Math 3d notes

Section 1 Introduction, Scene graphs, Shapes, Appearance

* Section 2 Groups, Transforms, Texture mapping, Lighting
* Section 3 Universes, Viewing, Input, Behaviors
* Section 4 Interpolators, Picking, Backgrounds, Fog
* Extended notes
* Section 5 Text geometry, Advanced texture mapping, Sound,
* Sound environment

***History***

1996- [Intel](https://en.wikipedia.org/wiki/Intel), [Silicon Graphics](https://en.wikipedia.org/wiki/Silicon_Graphics" \o "Silicon Graphics), [Apple](https://en.wikipedia.org/wiki/Apple_Computer), and [Sun](https://en.wikipedia.org/wiki/Sun_Microsystems) se mettent en group pour travailler sur un API base sur des graph scene

* First version 1998
* Development stopped 2003-2004. Et depuis l’été 2004 le projet est devenu Open Source.
* Current version 1.5.2 3/2/06 (Windows, Linux, Solaris) adds programmable shaders.
* Version 1.5 JOGL Rendering
* De 2008 à 2012 le code source était sous license [GPL version 2](https://en.wikipedia.org/wiki/GPL#Version_2)
* Depuis fevrier 2012, Java 3D utilise OpenGL  ou de Direct X selon la platform pour le rendu des graphisme 3D. Ce sont les librairie bas niveau ^pour le 3d

***What software do I need to use Java 3D?***

Java development kit

Java 2 platform

Free from http://java.sun.com

Java 3D development kit

Java 3D 1.1

Free from <http://www.sun.com/desktop/java3D>

***INTRODUCTION***

* Java 3D is a high-level API for building interactive 3D
* applications and applets in Java

***Using scene graph terminology***

But first, some terminology . . .

*Node*: an item in a scene graph

*Leaf nodes*: nodes with no children

Shapes, lights, sounds, etc.

Animation behaviors

*Group nodes*: nodes with children

Transforms, switches, etc.

*Node component*: a bundle of attributes for a node

Geometry of a shape

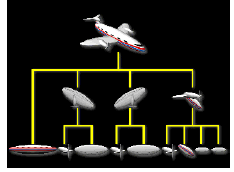
Color of a shape

Sound data to play

***Sketching a scene graph diagram***

Sketching a scene graph diagram can clarify a design and ease

software development



***Processing a scene graph***

Java 3D renders the scene graph

Scene graph specifies content, not rendering order

Rendering order is up to Java 3D

Java 3D uses separate, independent and asynchronous threads

Graphics rendering

Sound "rendering"

Animation "behavior execution"

Input device management

Event generation (collision detection