D Games in the browser
• More powerful frameworks and tooling
Thanks!

www.airtightinteractive.com/webgltalk