Elder Scrolls Explorer

# TODO:

***Current***

1. 100k J3DMessage! Too many reuse where possible – notice core-and I did some re-use work
2. Bounding Sphere 100k+ too many
3. I really want to put back particles for everything >tes3
4. bad lights in Morrowind and oblivion
5. hud missing!
6. When moving forward and rotating the camera physics is crazy jerky, like rots is putting me back by one frame, really noticeable in morrowind due to low fps - move bug to eseandroid doc
7. Tes3 land is stupidly slow, must drop the draw count by using the outer 4x4- move bug to eseandroid doc
8. Astc texture are in separate mipmap files now 00-0n no container anymore, load seperate
9. Astc texture converted at high quality too much for the dxt ones (no alpha required)
10. I need to use a filesource for now to skip bsa issues
11. I need to load data one time.
12. Waterfalls in oblivion are not running
13. Meshes are not being updated
14. Plants and other transparent gear have crazy ordering issues (are they is second pass for some reason)
15. Xesp – get it more done, skyrim is ignoring this code completely and now has a “thing” outside whiterun by the gate
16. Land for internal wlrds use parent – working but megaton is missing some land still
17. Land for internal WRLD in FO4 for diamond city is crazy big wrong place
18. FO4 has stuff appearing and disappearing a lot
19. No physics in FO4
20. Physics doors in morrowind
21. Worldwind has dropped java3d but the example of getting android going looks very promising
22. Land shader is all over the show, not correct like older multi geom system
23. I could compact all the older nif files with the modern BSTriShape compact code.
    1. In particular morrowind, along with compress archives and possibly separate out the archives to allow multithread loading?
24. Make a single runnable in the 3dtoolsdesktop that demos it all including discovers all meshes and texture bsas
25. Then a fat warning of set root and if no meshes below then also an extract instructions
26. Load screen are crazy colors, something to do with curve maybe
27. Skyrim still has physics too big, skypass01 for example
28. FO3 is showing plates stacked up with oversized physics (in uncle house near ant-agonist)

#### HunterSneaker

1. Restart this bad boy
2. In order to make a good tight huntersneaker, I need to cut my esm file down as well.
3. Oblivion gates can be cut out via the REFER factory booleans
4. Got my esm and 2 bsas ready to roll but they seem slower, note I put compression on
5. Note think about mesh texture separation in bsa files file locking etc

#### Physics

1. Interiors in skyrim have too many jittering miscs must bring them to a rest more quickly
2. Grey Mare, basket didn’t follow dynamic!
3. I MUST alter the camera system, it is definitely the case that Bip01 is the spot on the floor, and that is the transform (the accum transform) that take the motion, and then nonaccum is the pelvis above that. So my camera system must become the floor spot and the head spot and not anything else like now with pelvis
4. Try a single KCC for one of the Cha see what happens
5. NBStaticRigidBody has a major question in it about multiplying up to the root! Also see thoughts on performance below, I notice the gate to megaton is crazy in J-physics this question is wrong for megaton walls! Needs careful thought
6. I notice my “don’t fall infinite distance” check seems rubbish. I also notice if I’m half way through the terrain and I turn F on I fall down to about 2 meters below terrain then stop (which I suppose is roughly correct?)
7. Need to make kcc unable to walk up steep slopes
8. Also sometimes physic races away (cannon shot) in a direction now, but it never used to before KCC update, debug info spews out now, and rejects
9. I have a gimbal lock flick 0,0,0,1 issue again (this might be navigation not physics)
10. PhysicsDynamics.addRECO is calling addChild to scene graphs not in a behaviour! Could be trouble
11. I need a new type of physics kcc freefly-physics that is normal except gravity doesn’t apply and upward movement is fine
12. God damn tes3 has collision boxes that overlap (and are in front of) door collision boxes!! God dam it.
13. I need to make a simpler version of VisualPhysicalUniverse without physics, but CameraPanel assume it so I need to do lots of work Look into my use of VisualPhysicalUniverse, half my physics is not showing when the view specifics are disabled!! It is madness, should I drop it totally? And make an add detach style physics branch
14. Investigate <https://github.com/aperfilev/jBullet> in case there are lots of good enhancement I need
15. The camera in J debug sometimes does mad angles, like up high
16. Should the debug window of J be a square??
17. Morrowind no clutter has physics, because it uses the worn person models and none of the clutter has physics, it wants you to use visual models for picking!

#### Rendering

1. Skyrim texture not animating (can’t even find the water fall to be honest)
2. Some fires in oblivion not moving see cloudrulelrtemple courtyard, in fact I suspect fires of not starting sometime, greymare in choral has one that sometimes goes and sometimes not, I see that damn compiled not live bug in billboard2 now, how? Must hang behaviour on scene properly
3. I should fork java3d commit my updates and offer hharrision a pull request
   1. The reset of texturetransform and everything in postREnder calls with return graphics
   2. The mipmap level checks stuff
   3. Performance gear like hasmap in mirrors
4. Water not overriding colors for skyrim and fallout, now fallout water is far too transparent!
5. Could water use the 0th row as the last row for vertex shaking to make perfect match ups? In the water.vert shader try to find a deterministic shader (current one looks deterministic to me but)
6. When a card gives back 16bit depth buffer (ever?) must reduce front and back clip
7. Distant textures appear to have black back in them again? In particular Fallout, notice yellow lines on road badly minify, and distant windmill by megaton front. Dds viewer does not show, must be appearance prob? But nifskope does show it too a bit. Did the addition of rendering attributes help this?
8. The gross lods are lit up more than the close ones? Check material light values for land and lods
9. LANDFar should be used by tes3 lod system as a lod builder with reduce of 4, but how to know how far away and how to swap back in and out? tricky
10. TES3 head go missing (e.g. cliff racer) possibly from bounds setting, test out auto bounds and see diff, I could auto bounds (cost?) and then extend my cache system moreso – autobounds set bounds needs to be in performance section
11. Interesting code <http://docs.oracle.com/javase/tutorial/extra/fullscreen/example.html>
12. Oriented shape has a constant scale mode that would be cool for mark-up text surely?
13. Tes3ModelSizes for far loading radius should be configurable from the render setting panel
14. I need to make ALL behaviours passive and then for the one time that the physics system need a non-passive behaviour I should create a special active behaviour just for it!
15. Get attachments working in tes4? Some are still on the floor sometimes
16. I could experiment with multi texturing of the land to allow the use of the Gaussian overlay texture thingy
17. If you alter render setting while a cell is loading the half made characters etc collapse
18. J3dNiVisController is not ever being called via update for TES3 ascended sleeper
19. TES3 should have slider distant stats (size)
20. TES4 should have a slider for distant trees versus distant stats (stats should be waaay distant), probably TES5 could use the same system?
21. If I want to outline the selected item I should think about transparency in outlining, which I reckon can be done via the transparencyattributes of the outline shape???
22. The J3dRECOTypeGeneral check against Marker has taken away skyrims blacksmithforge marker
23. My J3dLIGH attach node is very simplistic, need to multiply up all proper like, I should also work out the spot lights question
24. Fallout and skyrim still don’t organise lods properly big gaps etc
25. Horse head still appear on ground, I still get a flick from attached geomorphs, recent buggering about hasn’t help, but now only a few goblins get this, possibly something to do with a double animation that’s less likely now?
26. Morrowind doors no open PhysicsDynamics. updateRECOToggleOpen needs the artificial pivot of J3dDOOR added and list need to by the NBKinematicRigidBody
27. See if the java stereo code works in a rift?? Nay nvidia drivers for rift would need ot be going, however it looks like the old 0.3 will still run on my DK2
28. Ok xesp for megaston has one set wrong, also goblins in oblivion show same issue one wrong

#### Animation

1. Varying lod fader needs knots/frames system because close things don’t need check often either, in fact lod fader is a fixed 5 frames so not easy to correct
2. Fustum clipped animations allows horse to stop whilst on screen.
3. Blended skeletons are Waaay broken, see alpha=1f; in the code
4. The varyinglod behavior might not be a good idea for the character behavior, find the distance might be a waste over simply updating the bones and skin, perhaps it should simply be set to a per frame behavior with frustum clip, particularly now I have both frustum clip and actor fade
5. The varying lod behavior needs to really have another version call points of interest varying, as the fade stuff was high speed checking at ever model change point and within say 10 of it (notice the distance is really related to max camera move not a fraction of total distance) in fact fade should probably also be over a distance (say 2 seconds of travel)
6. Tes3: my animations appear to be missing the base level rotation, knock out’s (e.g.) don’t get people onto the ground properly, check on this now perhaps they do in fact?
7. TES3: BSparticle system not working
8. TES4 I see fingers bending backwards in oblivion animations (I think its in fallout too)
9. TES5: animation accum bugs have decreased but are still present, but at the same time some fingers a twisting very strangely in oblivion, so perhaps related
10. Skyrim horse backlegs kickout appear to be gone (blending related?) however one of its bone is at 0,0,0 and a skin is attached (a saddle point in fact?)
11. TES3 geomorph control from links should be easy to sort out??
12. J3dNiControllerSequence has a single geommorph selector that’s rubbish but all of the oblivion kf files seem to point at all geommorphers for a single tribasedgeom but I want to pick and run only one of them. I would have thought dog attack would specifically select the mouth open geommmorpher but I can’t see it. Maybe it’s in an animation setting in the esm files?
13. There are shakey texture update see evtechpod in enclave dungeon for fallout, not sure why.
14. I notice in ravenrock that doors that default to open are showing as closed, but when you click them they do a double animation
15. If you click an opening door, it loses its mind
16. TES3 particles good example here F:\game media\Morrowind\Meshes\steam\_lavariver.nif
17. Oblion has egm files for heads, apparently skyrim has tr files etc, I should understand these (and remove the head uprighter code)

#### Performance

1. I should use Stack alloc in any performant areas?? How would I know there is an object burn issue? How would I test speed improvement?
2. I have a bunch of setting on command line, and in LAND and GeometryTriShapes statics that need playing with and understanding
3. ByteBuffer allow a setting of endian ness and then they have a bunch of data getters, I wonder if nif file loading might be faster with mappedbytebuffers too?
4. I need a test setup that will run and record the various performance metrics, then need to automate changing parameters and rerun the exact same tests
5. Try the split compress bsa file for morrowind, might make a nicer video – no files much smaller, but speed seems worse if anything, compare the 2 betterer, maybe totally uncompressed texture bsa
6. SimpleBethCellManager.getCellNameFormIdOf is slow because I’m supposed to have persistence in memory, probably ALL persistence everywhere at all times?? I wonder how much memory?
7. Physics line rendering makes fps drop by 25%???
8. the polygon attributes and the transparency attributes are added in the j3dgeometry calls, , it seems ok but may add this section to performance ideas (that is it best performance with less set) certainly the removeChild remove mirror code would benefit if the attribute is identical and hence shared and increases the hashset load

#### User Interface

1. I should move the “Info” crap from upper left to a proper nice looking bar at the top (or bottom)
2. Definitely write more in the user guide, it’s got spelling errors now
3. Table should update on each cell change to show current at top
4. Add a tick bos to show hide editor markers, 2 type esm world ones (defined by the refr flag and the nif file name) in J3dRECOTypeGeneral and the factories and the internal nif file editor markers in J3dNode
5. KeyMappings in the config file
6. It looks like each character sheet is going to need to be “done” in the esmj3d\* project for icons, maps etc, possibly by riding on the J3dICellFactory interface, maybe test out the inventory icon?
7. Now I’ve got inventory maybe allow intenalframe to be resized??
8. Perhaps a nice little map interface now? Does every game have a map? I suspect skyrim and other use a nif model Morrowind obliv and fallout fonts see <http://www.dafont.com/forum/read/2546/can-anyone-describe-this-font-format>
9. Morrowind is highlighting the boat at the start, and FLOr are never highlighting
10. I should improve nif display etc to take a source folder so it can be run on other computers in needed also the bsa extracted folder combo should be thought about, don’t’ forget nif exporter in ESE too and sound exporter, probably a link in the ESE gui s easiest, but everyone has to love BSA file then, no just put a warning up of the requirement to extract the files and then to add some base folders
11. GameConfig needs a multiple nif system to allow variations in loadscreens
12. Graphsic setting panels need to listen to setting updates ans reflect changes made by the program!

#### Config

1. Need to remove all prefs usage for PropertyLoader, like Dune
2. The config loader, properties loader and prefs loader system should be bought together into a mega loader, with order of load, and command line loader notice the config an property loader are 2 different things one is semi-permanent (config.ini) and lives next to game files, one is more fluid and live under user data area
3. Why not smack it all in android? Java3d/awt not on android
4. If a crash happens during the saving of the PropertyLoaders file the contents are lost, perhaps an old copy save system would be better?

#### Sound

1. Sounds in fallout produce errors, J3dSOUN and nifcharacter
2. I notice doors all have open/loop/close sounds

#### Input/Output

1. I should change ftp across to org.apache.commons.net.ftp.FTPClient
2. http://commons.apache.org/proper/commons-net/
3. Ftp download appears to lock up after a successful download sometimes
4. ftp = new FTPClient(FTP\_HOST\_NAME); definitely locks up! I can still make ftped files overlarge by pressing cancel somehow. dud file downloads cause havoc all round, must try more cancel resume to see if it can be sorted out

# Other Notes

## Performance

I put a check on a 2k users count and saw what it was ,it turns out it was a wildly reused material (from J3dLAND) so reproducing the bug (ArrayList-BalancedArrayList) is trivial, just create 10000 shapes with one static material

Investigate RenderBin.nodeComponentList and other arraylists

Multiple bsas with compression for morrowind – I think decompression time is not a problem, recalling also the requirement to get disk activity done well away from the java3d render thread

I could have a thread per grid loading up given I have structure thread

Need to do more profiling with morrowind, biggest structure pause of anyone

Physics is pausing more than it should on cell load? I feel it should only stutter as much as structure behaviour lags, as it's on a separate thread, the thread view very clearly shows the physic pause and what’s live during it

Also remember physics has transform listeners and transformgroup suck, perhaps it should use the transfromcache(the cache should have a changed bool too) in NifTransformGroup

Physics was loading model from file on a physics tick, this has been changed to load NifModels (on calling thread) totally then just attach them on a physics tick

//-Dj3d.disablecompile can't see a difference

//-Dj3d.docompaction=false

I need to recheck mappedbytebuffers for texture, see if they push the load time to the structure update behave (I think so)

If not how do they affect things if at all?

I should write this all up in the docs about performance

FPS, memory usage, cell load/unload times etc

put notes about texture loading, j3d thread versus other, interleave by ref etc, command line options (from ese.java)

put notes about using nif data moreso (like opt version of niobjects)

## Rift:

1. <https://github.com/38leinaD/JRift>
2. NEW VERSION lots of rework required

## Mac use:

1. I found how to force antialiasing on screen: quite strangely you have to set *j3d.implicitAntialiasing* property to true.   
   I don't fully understand why this property has to be set if you already called GraphicsConfigTemplate3D.setSceneAntialiasing(GraphicsConfigTemplate3D.PREFERRED); but it works on my computer. Miserably it has no effect for offscreen rendering.
2. <https://developer.apple.com/library/mac/qa/qa1170/_index.html>

ftp login

gamemedia:vivec

## BSA files

BSA should be all together and set to low compression

## I need to:

Connect sourceforge to github

Write a note on what each jar file does why it’s there

In the note find a link to the original jar file or web site if possible

Make up a list of attributions to people, and try to find licensing

Do I care about licensing in my java files? Or is that boring

### Normal maps into bump map

You just have to pass the normals when creating your own sphere without using the Sphere object if the bug is still in Java3D 1.6.0. You can use the COMBINE\_DOT3 RGB combine mode and the COMBINE texture mode to use a texture for bump mapping. You can use several texture units, one for your main texture and another one for the bump mapping.   
  
Edit.: I'm not sure that you can use several combiners in Java3D 1.6.0, it was the case in Java3D 1.4. If I'm right, you won't be able to fully implement bump mapping with Java3D.   
  
Edit.: You can convert an heightmap into a normal map. Maybe it's possible to use GLSL with a ShaderAppearance but I have never tried this feature.

# Launcher:

Also launcher and setting go hand in hand, launcher sets setting before launch, note that setting and the menu screen esc are related, and Mac requires a menu screen with exit in the Pane3D world as it won’t switch resolution

I had more ideas, if we eschew the launcher parsing bat file, we still need a way to get reliable console output on screen, possibly the launcher could have a tick box to stay resident and show console outs on a scrollable panel in a second tab? Then all output can go to a single log file nicely unless you are debugging proper.

Launcher could then include a url to get latest from and unzip over the current jar, this probably means moving the launcher into a separate jar file to not over ride itself.

So how does the launcher get updated then? I really want the launcher to get the new files down unzip everything and then somehow rename the jar and relaunch itself?

A launcher in tools for general command line script and launcher in tools3d to adf display dialog, which needs to flip over to jpanel version too, then tools3d can include jogl version option, which probably drops the bat file parse option, but given noddraw etc. that’s probably fine. If launcher cant launch put debug launcher bat file

Launcher should hand –logout to app then app knows to send all sops out to a particular file, that way boot strap can exit and doesn’t hang around.

Tools3d launcher can extends tools launch and include standard lib file of java3d and jogl and ddraw=no etc. then app can send through its own lib path files and options, each app will still have a bootstrap class invoked form the meta info but it will be cut down, but the start server code can still be invoked from it.

The boot strap then calls the launcher which then calls the main app. So launcher is the main of the main app, but then calls a separate thread???

So is bootstrap and launcher the exact something?

I have 3 types of launch

Development:

No updater required, no bootstrap required, but display resolution including full screen and antialiasing I also want to be able to optionally go jogl2 but I have no class path without boot strap, though all jars is in fact fine isn’t it?

I also possibly just want setting to go so the display stuff could be property loader - ed and recalled for straight boot up, however what’s happened on a setting change? Restart is classic

Boot strap:

Jar file only, must spawn process, want to end this process, so best to hand a log file across and get the main to pump out to log.

Display selection does not require anything but core java, so bootstrap can use it too

However boot strap needs to be a separate jar form the main which means that the selections form boot strap need to go across to the main app, but that’s just the config ini file anyway.

Boot strap also wants to update the game from a url, unzip including replace the main jar, hence it’s on a separate jar.

Command Line:

Finally I need command line gear so I can test stuff, but that’s just dev anyway.

For mac shells

http://mathiasbynens.be/notes/shell-script-mac-apps

# Media Releases

1. Release up on jogamp/java3d
2. niftools not done yet ( just point at the jgo one?)
3. Java Gaming org done

<https://www.youtube.com/watch?v=MIdjuFq-dE>

This is a project I’ve worked on in my spare time for about ten years now. It is approaching a level where I think people might be interested in seeing what I’ve done; specifically what can be done in pure java, and possibly the code might help someone. (I know, I know… minecraft… but this is Java3d)

It is a pure java, open source project.

It uses Jogamp’s Java3d for the scene graph and Jogamp’s Jogl for the render bindings <https://jogamp.org/>

It uses JBullet for physic simulation <http://jbullet.advel.cz/>

I’ve relied heavily on the NifTools team for decryption of models. <http://www.niftools.org/>

I am enormously grateful to the above teams/people for what they have done and the entire modding community generally are just awesome.

The binaries (you need to have access to the game data files) can be found here:

<https://sourceforge.net/projects/elderscrollsexplorer/>

And finally the source code can be found here:

<https://github.com/philjord/ElderScrollsExplorer>