Distorted Android - Feature #15

Order Independent Transparency

06/17/2016 09:55 PM - Distorted Admin

Status:	Closed	**Start date:**	06/17/2016
Priority:	High	**Due date:**	
Assignee:	Leszek Koltunski	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

Alphablend is broken - it always takes into account the order with which we draw; thus if we are drawing a DistortedCubes target and happen to rotate it in a way that the Surfaces behind are drawn after the Surfaces in front, stuff looks weird.

Also visible if a large distortion comes out of a DistortedBitmap target.

http://stackoverflow.com/questions/28153207/opengl-alphablending-surface-with-itself

Related issues:

Related to Bug #29: Postprocessed surface incorrectly merged	**Closed**	**04/08/2018**
Blocked by Bug #31: various issues with OIT branch on Mali GPU	**Closed**	**05/30/2018**

History

#1 - 09/08/2017 09:43 AM - Leszek Koltunski

Currently reading some scientific papers (see the open source 3D engine 'guacamole'!) on how to implement this.

#2 - 02/21/2018 11:13 AM - Distorted Admin

- Tracker changed from Bug to Feature

- Subject changed from Surfaces sometimes drawn partially obstructed by Surfaces behind to Order Independent Transparency

We need to implement correct drawing of partially-transparent meshes. (currently, if the mesh self-obstructs, results on the screen depend on the order fragments get drawn).

#3 - 02/21/2018 11:23 AM - Distorted Admin

- Status changed from New to In Progress

Blocks #7.

Currently studying theory. ('guacamole' rendering system, https://github.com/vrsys/guacamole)

#4 - 02/21/2018 11:24 AM - Distorted Admin

- Assignee set to Distorted Admin

#5 - 04/11/2018 11:03 PM - Leszek Koltunski

Commit examples|664a0e45 adds an application checking this feature.

#6 - 04/11/2018 11:08 PM - Leszek Koltunski

Algorithm outlined in 'Per-Pixel Lists for Single Pass A-buffer' (Sylvain Lefebvre, Samuel Hornus, Anass Lasram) - specifically the 'insert_prelin_cas32' way from its implementations.fp will be ported.

This will need to be implemented in 2 places:

- DistortedNode.draw() when we render a single mesh

- the 'Blit with depth' phase when we merge postprocessed surfaces

#7 - 04/12/2018 10:02 PM - Leszek Koltunski

- % Done changed from 0 to 20

Theory understood, app checking functionality written. 20%.

#8 - 04/12/2018 11:10 PM - Leszek Koltunski

- Related to Bug #29: Postprocessed surface incorrectly merged added

#9 - 05/30/2018 12:57 PM - Leszek Koltunski

- % Done changed from 20 to 70

OIT branch fully implemented and working, at least on Adremo GPUs.

#10 - 05/30/2018 12:58 PM - Leszek Koltunski

- Blocked by Bug #31: various issues with OIT branch on Mali GPU added

#11 - 07/03/2018 12:54 PM - Leszek Koltunski

- % Done changed from 70 to 90

Issue almost finished. Commit 6544040f makes non-postprocessed OIT work. Remaining stuff to be done:

1) Confirm that the issues with OIT on Mali T880 is indeed gone on driver r22
2) Somehow resolve the situation with PowerVR GE8*** compiler whose version 1.8 fails to compile OIT pass2 'build' and pass4 'render' shaders
3) Make the size of the SSBO adjustable (currently stuck at 8MB)

#12 - 12/13/2018 10:45 PM - Leszek Koltunski

SSBO is adjustable now. This leaves two things:

1) PowerVR shader compiler situation: even the latest update to the system still keeps the old driver, unable to confirm.
2) Mali: ditto, stuck with r12.

#13 - 08/26/2020 11:29 PM - Leszek Koltunski

- Status changed from In Progress to Closed

- Assignee changed from Distorted Admin to Leszek Koltunski

- % Done changed from 90 to 100

PowerVR kept in a separate issue, Mali also - closing this.